Margaret L. Usdansky *
Wendy M. Parker
Center for Policy Research
Syracuse University

* Please address all correspondence to: Margaret L. Usdansky, Center for Policy Research, 426 Eggers Hall, Syracuse University, Syracuse, NY 13244-1020, mlusdans@maxwell.syr.edu. We thank Rachel Gordon, Madonna Harrington Meyer, Liana Sayer, Janet Wilmoth and Doug Wolf for their comments on earlier versions of this paper.

Using new data from the American Time Use Survey (ATUS), we evaluate and extend recent claims of independent effects of wives' own earnings on the time they devote to housework. We capitalize on the large samples in ATUS to study subgroups of wives whose educational and parental status strengthen tests of past claims regarding bargaining, gender display and housework as well as newer claims of wives' economic autonomy. We find limited evidence of bargaining, weak evidence of gender display and little evidence of autonomy. Our subgroup analysis suggests that the processes of bargaining and gender display pertain mainly to mothers without a college degree, raising the possibility that money matters less to wives' housework than previously demonstrated using survey-based analyses.

Keywords: Housework/Division of Labor; Time Use; Family Process

In a recent article in this journal, Gupta (2007) argued that married women's own earnings provided a simple and compelling explanation for the time wives devote to housework. Most research on this topic has focused on wives' earnings relative to their husbands without exploring the potential power of wives' own earnings (Bittman et al., 2003; Brines, 1994; Evertsson & Nermo, 2004; Greenstein, 2000). Using the second wave of the National Survey of Families and Households (NSFH) conducted from 1992 to 1994 and focusing on full-time, dual-earner wives, Gupta found that wives' own earnings mattered more. (He reported that a sensitivity analysis of all wives yielded similar results.)

To date, Gupta's interesting claim has not been tested using other data. Whether evidence of the superior predictive power of wives' own earnings can be replicated using more recent time diary data is an important question given uncertainty as to whether wives' relative earnings bear a linear or curvilinear relationship to housework (Bittman et al., 2003; Evertsson & Nermo, 2004; Gupta, 2007) and evidence that time diaries measure time expenditures more accurately than survey data (Juster & Stafford, 1991; Kan & Pudney, 2008). This paper extends Gupta's research in three ways: by providing the first test of the importance of wives' absolute versus relative earnings using time diary data; by making an explicit comparison of findings for dual-earner wives and for all wives; and by considering how the attainment or lack of a college education combined with the presence or absence of children shape the earnings-housework relationship.

To our knowledge, no previous research has examined the latter question. It is of theoretical interest because, as described further below, the countervailing effects of a college education – associated with increased gender egalitarianism (Bolzendahl & Myers, 2004; Brewster & Padavic, 2000) – and motherhood – associated with increased gender traditionalism

(Coltrane, 2000; Sayer, 2005; Vespa, 2009) – strengthen tests of competing theories of the relationship between wives' earnings and the time they spend on housework.

BACKGROUND

The Exchange and Gender Display Perspectives

Most research on the relationship between wives' earnings and their housework incorporates two theoretical perspectives, which lead to different expectations. The first perspective starts from the assumption that domestic labor is unrewarding. Sociological exchange theory predicts that the more economically dependent a spouse is, the more domestic labor she or he will perform because limited access to economic resources outside the marriage decreases marital power and increases the dependent spouse's incentive to maintain the marriage (Molm and Cook, 1995; Scanzoni, 1972). Similar arguments flow from bargaining models developed by economists using game theory to predict that the spouse with fewer resources will hold the weaker bargaining position and thus perform more domestic labor (Lundberg and Pollack 1996). While spouses may not strike explicit verbal agreements, this perspective assumes that they will behave as if they did (Bittman et al., 2003). The exchange or bargaining perspective gives the appearance of gender neutrality, suggesting that anyone with sufficient resources, regardless of gender, can opt out of domestic labor.

In contrast, the gender display or "doing gender" perspective emphasizes the highly gendered nature of most couples' division of domestic labor, regardless of relative resources, and the structures and processes through which gender differences are created and maintained (Brines, 1994; Greenstein, 2000; West & Zimmerman, 1987). Rather than viewing women's assumption of the majority of domestic labor as the result of limited resources, the gender display perspective asserts that it is inextricably linked to the ways in which we "do gender" in

order to define ourselves as women and men (West and Zimmerman, 1987). Central to this gendering process is the conceptualization of many domestic tasks as the appropriate domain of women. Thus, the gender perspective suggests that women will continue to shoulder a greater portion of domestic labor regardless of the balance of economic resources between spouses.

Relative earnings are the measure of resources most often used in testing both the exchange and the gender display perspectives. A negative relationship between wives' relative earnings and the time they devote to housework is interpreted as evidence of exchange (Bittman et al. 2003). The square of relative earnings is included to test for possible curvilinear effects. These are interpreted as evidence that wives engage in gender display by performing more housework in order to demonstrate womanliness when their relative earnings are unusually high (Brines, 1994; Greenstein, 2000; Gupta, 2007).

As noted by Gupta (2007; 2006), however, studies examining linear and curvilinear effects of relative earnings on wives' housework have not been entirely consistent. Using the 1985 Panel Study of Income Dynamics (PSID), Brines (1994) found that wives' housework followed a linear pattern of dependence in which greater relative income was associated with less time spent on housework. Using the 1987-1988 NSFH, Greenstein (2000) likewise found an inverse, linear relationship between relative earnings and wives' housework hours. Bittman et al. (2003) analyzed the 1987-1988 NSFH and 1992 time use data from Australia. They reported a linear pattern of dependence for U.S. wives but a curvilinear pattern for Australian wives, which they interpreted as a genuine cross-national difference. Evertsson and Nermo (2004), however, reported a linear relationship between Swedish wives' relative earnings and their housework based on an analysis of the 1974, 1981, 1991 and 2000 Swedish Level of Living Survey but a curvilinear relationship between U.S. wives' relative earnings and their housework based on

analysis of the 1981, 1991, and 1999 PSID. (They found no relationship between U.S. wives' relative earnings and housework in the 1973 PSID.)

The Autonomy Perspective

Gupta (2007) suggested that inconsistent findings regarding wives' relative earnings stemmed from the failure to consider a simpler possibility: that wives own earnings were a superior predictor of their housework. Gupta based his argument on evidence that wives' earnings matter more than husbands' in predicting expenditures on substitutes for domestic labor (Cohen, 1998; Phipps & Burton, 1998) and that wives with high relative earnings are disproportionately found among lower-income couples (Winslow-Bowe, 2006). The latter pattern could mean that curvilinear effects of wives' relative earnings found in some past research (Bittman et al., 2003; Evertsson & Nermo, 2004) reflected the low absolute earnings of wives with unusually high relative earnings rather than behavior consistent with gender display (Gupta, 2007).

Gupta (2007) focused his research on dual-earner wives working full-time, year round, contending that they provided a better test of the gender display perspective because they included a larger group of high-relative earning wives and excluded women with low levels of attachment to the labor force, limiting a potential source of unobserved heterogeneity. Using the second wave of the NSFH, Gupta found that wives' own earnings related inversely to the time they devoted to housework, while husbands' earnings were not associated with wives' housework. He argued that his autonomy model yielded similar predictions of wives' housework time when compared to past models based on the exchange and gender display perspectives and was superior in its parsimony and its demonstration of wives' ability to draw on their own rather than their relative earnings to reduce their housework. Gupta acknowledged that the inverse

relationship he found between wives' own earnings and their housework could reflect a modified form of dependence in which wives with higher absolute earnings enjoyed greater marital bargaining power than wives with lower absolute earnings. But he argued that related analyses he presented showing that single women's earnings also related inversely to their housework suggested instead a common process whereby earnings give women, regardless of marital status, genuine autonomy to reduce their housework.

Our test of this proposition using the ATUS data has the potential to address inconsistent findings regarding the linearity or curvilinearity of the relationship between wives' relative earnings and their housework. By examining recent time diary data including large samples of dual-earner wives as well as all wives, we evaluate evidence for the applicability of both exchange and gender display theory to wives' housework. The data also allow us to evaluate evidence for Gupta's alternative theory of wives' autonomy.

Using Subgroups of Wives to Test the Exchange, Gender Display and Autonomy Perspectives

Prior research on the relationship between wives' earnings and their housework has studied married and cohabiting women (Bittman et al., 2003; Brines, 1994; Evertsson & Nermo, 2004; Gupta, 2006), married women (Greenstein, 2000), or all married women working full time, year round (Gupta, 2007). But full-time employment is not the only characteristic likely to affect the relationship between women's earnings and their housework. The relative salience – and related explanatory power – of bargaining, gender display and autonomy may also vary by wives' educational attainment and parental status.

Past research has consistently linked women's attainment of a college degree to gender egalitarian attitudes that result from greater exposure to egalitarian ideas and to college-educated women's increased stake in gaining access to equal opportunities (Bolzendahl & Myers, 2004;

Brewster & Padavic, 2000; Brooks & Bolzendahl, 2004; Cunningham, 2008). Research on domestic labor confirms that education is inversely related to wives' housework (Bianchi et al. 2000; Bittman et al. 2003; Brines 1994; Gupta 2006) although this relationship is not always statistically significant once gender role attitudes are controlled (Greenstein, 2000; Gupta, 2007).

Parenthood, in contrast, is associated with increased gender traditionalism. The gender gap in time devoted to employment and housework is larger among parents than among all women and men (Sayer, 2005) and driven primarily by changes in women's rather than men's behavior. Upon becoming parents, women tend to decrease the time they devote to paid work and increase the time they spend on housework, while men make much smaller changes (Baxter, Hewitt & Haynes, 2008; Kluwer, Heesink & van de Vliert, 2002; Sanchez & Thomson, 1997). The number of children in the home is strongly, positively associated with the number of hours wives devote to housework (Bianchi et al., 2000; Bittman et al., 2003; Brines, 1994; Coltrane, 2000; Evertsson & Nermo, 2004; Gupta, 2007) although this may be more true in the U.S. than in Nordic countries like Sweden or Denmark with a history of private and public emphasis on gender egalitarianism (Bonke et al., 2008; Dribe & Stanfors, 2009).

The countervailing effects of education and parenthood suggest that tests of the relative explanatory power of the exchange, gender display and autonomy hypotheses can be strengthened by comparing relationships between earnings and housework among wives with and without a college degree and with and without children at home. Higher education should make women better equipped to support themselves in the case of a failed marriage and thus less reliant on marital bargaining power to achieve their own goals (Bittman et al., 2003). Higher education should similarly reduce women's inclination toward gender display since the increased gender egalitarianism associated with higher education (Bolzendahl & Myers, 2004;

Cunningham, 2008) should decrease discomfort with violations of gender norms. The same logic suggests that college-educated women should be particularly well positioned to act autonomously and thus to translate their own earnings into reductions in housework.

In contrast to higher education, motherhood is associated with increased gender traditionalism. By encouraging greater gender specialization (Sanchez & Thomson, 1997), children are likely to decrease women's options outside marriage and increase their reliance on marital bargaining power to achieve their own goals. Children are also likely to encourage gender display since the presence of children and associated norms of mothering, including the performance of housework, increase the salience of violating gender norms (Baxter, Hewitt & Haynes, 2008). Thus, women with children at home should be less well positioned than women without children to act autonomously with regard to their own earnings.

To test these propositions, we compare four subgroups of wives: those with a college degree and without children at home; those without a degree and with children; those with a degree and children; and those without a degree or children. Reflecting the patterns discussed above, we expect the first group – those with a degree and without children at home – to be best positioned to translate their own earnings into reductions in housework. Thus, if Gupta is correct that an inverse relationship between wives' own earnings and their housework reflects wives' ability to act autonomously, the relationship between own earnings and housework should be strongest among college-educated wives without children at home. In contrast, evidence of bargaining and gender display should be weakest among this group of wives.

We expect the second group of wives – those without a degree and with children – to be most reliant on marital power and most inclined toward affirmations of gender identity. Thus, evidence of bargaining and gender display should be strongest among these wives, while

evidence of autonomy should be weakest. The relative importance of bargaining, gender display and autonomy is less certain among the two remaining groups of wives for whom educational and motherhood pull in opposite directions.

Other Predictors of Wives' Housework Time

Our models also take into account a number of other factors that constitute important controls in modeling housework time. Wives' hours of employment limit the time they have available to perform housework (Bittman et al., 2003; Greenstein 2000; Evertsson & Nermo, 2004). Some studies also suggest that wives increase their housework time as their husbands' work hours rise (Bittman et al., 2003, for the U.S. only) although this finding is not consistent (Evertsson & Nermo, 2004; Gupta, 2007). Wives' housework may also be inversely related to husbands' educational attainment (Gupta, 2007). A few studies also control for wives' and husbands' occupational status (Evertsson & Nermo, 2004). Like college education, occupational status is positively associated with gender egalitarianism (Brint, 1984; Van de Werforst & de Graaf, 2004), and thus may be predictive of decreases in wives' housework and increases in husbands' housework. Most studies find that older wives perform more housework than younger wives, reflecting sharp declines in the time married women in the U.S. devoted to housework over time (Bianchi et al., 2000; Brines, 1994; Gupta, 2006, 2007). Race-ethnicity may also affect housework (Brines, 1994; Evertsson & Nermo, 2004; Greenstein, 2000).

Controlling for these factors, we contribute to the literature on earnings and wives' housework by using new, time diary data. These data allow us to reassess the relevance of exchange and gender display theories for wives' housework. They further enable us to examine four groups of mothers whose differing backgrounds and circumstances strengthen tests of these well-established perspectives and more recent theoretical claims of wives' autonomy.

METHOD

Our data come from the 2003 through 2006 American Time Use Surveys (ATUS), which interviewed one member of a sample of eligible households completing their final month of Current Population Survey (CPS) interviews. The ATUS data are time diaries based on respondents' reports of their activities during a 24- hour period preceding the interview and include additional questions about household composition and labor force status. Trained coders classified each activity using a three-level coding system consisting of 17 major categories, including "household activities" such as cleaning, laundry and meal preparation (Bureau of Labor Statistics 2007). Time diaries provide a more accurate means of measuring time use than general surveys because reported activities must sum to 24 hours, reducing the likelihood that respondents will make recall errors or overestimate time spent on socially desirable activities (Juster & Stafford, 2003, 1991).

The ATUS data provide a particularly valuable portrait of wives' domestic labor because they are new and reflect recent declines in the time that wives devoted to housework (Bianchi et al., 2000). The ATUS data are cross-sectional, a limitation of most U.S. time use data and therefore do not support causal claims about relationships between earnings and housework. Although ATUS interviews were conducted with only one member of each CPS household age 15 or older, married respondents were asked about their spouses' labor force status. The ATUS data were also linked to the CPS, making it possible to take into account additional labor force information about spouses collected during the CPS interview occurring a few months prior.

We pooled data from the 2003 through 2006 ATUS to increase the number of wives sampled and allow us to examine subgroups of wives by educational and parental status. To make comparisons to Gupta's research, we limited our sample to wives between the ages of 18

and 65 with spouses in the same age range. We excluded self-employed wives and wives with self-employed husbands because ATUS did not collect data on their earnings, and their work hours may be variable. We also excluded 349 wives for whom spouses' CPS labor force data were unavailable and 1,221 wives in couples where either spouse shifted from working to not working or vice versa during the interval between the CPS and ATUS interviews, preventing us from obtaining a meaningful measure of the wife's relative earnings. Findings including these wives and controlling for any changes in their own or (less often) their spouses' labor force status yielded similar results, especially for dual-earner wives, few of whom changed status between surveys. With one exception (noted in the text and shown in the Appendix), models that controlled for labor force status changes provided even less evidence for the autonomy hypothesis than our main models, which excluded wives and husbands with such status changes.

Our full analytic sample consisted of 8,748 wives. Of these, 4,246 were full-time, dual-earner wives, defined as those in couples in which each spouse was employed for 35 hours or more per week. (The ATUS data do not include information about number of weeks worked per year.) For brevity's sake, we use the term "dual-earner" wives as shorthand for "full-time, dual-earner" wives.

Variables included in the analyses are shown in Table 1. Our outcome was minutes per

(TABLE 1 ABOUT HERE)

day devoted to four core housework tasks: cleaning, laundry, meal preparation and meal cleanup. We focused on these tasks because they account for the vast majority of time devoted to housework and are less discretionary than activities such as yard work or household repairs, which need not be performed on a daily or weekly basis (Gupta, 2007). To limit the influence of

outliers, we recoded the housework values above the 95th percentile to the 95th percentile value (Sayer, Bianchi & Robinson, 2004).

Our key independent variables were wives' and husbands' absolute weekly earnings (measured in hundreds) and wives' relative earnings. We measured wives' relative earnings by dividing their weekly earnings by the sum of the couple's combined weekly earnings, resulting in a scale ranging from 0 to 1, with a mean of 0.32 for all wives and 0.45 for dual-earner wives. This relative earnings measure is a simpler equivalent of the scale developed by Sorensen and McLanahan (1987), which ranges from -1 when the wife provides all the income to 1 when the husband provides all the income (Bittman et al., 2003). We included the square of wives' relative earnings to capture possible curvilinear effects.

The models included wives' and husbands' usual weekly work hours. Occupational status was based on the Nam-Powers-Boyd Occupational Status Scale, which ranges from 0 to 100 reflecting the average educational attainment and income associated with each occupation (Nam and Boyd 2004). Separate dichotomous measures identified wives who were unemployed or out of the labor force. A single dichotomous measure identified non-employed husbands as more detailed labor force status was not available for spouses at the time of the ATUS interview.

Wives' and husbands' educational attainment distinguished college graduates, high school graduates and those who had not completed high school. The presence of children was captured by measures of the number of children under age 6 and between 6 and 17 in the household. Wife's age was coded as well as race-ethnicity (White, African American, Hispanic or other). The number of additional adult men and women in the household beyond the wife and husband was determined based on the household roster file. We included additional controls (not shown) for: wives' school enrollment; the topcoding of wives' and husbands' weekly earnings

when they exceeded $2,885 (equivalent to annual earnings above $150,000 for year-round workers); topcoding of husbands' usual weekly work hours when they exceeded 99; whether the diary day fell on a holiday or a weekend; and survey year to capture any effects of changes in the ATUS sample design over the 2003-2006 period. None of the three dichotomous measures indicating topcoding was statistically significant except as noted in the text.

We weighted the descriptive and multivariate analyses because they combined data from the 2003-2006 ATUS. Following recent practice in time diary analysis (Gupta 2007; Hook and Chalasani, 2008), we used OLS models, which are easier to interpret than tobit models and do not involve an assumption that the latent dependent variable could take on values of less than zero. We tested the robustness of our findings by running the same models using tobit regression, which produced similar results. (Alternate models available upon request.)

Our analytic strategy involved two sets of models. The first set replicated Gupta's (2007) tests of the relationship between absolute versus relative earnings with the addition of an explicit comparison of results for all wives and dual-earner wives. Following Gupta, this first analysis included three related models. Model 1 contained linear and squared measures of wives' relative earnings to test for evidence of bargaining and gender display and couples' combined weekly earnings to provide a control for earnings level. This approach was used by Bittman et al. (2003) and resembles that of Brines (1994) and Greenstein (2000) who included the natural log of family income to control for household-level earnings. It allows us to compare our results to previous research on exchange and gender display in wives' housework performance. Model 2 replaced the measure of couples' combined earnings with separate measures of wives' and husbands' absolute earnings. This model tests Gupta's claims that measures of wives' relative earnings become nonsignificant once measures of wives' and husbands' own earnings are

included and that wives' earnings matter more than husbands'. Model 3 mirrors Gupta's preferred model, including only wives' and husbands' absolute earnings.

Our second set of models extends Gupta's research by examining four subgroups of wives: those with a college degree and without children at home; those without a degree and with children; those with a degree and with children; and those without a degree or children. This strategy, which we applied to analyses of dual-earner wives and all wives, allows us to better gage the relative explanatory power of the exchange, gender display and autonomy perspectives. This section of the analysis replicates Gupta's second and third model for each subgroup of wives. We do not include Gupta's first model because our first analysis confirmed that the effects of wives' and husbands' absolute earnings on wives' housework often differed in magnitude although not necessarily in the manner Gupta predicted.

As previous research has demonstrated that curvilinear effects of relative earnings can be attributable to a small group of wives commanding unusually high relative earnings (Bittman et al., 2003), we reran all models that showed significant curvilinear relative earnings effects after excluding the small proportion of wives who accounted for 75% or more of couples' earnings. Results of these supplementary models (available from the authors) are noted but not shown.

RESULTS

Exchange, Gender Display or Autonomy

Model 1 of Table 2 parallels Gupta's (2007) first model including linear and squared

(TABLE 2 ABOUT HERE)

measures of relative earnings and couples' combined earnings to control for income level. The negative coefficient for the linear relative earnings term and the positive coefficient for the squared term indicated a curvilinear relationship between wives' relative earnings and their

housework. This pattern, consistent with predictions that bargaining will give way to gender display when wives' relative earnings are high, mirrors that found by Gupta for dual-earner wives. The curvilinear effect, however, became nonsignificant with the exclusion of the 4.1% of wives who brought in 75% or more of the couples' combined earnings (results not shown).

Model 2 tested two key results reported by Gupta (2007): first, that measures of relative earnings became nonsignificant once separate measures of wives' and husbands' absolute earnings replaced the measure of couples' earnings; and, second, that the magnitude of the effect of wives' earnings substantially exceeded that of husbands' earnings. Our results did not support either of these claims. Both the linear and the squared terms for relative earnings remained significant in Model 2. As was the case in Model 1, however, the curvilinear effect was driven by the 4.1% of wives commanding 75% or more of couples' combined earnings (results not shown). The coefficients for wives' and husbands' absolute earnings differed in magnitude, but not in the manner predicted by Gupta. Model 2 revealed a negative effect of husbands' earnings almost twice the size of the nonsignificant, positive effect of wives' earnings: Wives performed 1.15 minutes less housework for every additional $100 earned by their husbands.

Model 3 replicated Gupta's preferred autonomy model by dropping both measures of relative earnings while retaining the two separate measures of wives' and husbands' absolute earnings. Again, our findings using the ATUS data differed from Gupta's NSFH-based results. Absent measures of relative earnings, neither wives' nor husbands' absolute earnings related to wives' housework. The coefficient for wives' earnings was negative, as predicted by the autonomy model, but fell short of traditional standards of statistical significance ($p = 0.07$).

To summarize, our findings for all wives based on the ATUS data differed considerably from Gupta's (2007) results for dual-earner wives based on the NSFH. In contrast to Gupta, we

found strong evidence of bargaining and weaker evidence of gender display driven by the 4.1% of wives with the highest relative earnings. We found little evidence that married women's own earnings related inversely to their housework.

Models 4 – 6 of Table 2 parallel Models 1 – 3 but limit the analytic sample to full-time, dual-earner wives to test whether differences between our results and Gupta's reflected which group of wives was examined. Model 4 produced results similar though not identical to those of Model 1. The curvilinear effect of relative earnings was steeper in Model 4, as indicated by the larger magnitude of the positive coefficient on the squared term for relative earnings compared to the negative coefficient on the linear term. As in Model 1, this curvilinearity was driven by the small group of wives (2.3%) who accounted for 75% or more of couple earnings and became non-significant when these wives were excluded from analysis. While the coefficient for couples' combined earnings was negative, as in Model 1, it did not reach statistical significance.

Once separate measures of wives' and husbands' absolute earnings replaced the measure of couples' earnings in Model 5, the negative relationship between wives' relative earnings and their housework became nonsignificant, indicating no evidence of bargaining. The positive relationship between the square of wives' relative earnings and their housework remained positive and significant, however, providing evidence of gender display albeit driven by the 2.3% of wives who accounted for 75% or more of couples' combined earnings (results not shown). Neither Model 5 nor Model 6 provided support for Gupta's claim of the superior predictive power of wives' absolute compared to their relative earnings. With measures of wives' relative earnings (Model 5) or without (Model 6), wives' absolute earnings failed to reach standard levels of statistical significance ($p = 0.17$ and $p = 0.10$ respectively).

Considered together, the six models in Table 2 provide support for the exchange perspective although evidence of bargaining was stronger for all wives than for dual earners. The models also provide support for claims that bargaining gives way to gender display when wives have very high relative earnings. The curvilinear effect of relative earnings became nonsignificant, however, once the small groups of all or dual earner wives accounting for 75% or more of couples' earnings were excluded. This pattern suggests that for most wives, increases in relative earnings were associated with reductions in housework time. Increases in wives' own earnings, in contrast, did not produce comparable reductions in housework.

Alternative models to those in Table 2 that included controls for wives' and husbands' labor force status changes are shown in the Appendix. Results were very similar for dual-earner wives, the group that Gupta (2007) studied. For all wives, however, the first two models showed evidence of bargaining but no evidence of gender display or of autonomy, while the third model revealed a significant inverse effect of wives' own earnings on housework. While this relationship is consistent with the autonomy argument, the absence of a significant effect of wives' own earnings in the second model and the fact that the magnitude of the coefficient for husbands' absolute earnings exceeded that for wives' absolute earnings are not consistent with Gupta's predictions. Moreover, as noted below, alternative models for the four subgroups of wives provided even less support for autonomy theory than our preferred models.

College Education and the Presence of Children

The second half of our analysis, presented in Table 3, capitalizes on expected differences

(TABLE 3 ABOUT HERE)

among our four subgroups of wives to generate additional evidence regarding the exchange, gender display and autonomy perspectives. The upper panel of Table 3 displays models for all

wives, while the lower panel displays parallel models for full-time, dual earner wives. Two models are presented for each subgroup. The first model includes linear and squared measures of wives' relative earnings as well as separate measures of wives' and husbands' absolute earnings. The second model includes only the two absolute earnings measures.

We begin with the upper panel of Table 3 examining the four subgroups among the analytic sample of all wives. None of the four earnings measures related to housework among college-educated wives without children at home (Models 1 and 2). The lack of a relationship between relative earnings and housework accorded with our expectation that this subgroup of wives would be least likely to engage in bargaining or gender display, reflecting heightened support for gender egalitarianism among the college educated (Bolzendahl & Myers, 2004), and the absence of children at home, a key source of gender traditionalism (Sayer, 2005). The lack of an inverse association between these wives' own earnings and their housework was more surprising in light of Gupta's autonomy argument. This subgroup of wives should have been best positioned to act autonomously for the same reasons that they were least likely to engage in bargaining or gender display.

Models 3 and 4 illustrate a very different pattern among less-educated wives with children at home. As predicted, relative earnings bore a curvilinear relationship to housework among this subgroup of wives though, as in previous models, the squared measure of relative earnings became nonsignificant once wives accounting for 75% or more of couples' combined earnings were excluded from the analysis (results not shown). In addition, husband's earnings were inversely related to housework, suggesting that these wives' relied directly as well as indirectly on spousal earnings to reduce their housework. This effect of husband's earnings remained evident in Model 4 once relative earnings measures were excluded, while wives' own

earnings were unrelated to housework in both models. These results support our expectation that this subgroup of wives would demonstrate strong evidence of bargaining and gender display and little evidence of autonomy in accord with their greater gender traditionalism.

Also as expected, results were more ambiguous for our third subgroups of wives among whom the egalitarian pull of a college education was counter-balanced by the traditionalist push of the presence of children. With all four earnings measures included (Model 5), relative earnings exhibited a curvilinear relationship with housework, while the relationship between wives' own earnings and housework was negative but nonsignificant. Exclusion of the 4.6% of wives accounting for at least 75% of couples' combined earnings reduced both measures of wives' relative earnings to nonsignificance (results not shown). Without measures of relative earnings (Model 6), however, a significant inverse relationship between wives own earnings and housework emerged. Among our fourth group of wives, results were similarly ambiguous. None of the four earnings measures related to housework in Model 7, but a significant inverse relationship between wives' own earnings and housework emerged in Model 8.

Together, Models 1 – 8 of Table 3 show that relative earnings related to housework only among wives with children at home. Among the two subgroups of wives with children, evidence of bargaining was stronger among those without a college degree than among those with a degree. Among the latter subgroup, the linear as well as the squared measure of relative earnings became nonsignificant once wives accounting for at least 75% of couples' combined earnings were excluded from analysis. For the former group, the linear but not the squared term remained inversely related to housework after excluding this small group of wives (results not shown). Evidence of wives' autonomy was limited. Wives' own earnings were associated with reductions in housework time in only two of the eight models. In both cases (Models 6 and 8), this

relationship was statistically significant only when relative earnings were not controlled. Moreover, own earnings and housework were unrelated among college-educated wives without children, the group best positioned to use their earnings to reduce their housework if we apply Gupta's interpretation of an inverse relationship between wives' own earnings and housework as evidence of autonomy. The absence of such a relationship for this subgroup of wives casts doubt on this interpretation, suggesting instead that the relationship reflects a modified form of dependence on husbands rather than genuine autonomy (Gupta, 2007). A supplementary analysis of single wives' earnings and housework (available from the authors) bolstered this conclusion. Earnings were unrelated to housework time for samples of all single women and single women employed full time just as they were for married women.

Turning to the lower panel of models in Table 3, we find similar results for the four subgroups of wives when we limit the analysis to dual-earners. As was the case for all wives, none of the earnings measures were associated with housework for the group of dual-earner wives expected to most inclined toward gender egalitarianism, those who possessed a college degree but did not have children at home (Models 9 and 10). Similar to the case for all wives, relative earnings bore a curvilinear relation to housework for the group of dual-earner wives expected to be most inclined toward gender traditionalism, those without a college degree and with children at home (Models 11 and 12). Among dual-earner wives, however, husbands' earnings were unrelated to housework, and the curvilinear effect of relative earnings in Model 11 was robust to the exclusion of the 1.8% of these wives who accounted for 75% or more of couple earnings, the only instance among all of our results in which the exclusion of this group did not render the curvilinear effect of relative earnings nonsignificant. None of the earnings measures

related to housework among the final two subgroups of dual-earner wives among whom educational and parental status exerted countervailing effects (Models 13 – 16).

Alternative models (available from the authors) that included controls for wives' and husbands' labor force status changes produced similar patterns to those shown in Table 3. But these models provided even less evidence of wives' autonomy: Own earnings were unrelated to housework among the third subgroup of all wives in the alternative models, whereas this relationship was inverse and statistically significant in our preferred models.

Collectively, the models in Table 3 indicate that wives without a college degree and with children at home are most likely to engage in bargaining and in gender display. Predicted values based on Models 3 and 11 demonstrate that this curvilinear effect of relative earnings on housework is not only more robust to the exclusion of wives with extremely high relative earnings in the case of dual-earner wives, but also much steeper. As shown in Figure 1, for all

(FIGURE 1 ABOUT HERE)

wives without a college degree and with children, time spent on housework declined sharply from 177 minutes per day when wives contributed no earnings to 102 minutes per day when wives accounted for 60% of combined earnings. Beyond this point, wives' predicted housework time increased slowly to 106 minutes for wives contributing 80% of couples' combined earnings and to 118 minutes for wives accounting for 100% of couples' earnings. For dual-earner wives, the inflection point occurred slightly earlier – when wives' accounted for 50% of combined earnings – and the decline and subsequent rise in predicted housework time was sharper.

DISCUSSION

In this paper, we provide the first test using time use data of Gupta's contention that wives' own earnings provide a better explanation of their housework time than relative earnings. We use more recent ATUS data to replicate Gupta's NSFH-based comparisons of standard models featuring wives' relative earnings with alternate models featuring separate measures of wives' and husbands' absolute earnings. We then extend Gupta's research by capitalizing on the large sample sizes available in ATUS to contrast patterns among wives with and without a college degree and with and without children at home, thereby strengthening tests of the three relevant theories: exchange; gender display; and autonomy.

Our analyses parallel Gupta (2007) in demonstrating that the absolute effects of wives' and husbands' earnings often differ in magnitude and statistical significance. These results indicate the importance of taking both wives' and husbands' absolute earnings and their relative earnings into account. But our results do not support Gupta's central claim – that wives' own earnings provide a superior explanation of their housework – or its corollary – that wives' ability to translate their own earnings into reductions in housework demonstrates autonomy. Instead, our results point to a set of conclusions that simultaneously bolster earlier claims of the importance of wives' relative earnings to their housework *and* provide new evidence that the explanatory power of this relationship applies to a more limited group of wives than previously recognized.

Our first set of analyses suggests that for most American wives housework time declines in a linear pattern as relative earnings rise, consistent with exchange theory though this evidence is weaker among dual earner wives than among all wives. In contrast, only the small group of wives who command 75% or more of couples' combined earnings appear to engage in gender display, and evidence of wives' autonomous use of their earnings is scant.

Our second set of analyses examining four subgroups of wives based on college attainment and parental status generates several additional conclusions. First, college-educated wives without children, the group who should be most inclined toward gender egalitarianism and best positioned to enact it, do not decrease the time they spend on housework as their absolute earnings rise. The limited evidence we found for the role of wives' own earnings was inconsistent across models, became nonsignificant once relative earnings were controlled, and pertained to two subgroups of all wives who were relatively poorly equipped to act autonomously: those with a college degree and children, and those without a degree or children. We believe that this weak evidence of an inverse relationship between wives' own earnings and their housework time reflects a modified form of dependence on husbands rather than genuine autonomy. The fact that single women's own earnings were unrelated to their housework time in the 2003-2006 ATUS sample (models not shown) bolsters this interpretation.

Our subgroup analyses further suggest that the processes of bargaining and gender display with regard to wives' housework are more limited than previously recognized. We find evidence of bargaining only among wives with children. Specifically, we find evidence of bargaining only among wives with children regardless of college status in the case of all wives and only among wives with children and without a college degree in the case of dual-earner wives. Evidence that wives' engage in gender display with regard to housework is even more limited. The only case in which evidence of gender display does not disappear with the exclusion of the small percentage of wives who account for 75% or more of couples' combined earnings involves dual-earner wives with children and without a college degree. These results raise the possibility that money is a considerably less important factor in wives' housework than past research based on smaller, predominantly survey-based samples has indicated.

These findings also speak to the forceful pull toward traditionalism exerted by children. (Sanchez & Thomson, 1997; Sayer, 2005). It is particularly noteworthy that the only instance in which curvilinearity in the relationship between wives' relative earnings and their housework is not driven solely by the small and select group of wives who bring in 75% or more of the couple's combined earnings involves dual-earner wives without a college degree and with children at home. Despite being fully engaged in the labor force, this group of wives' ability to reduce their housework depends on their relative earnings, that is, on their husbands' as well as on their own absolute earnings, and decreases rather than increases once their contributions exceed half of couples' combined earnings.

Our results also suggest a new interpretation of inconsistencies in past research regarding wives' relative earnings and their housework. Most past research in the U.S. using survey data has found an inverse relationship between linear measures of wives' relative earnings and their housework (Bittman et al., 2003; Brines, 1994; Evertsson & Nermo, 2004; Greenstein, 2000; Gupta, 2007). Findings have been less consistent with regard to the relationship between squared measures of relative earnings and housework time, generating debate as to whether or not U.S. wives engage in gender display through their performance of housework. Evidence of gender display in U.S. wives' performance of housework was found by Evertsson & Nermo (2004) and by Gupta (2007) but not by Bittman et al. (2003), Brines (1994) or Greenstein (2000). Our research suggests that this may reflect the sensitivity of curvilinear findings in this relationship to small variations in the samples studied, particularly the proportion of wives with children at home and without a college degree.

Why do our findings differ from those of Gupta? Our examination of all wives, dual-earner wives and subgroups within these larger populations makes it unlikely that differences in

analytic samples drove our differing conclusions. Two other possibilities suggest themselves. One is differences in time period. Although Gupta's main analysis was based on 1992-1994 data – a full decade prior to our sample collection – this explanation is rendered less likely by his supplementary analysis producing similar findings using the 1999 PSID and by the absence of any theoretical reason to expect that wives own earnings would have been more closely related to their housework time in the 1990s than in the early 21st century. The more likely explanation, we believe, lies in documented differences between survey and time diary data (Juster & Stafford, 1991; Juster, Ono & Stafford, 2003; Kan & Pudney, 2008). An explicit test of this possibility is beyond the scope of this paper. Comparative analyses of the relationship between wives' relative and absolute earnings and housework in European countries for which time diary and survey-based time use data are available, particularly linked time diary and survey data for the United Kingdom (Kan & Pudney, 2008), would shed further light on this question.

Our study is subject to several limitations. Like most time use studies in the U.S., it is cross-sectional and includes time use measures for only one respondent per household. The ATUS data also lack direct measures of gender egalitarianism, and measures of husbands' earnings are based on CPS data collected two to five months prior to the collection of the ATUS data. This time lag creates measurement error in cases in which wives' or husbands' labor force status changed between the two surveys. Sensitivity tests, however, indicate that our findings are robust to varying treatment of such cases. Despite these limitations, our study provides important new evidence suggesting that money – whether measured in absolute or relative terms – matters less than previously recognized in wives' performance of housework.

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Table 1. *Weighted Means and Standard Deviations of Variables Used in the Analysis (N = 8748 for All Wives and N = 4246 for Full-Time Dual-Earner Wives)*

	All Wives		Full-Time Dual-Earner Wives	
	M	SD	M	SD
Housework minutes per day	116.40	108.48	87.08	90.03
Wife's relative earnings	0.32	0.25	0.45	0.14
Wife's relative earnings squared	0.16	0.20	0.22	0.14
Couple's combined weekly earnings (in hundreds)	14.47	8.44	17.09	8.41
Wife's absolute weekly earnings (in hundreds)	4.93	5.12	7.65	4.83
Husband's absolute weekly earnings (in hundreds)	9.54	6.15	9.44	5.36
Wife's usual weekly work hours	27.03	19.41	41.90	8.13
Husband's usual weekly work hours	41.63	14.08	44.64	8.18
Wife's occupational status	42.19	33.66	60.63	24.28
Husband's occupational status	58.76	26.68	60.47	24.80
Wife unemployed	0.03	0.16	0.00	0.00
Wife out of the labor force	0.24	0.43	0.00	0.00
Husband not working	0.03	0.17	0.00	0.00
Wife completed college	0.35	0.48	0.40	0.49
Wife completed high school	0.56	0.50	0.56	0.50
Wife did not complete high school	0.09	0.28	0.04	0.20
Husband completed college	0.36	0.48	0.37	0.48
Husband completed high school	0.53	0.50	0.56	0.50
Husband did not complete high school	0.10	0.30	0.07	0.26
No. children 6-17	0.74	0.99	0.63	0.91
No. children < 6	0.41	0.72	0.25	0.55
Wife's race				
White	0.74	0.44	0.77	0.42
African-American	0.06	0.24	0.07	0.26
Hispanic	0.14	0.35	0.10	0.30
Other	0.06	0.23	0.06	0.23
Wife's age	40.56	10.19	41.46	9.94
No. additional men in household	0.17	0.47	0.18	0.49
No. additional women in household	0.16	0.43	0.15	0.42

Table 2. *Summary of Simple Regression Analyses for Variables Predicting All Wives' and Full-time Dual Earner Wives' Daily Minutes of Housework (N=8748 for All Wives and N=4246 for Full-time Dual Earner Wives)*

	All Wives						Full-Time Dual-Earner Wives					
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	B	*SE B*	*B*	*SE B*	*B*	*SE B*	*B*	*SE B*	*B*	*SE B*	*B*	*SE B*
Wife's relative earnings	-104.29**	29.54	-130.61**	32.19			-134.25**	48.18	-105.34	55.36		
Wife's relative earnings squared	84.31**	31.77	85.54**	31.85			134.32**	48.80	133.41**	48.79		
Couple's combined weekly earnings[a]	-0.49*	0.23					-0.25	0.29				
Wife's absolute earnings[a]			0.64	0.53	-0.69	0.38			-1.14	0.83	-0.74	0.44
Husband's absolute earnings[a]			-1.15**	0.40	-0.33	0.31			0.52	0.75	0.10	0.42
Wife's usual weekly work hours	-0.53**	0.15	-0.54**	0.15	-0.79**	0.15	-0.65*	0.24	-0.63**	0.24	-0.63**	0.25
Husband's usual weekly work hours	0.15	0.11	0.16	0.11	0.18	0.11	0.10	0.22	0.09	0.22	0.12	0.22
Wife's occupational status	-0.06	0.07	-0.09	0.07	-0.09	0.07	-0.24**	0.09	-0.25**	0.09	-0.25**	0.09
Husband's occupational status	-0.15*	0.07	-0.13	0.07	-0.13	0.07	-0.08	0.08	-0.08	0.08	-0.08	0.08
Wife unemployed	18.78	12.08	12.89	12.51	29.71**	11.36						
Wife out of the labor force	19.50*	7.90	15.02	8.30	31.03**	6.93						
Husband not working	-4.79	13.44	3.39	13.90	-5.05	10.43						
Wife completed college	0.37	3.29	0.19	3.29	-0.34	3.30	7.74	4.10	7.85	4.10	7.93	4.09
Wife did not finish high school	26.49**	6.80	25.22**	6.84	27.45**	6.80	29.75**	11.04	30.28**	11.05	29.52**	11.06
Husband completed college	-6.07	3.54	-5.43	3.55	-5.36	3.55	-2.88	4.37	-3.23	4.40	-2.73	4.37
Husband did not finish high school	1.89	5.72	1.67	5.70	1.06	5.76	1.70	7.65	1.63	7.65	1.19	7.64
No. children 6-17	13.62**	1.36	13.72**	1.36	13.88**	1.37	12.00**	1.71	11.98**	1.71	12.05**	1.72
No. children < 6	14.00**	2.14	13.97**	2.14	14.00**	2.16	12.43**	2.93	12.50**	2.93	12.35**	2.93
African-American wife	-8.66	5.62	-8.72	5.63	-9.27	5.61	-10.79	5.92	-10.68	5.91	-10.77	5.98
Hispanic wife	21.15**	4.63	20.81**	4.61	21.32**	4.65	3.40	5.81	3.28	5.81	2.90	5.81
Other race wife	23.75**	5.79	23.67**	5.81	22.89**	5.78	6.01	6.48	6.12	6.48	5.90	6.46
Wife's age	1.12**	0.16	1.13**	0.16	1.17**	0.17	1.14**	0.21	1.14**	0.21	1.17**	0.21
No. additional men in household	4.26	3.26	4.41	3.24	3.90	3.29	0.37	3.59	0.16	3.62	0.43	3.56
No. additional women in household	7.54*	3.55	7.64*	3.54	7.02	3.61	8.95*	4.43	8.86*	4.45	8.79*	4.43
Constant	81.25**	12.45	91.03**	13.51	62.55**	11.70	83.22**	19.48	69.76**	23.37	49.90**	16.39
R^2	0.19**		0.20**		0.19**		0.12**		0.12**		0.12**	

Note: All values weighted. Omitted reference category is employed, White, high-school educated wives, with employed, high-school educated husbands. Controls include wife's absolute earnings topcoded, husband's absolute earnings topcoded, wife's work hours vary, husband's work hours topcoded, wife enrolled in school, holiday or weekend diary day, and survey year. [a] In hundreds per week.

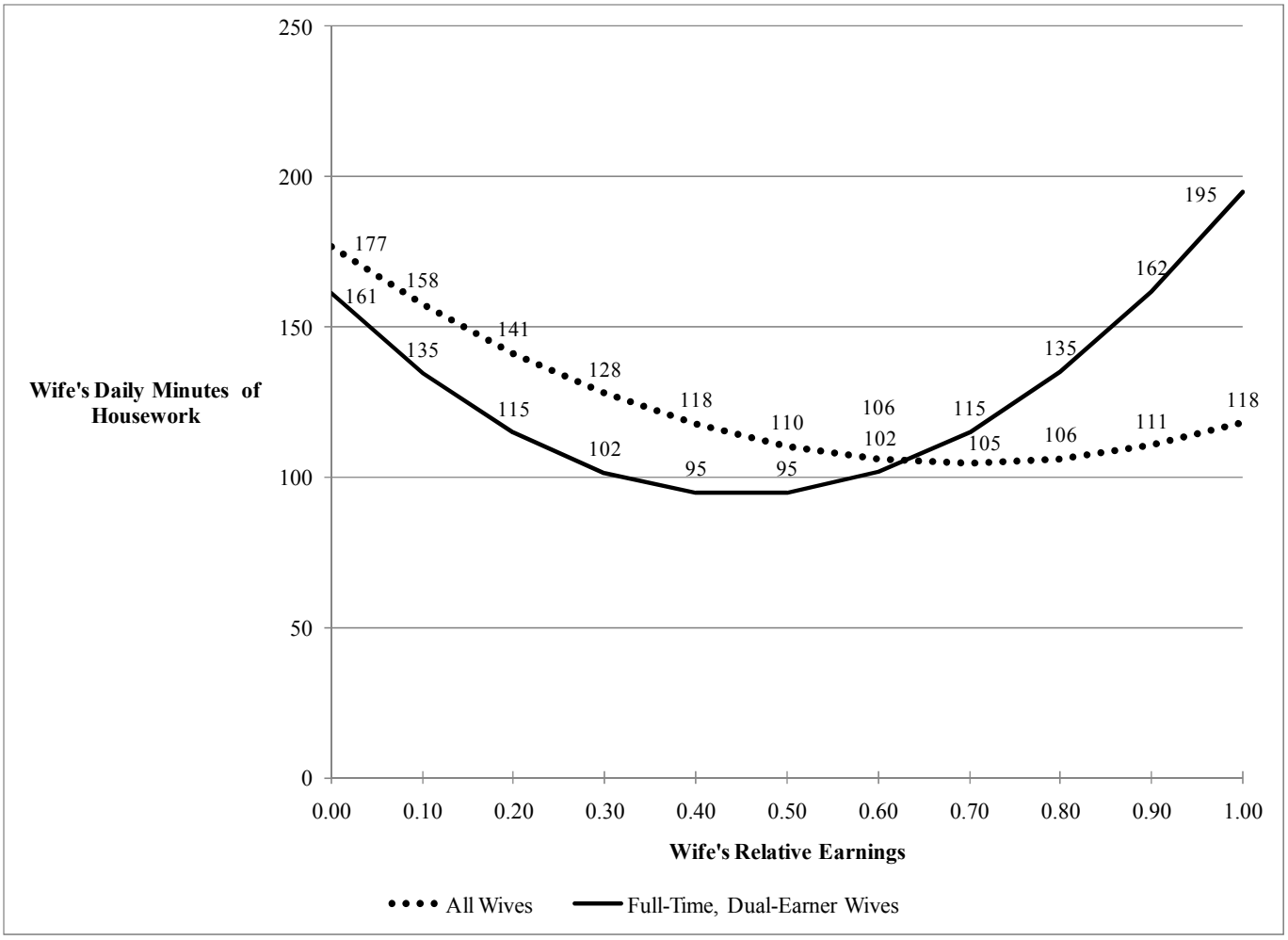
*$p < .05$. **$p < .01$.

Table 3. *Summary of Simple Regression Analyses for Variables Predicting Daily Minutes of Housework for All Wives (N=8748) and Full-Time Dual-Earner Wives (N=4246) With and Without Children Under Age 18 at Home and With and Without a College Degree.*

	All Wives							
	College, No Children		No College, Children		College, Children		No College, No Children	
Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Wife's relative earnings	-20.77		-206.05**		-113.69*		-68.16	
	(79.93)		(49.20)		(45.29)		(75.59)	
Wife's relative earnings squared	18.62		147.48**		104.28*		18.88	
	(68.01)		(44.63)		(41.34)		(74.41)	
Wife's absolute earnings[a]	-0.38	-0.48	2.03	-0.35	-0.67	-1.17*	-0.59	-2.21*
	(1.20)	(0.75)	(1.19)	(0.92)	(0.80)	(0.56)	(1.34)	(0.88)
Husband's absolute earnings[a]	-0.02	0.04	-2.21**	-1.13*	-0.41	-0.14	-1.00	-0.10
	(1.10)	(0.73)	(0.70)	(0.56)	(0.60)	(0.44)	(0.98)	(0.75)
Constant	71.58	66.93*	91.87**	54.10**	64.10**	46.42*	95.25**	75.43**
	(37.35)	(29.58)	(22.94)	(20.60)	(23.46)	(21.34)	(28.30)	(23.66)
R^2	0.12	0.12	0.21	0.2	0.14	0.14	0.16	0.16
	Full-Time Dual-Earner Wives							
	College, No Children		No College, Children		College, Children		No College, No Children	
Variable	Model 9	Model 10	Model 11	Model 12	Model 13	Model 14	Model 15	Model 16
Wife's relative earnings	-22.70		-298.00**		-59.79		-7.75	
	(100.90)		(113.86)		(114.23)		(98.51)	
Wife's relative earnings squared	40.91		331.77**		116.21		33.79	
	(95.31)		(100.06)		(92.89)		(82.39)	
Wife's absolute earnings[a]	-1.15	-0.81	-1.56	-1.46	-1.34	-0.29	-2.07	-1.34
	(1.74)	(0.88)	(1.68)	(0.96)	(1.58)	(0.67)	(1.92)	(0.99)
Husband's absolute earnings[a]	0.86	0.48	-0.39	-0.12	0.60	-0.45	0.26	-0.25
	(1.42)	(0.88)	(1.55)	(0.82)	(1.43)	(0.60)	(1.64)	(1.00)
Constant	125.00*	124.34**	72.62	-3.68	38.63	37.83	48.42	51.88
	(49.35)	(33.31)	(50.34)	(35.14)	(47.94)	(31.15)	(42.57)	(32.11)
R^2	0.09	0.09	0.14	0.13	0.15	0.15	0.10	0.10

Note: All values weighted. Standard errors in parentheses below unstandardized coefficients. Omitted reference category is employed, White, high-school educated wives, with employed, high-school educated husbands. Controls include topcoding of wife's and husband's absolute weekly earnings, each spouse's usual weekly work hours, wife's race, wife enrolled in school, wife's work hours vary, husband's work hours topcoded, holiday or weekend diary day, and survey year.
Models 1 - 2, N = 883; Models 3 - 4, N = 3670; Models 5 - 6, N = 2519; Models 7 - 8, N = 1676; Models 9 - 10, N = 614; Models 11 - 12, N = 1499; Models 13 - 14, N = 1174; Models 15 - 16, N = 959. [a] In hundreds per week.
*p < .05. **p < .01.

Figure 1. *Predicted Values for All Wives (N = 3,670) and Full-time, Dual-earner Wives (N = 1,499) With Children and Without a College Degree*[a]



Note: [a] Predicted values based on Models 3 and 11 of Table 3. All other variables held at their weighted means.

Appendix. *Summary of Alternative Simple Regression Analyses for Variables Predicting Daily Minutes of Housework for All Wives (N = 9969) and Full-Time Dual-Earner Wives (N = 4484)*

	All Wives						Dual Wives					
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	B	*SE B*	*B*	*SE B*	*B*	*SE B*	*B*	*SE B*	*B*	*SE B*	*B*	*SE B*
Wife's relative earnings	-60.76*	24.36	-70.31*	27.35			-121.14*	47.18	-83.95	53.24		
Wife's relative earnings squared	39.56	25.11	40.71	25.17			122.50*	47.62	119.88*	47.61		
Couple's combined weekly earnings[a]	-0.40	0.23					-0.26	0.28				
Wife's absolute weekly earnings[a]			0.003	0.49	-0.82*	0.36			-1.38	0.76	-0.76	0.43
Husband's absolute weekly earnings[a]			-0.63	0.39	-0.13	0.30			0.71	0.71	0.11	0.42
Wife moved into paid employment	6.43	6.77	6.32	6.77	7.94	6.73	7.16	9.79	7.24	9.76	7.66	9.66
Wife moved out of paid employment	-20.41*	8.23	-20.47*	8.26	-20.12*	8.19						
Husband moved into paid employment	7.98	10.69	10.99	11.20	1.25	8.48	-21.72	17.77	-32.56	18.53	9.19	12.63
Husband moved out of paid employment	10.64	13.77	7.94	14.09	16.28	11.95						
Constant	67.83**	11.62	71.34**	12.52	55.60**	11.07	81.99**	19.75	66.28**	22.34	53.40**	16.19
R-squared	0.19		0.19		0.18		0.12		0.12		0.12	

Note: All values weighted. Standard errors in parentheses below unstandardized coefficients. Omitted reference category is employed, White, high-school educated wives, with employed, high-school educated husbands. Controls include topcoding of wife's and husband's absolute weekly earnings, each spouse's usual weekly work hours, wife's race, wife enrolled in school, wife's work hours vary, husband's work hours topcoded, holiday or weekend diary day, and survey year. [a] In hundreds per week.
*p < .05. **p < .01.