

Is the Gap More Than Gender? A Longitudinal Analysis of Gender, Gender Role Orientation, and Earnings

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This study investigated the relationships among gender, gender role orientation (i.e., attitudes toward the gendered separation of roles at work and at home), and earnings. A multilevel model was conceptualized in which gender role orientation and earnings were within-individual variables that fluctuate over time (although predictors of between-individual differences in gender role orientation were also considered). Results indicated that whereas traditional gender role orientation was positively related to earnings, gender significantly predicted the slope of this relationship: Traditional gender role orientation was strongly positively associated with earnings for men; it was slightly negatively associated with earnings for women. Occupational segregation partly explained these gender differences. Overall, the results suggest that although gender role attitudes are becoming less traditional for men and for women, traditional gender role orientation continues to exacerbate the gender wage gap.

Keywords: gender, gender role orientation, earnings, time, pay

Gender differences have long been the focus of heated debate and intense scrutiny in the social and biological sciences (Roughgarden, 2004). In organizational psychology, although the debate may be less intense, gender is no less central. Gender is often one of the first variables considered when validating a new scale or when conducting a meta-analytic review. Researchers have examined gender differences in the most focal concepts in organizational behavior, including work–family conflict (e.g., Kossek & Ozeki, 1998), job attitudes (e.g., Lefkowitz, 1994), job performance (e.g., Tsui & Gutek, 1984), and leadership emergence (Eagly & Karau, 1991). Although many researchers have concluded that the gender differences observed in psychological constructs are slight, if not invisible (Hyde, 2005), as evidenced by the persistence of the gender wage gap (Blau & Kahn, 2006, 2007), employment outcomes may still differ by gender.

As is true of any topic as fundamental as gender, it has been studied from different disciplinary perspectives. Although economists and sociologists are to be credited for their work on the structural causes and economic consequences of gender differences, and although psychologists and gender researchers are to be credited for considering the social construction of gender roles, very little work has integrated these perspectives. Specifically, only one study has linked gender role attitudes and income, and this occurred almost 25 years ago, investigated women only, and was a cross-sectional study, making causality issues more difficult to assess (Morgan & Walker, 1983). Accordingly, the purpose of the present study was to test a series of propositions relating gender, a psychological construction of gender roles (gender role

orientation), and perhaps the central outcome in labor economics: earnings.

Any time one concurrently investigates the concepts of gender and earnings, one must consider the existence of the gender wage gap. The gender wage (or pay) gap is considered to be the difference in average wages or earnings between men and women (e.g., Blau & Kahn, 2006, 2007), and it has been widely studied in economics, sociology, and psychology over many decades. However, instead of specifically examining the differences in earnings between men and women, the current study focuses on the impact that the interaction between gender role orientation and gender has on earnings, as we believe the inclusion of such an interaction will reveal unique effects related to how we currently view the gender wage gap. Indeed, we posit that gender role orientation contributes a psychological approach to the gender wage gap (e.g., Hollenbeck, Ilgen, Ostroff, & Vancouver, 1987) that cannot be fully explained by economic or environmental forces (e.g., discrimination). The potential relationship of gender role orientation to earnings has been introduced recently by Corrigan and Konrad (2007) and Lau, Ma, and Chan (2006), but the relationship has not been parsed out in a systematic manner.

To clarify presentation, we present an overview of our hypotheses in Figure 1. As shown in the figure, gender role orientation is the central variable in our model, and accordingly we consider both its consequences (earnings, as moderated by gender) and its antecedents. Because social attitudes—of which gender role orientation might be considered an example—vary over time (Hulin & Judge, 2003), we include time as a variable in our research design, which allows us to conceptualize gender role orientation as a variable that exhibits both between- and within-individual variability. In the next section of the article, we introduce the importance of gender role orientation in the study of earnings and discuss predictors of gender role orientation.

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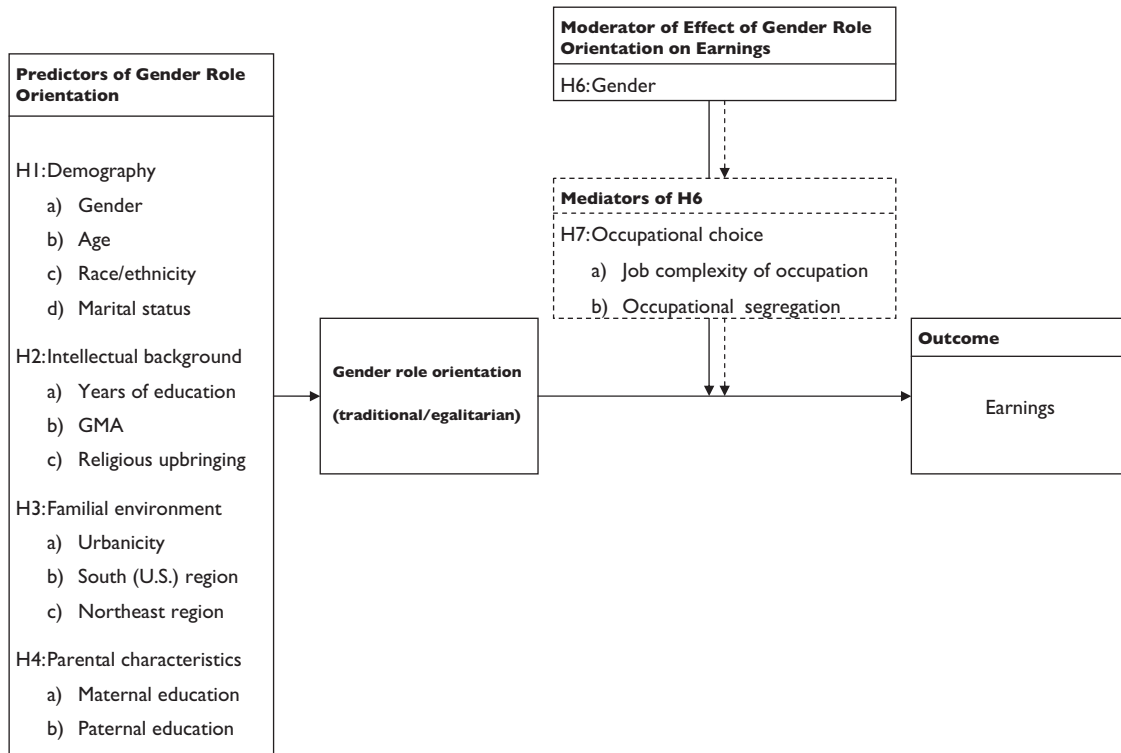


Figure 1. Model of proposed hypotheses (H) and relationships among study variables. GMA = general mental ability.

Predictors of Gender Role Orientation

Gender role orientation is defined as the beliefs that individuals hold about the proper roles for men and women at work and at home (Fortin, 2005).¹ Gender role theory (Bem, 1993; Gutek, Searle, & Klepa, 1991) and social role theory (Eagly, 1987) both suggest that the family role is more strongly identified with women than with men, and gender role orientation is the operationalization of how strongly individuals subscribe to this perspective. Traditional conceptions of gender roles suggest that women are expected to fulfill the family, or private, role and men are expected to fulfill the work, or public, role. Women are thus expected to specialize more in socially facilitative behaviors (Eagly & Karau, 1991) than are men, who are expected to specialize more often in task-oriented behaviors. Alternatively, an egalitarian gender role attitude refers to relaxing the gendered separation of work and family, allowing either men or women to be involved in each (Fletcher & Bailyn, 2005).

Eagly (1997) asserted that gender roles may contribute to gender differences, but what specifically predicts a person's gender role orientation? Additionally, if gender role orientation predicts earnings, as we posit subsequently, then understanding the drivers behind one's gender role orientation is critical. Although gender role orientation is studied in many disciplines, including psychology, predictors of gender role orientation are often overlooked. Only a couple of studies have examined predictors of gender role attitudes using broad samples, but they tended to focus solely on family structure (e.g., Kiecolt & Acock, 1988; Willetts-Bloom & Nock, 1994). As attitudes are often formed through myriad char-

acteristics and experiences, we expect that a person's gender role orientation will be predicted by a number of variables, including demography, intellectual background, parental environment, and parental education and employment. Each of these sets of influences is discussed in turn.

Demographic Characteristics: Gender, Age, Race and Ethnicity, and Marital Status

Attitudes are often formed by the experiences that one has throughout one's life (Eaves et al., 1997), and these experiences may be quite different depending on one's age, gender, marital status, or race or ethnicity. The specific impact of demographic characteristics such as age, gender, marital status, and race on gender role orientation can be examined in conjunction with gender-related traits and attitudes.

Research has established that women tend to endorse more liberal attitudes toward women's roles (e.g., Eagly, Diekmann, Johannesen-Schmidt, & Koenig, 2004). If individuals tend to en-

¹ The term *gender role orientation* is used in gender research to refer to one's attitudes toward women's roles (e.g., Harris, Firestone, & Vega, 2005; Rhoden, 2003; Scherer & Petrick, 2001). Although the term is used by some researchers to reflect a trait-based conceptualization of masculinity and femininity (Rammsayer & Troche, 2007), in an effort not to create additional terms, we use *gender role orientation* to refer to a statelike conception of gender role attitudes, with high scores representing traditional attitudes and low scores egalitarian attitudes.

dorse attitudes that reflect an improvement in status, position, or power of the group with which they identify (Treas & Widmer, 2000), and there is reason to believe that people do (e.g., Darke & Chaiken, 2005; Newport, 2007; Walker, Field, Giles, Bernerth, & Jones-Farmer, 2007), then one would expect women to prefer less traditional or more egalitarian gender roles compared with men. As noted by Eagly et al. (2004), to the extent that men and women are differently positioned in the social structure, such that men are advantaged, then one would expect women to hold attitudes that would improve on their disadvantage and men to hold attitudes that would maintain their advantage. Thus, women should, on average, have a less traditional gender role orientation than men.

Additionally, age may be related to gender role orientation, such that people who are older will likely endorse more traditional gender roles. Previous research has indicated that attitudes toward women among both men and women have shown trends toward egalitarianism (Twenge, 1997). However, generational or cohort differences may coexist with this trend, such that respondents who are older tend to conform more to the social expectations of their generation. Indeed, research has suggested that older individuals tend to report more traditional attitudes in general (Eagly et al., 2004). Thus, we expect that older individuals will report more traditional gender role orientations.

Among African Americans, more egalitarian gender role orientations are often espoused than among Caucasians. For instance, African American women differ from Caucasian women in terms of cultural ideals of femininity, such that being career oriented is more likely to be considered a feminine ideal among African Americans (e.g., DeFour & Brown, 2006; Epstein, 1973). Likewise, African Americans are more likely to support feminist positions and to acknowledge the existence of gender inequality (Gooley, 1989; Kane, 1992). Although African American women tend to profess even more egalitarian gender role orientations than do African American men (Kane, 1992), African American men have more egalitarian attitudes than Caucasians on many issues related to gender (e.g., place of women in careers; Blee & Tickamyer, 1995; Ransford & Miller, 1983; Tomkiewicz, Bass, & Vaicys, 2003). Thus, we expect that in general, African Americans will tend to be more egalitarian in their gender role orientations than are Caucasians or members of other racial or ethnic groups.

It is within the marital relationship that traditional gender roles are most readily played out (Komter, 1989). For example, even when a woman is the primary breadwinner of the family (i.e., has a larger income than her husband), the couple may use tactics within the marriage to preserve the appearance of power being held by the husband (Deutsch & Saxon, 1998). Moreover, evidence has reliably indicated that married individuals are more politically conservative and more traditional in their social mores than unmarried individuals, so much so that the "marriage gap" has been called "one of the most important cleavages in electoral politics" (Greenberg Quinlan Rosner Research, 2005, p. 3). Although, obviously, such a marriage gap is hardly expected to be universal, such that every married person is more traditional than every unmarried one, we do expect a difference such that being married will be associated with more traditional gender role orientations.

Hypothesis 1: Gender, age, race or ethnicity, and marital status will predict gender role orientation such that men

(Hypothesis 1a) and older individuals (Hypothesis 1b) will have more traditional gender role orientations, African Americans will have less traditional gender role orientations (Hypothesis 1c), and married individuals will have more traditional gender role orientations (Hypothesis 1d).

Intellectual Background: Education, General Mental Ability, and Religiosity

Characteristics of an individual's intellectual environment may also have an impact on that individual's gender role orientation. Education, general mental (cognitive) ability, and religiosity are aspects of intellectual development that may determine whether one holds traditional or egalitarian perspectives of gender roles. Attitude formation and change are often affected by one's ability to cognitively discern options and alternatives and be persuaded by evidence, as suggested by the persuasion literature (Chaiken, 1980; Petty & Cacioppo, 1984). A person who is more highly educated, who possesses more cognitive ability, or both will likely be more critical of traditional gender roles, as such people are likely to adjust their attitudes on the basis of evidence they encounter rather than on historical norms and are likely to have learned about equity and women's abilities in society. Intelligent children tend to endorse more politically liberal attitudes later in life (Deary, Batty, & Gale, 2008), and egalitarian gender role attitudes are associated with self-ratings of intellectual ability (Grieve, Rosenthal, & Cavallo, 1988; Peplau, 1976) and even with SAT scores (Peplau, 1976). Moreover, educational attainment is among the most important predictors of gender role orientation (Mason, Czajka, & Arber, 1976).

Additionally, one's religiosity may be a strong predictor of gender role orientation. Religious service attendance has been found to predict traditional attitudes toward women (Willetts-Bloom & Nock, 1994), as has active Protestantism (Lottes & Kuriloff, 1992). Historically, women were discouraged from education or cognitive enhancement because it went against many traditional, religious conceptions of gender roles (DeBerg, 2006). Although there may be variation both within and between specific religious faiths in the degree to which traditional gender roles are emphasized, overall we expect that those who were raised in a religious environment will tend to hold more strongly traditional gender role orientations.

Hypothesis 2: Education, general mental ability, and religion will predict gender role orientation such that those who have lower levels of education (Hypothesis 2a) or general mental ability (Hypothesis 2b) and who were raised in a religious household (Hypothesis 2c) will have a more traditional gender role orientation.

Familial Environment: Urbanicity and Region

Other environmental variables, such as region and urbanicity of residence, may be influential in the formation of gender role orientation. Southern Americans often hold more conservative opinions on employed women and women in politics (Rice & Coates, 1995) and tend to hold less egalitarian opinions of women in general (Hurlbert, 1989). Some scholars have argued that Southern U.S. culture promotes traditional gender roles such that wom-

en's roles are those of homemaker and mother (Good, 1989). Although these views may have moderated in the "New South," there is still evidence that individuals in the American South, as compared with those in the Northeast, are more likely to subscribe to traditional attitudes, including those pertaining to gender roles (Carter & Borch, 2005). Additionally, urbanicity of one's home of origin may affect gender role orientation. Previous research has illustrated that rural dwellers tend to express more traditional gender role orientations than people from more urban settings (Rice & Coates, 1995). This may be because individuals who live in cities tend to be more progressive and egalitarian than those who live in more rural areas (Greenberg Quinlan Rosner Research, 2005). Variables such as urbanicity and region of the country may also be proxies for attitudinal variables such as conservatism or openness to experience, which may systematically vary in the population on the basis of whether one was reared in the South versus the Northeast or in the city versus the country.

Hypothesis 3: Urbanicity and region of the country of one's upbringing will predict gender role orientation such that those who have spent more time living in a city will have less traditional (Hypothesis 3a), those who have spent more time living in the Southern United States will have more traditional (Hypothesis 3b), and those who have spent more time living in the Northeastern United States will have less traditional (Hypothesis 3c) gender role orientations.

Parental Education and Maternal Employment

We also expect that one's gender role orientation will be influenced by the experiences and behaviors of one's parents. Attitude formation often occurs very early in life (Eaves et al., 1997), emanating primarily from one's parents (Abrahamson, Baker, & Caspi, 2002). Children of dual-career families are more likely to also aspire to dual-career families, which are argued to reflect (or result from) less traditional gender role attitudes (Stephan & Corder, 1985). As supported by social role theory (Eagly, 1987), attitudes can be affected by the mere exposure to women in the working role (e.g., a working mother). Shared environmental factors, such as parental upbringing and the attitudes held by one's parents, have been found to affect the held attitudes of children, using adoptive child studies (Abrahamson et al., 2002), suggesting that exposure to egalitarian gender role orientations through observation of a working mother may be enough to promote these same attitudes in a child. Thus, we expect that individuals whose mother has worked outside the home will hold more egalitarian gender role orientations.

Attitudes and behaviors regarding gender roles are generally learned first in the home and then reinforced by a child's peers and experiences (Witt, 1997). Parents seem to pass on their gender role orientations both directly and indirectly. Just as an individual's education is likely to encourage less traditional attitudes toward gender roles, the education of one's parents will likely affect one's attitudes. Parents who are more highly educated may discuss social equality openly with their children, thus sharing their more egalitarian perspectives on gender roles more openly. This may be another way in which shared environment influences attitude formation (Abrahamson et al., 2002).

Hypothesis 4: Parental education and maternal employment will predict gender role orientation such that individuals whose mother (Hypothesis 4a) and father (Hypothesis 4b) are less educated and individuals whose mother did not work outside the home (Hypothesis 4c) will have a more traditional gender role orientation.

Time

Although research has suggested that people are becoming more egalitarian in their gender role orientation over time, much of this research has been conducted with cross-sectional designs, thus confounding time-based change with cohort effects (Rice & Coates, 1995; Rogers & Amato, 2000; Twenge, 1997). Specifically, as we hypothesized, younger individuals may be less traditional than older individuals, but that does not necessarily mean that gender role orientations become less traditional as individuals age. Even if one controls for cohort effects, however, there is reason to believe that gender role orientations are becoming less traditional. Over time, individuals' gender role orientation may become less traditional as a consequence of the equalization of labor force participation rates in society or as a result of a growth in the embrace of individualism and civil libertarianism (Brooks & Bolzendahl, 2004).

Hulin and Judge (2003) discussed that attitudes often experience shifts within individuals over time. Although attitudes that people consider personally important (e.g., one's gender role orientation) tend to be more resistant to change (Boninger, Krosnick, Berent, & Fabrigar, 1995), individuals are more impressionable during their early adulthood and late adolescence (e.g., Krosnick & Alwin, 1989). Thus, even if gender role orientations are thought to be somewhat stable, it is likely that when following individuals from late adolescence to mid- to late adulthood, one's gender role orientation will experience change. We expect that even controlling for cohort replacement effects (attitudes becoming more liberal over time because younger people with more liberal attitudes replace older individuals with more traditional attitudes), over time, gender role orientation will become less traditional.

Hypothesis 5: Time will predict gender role orientation such that over time individuals will become less traditional in their gender role orientation.

Gender Role Orientation, Gender, and Earnings

Having considered the possible causes of gender role orientation, there are the larger questions of how gender role orientation affects earnings for men and for women and what factors might explain this effect (as shown in Figure 1). We suggest that the economic consequences of gender role orientation vary by gender and that self-fulfilling prophecies will explain how gender may moderate the gender role orientation–earnings relationship.

Gender Role Orientation and Gender

A traditional gender role orientation reinforces the social norm that a woman's place is in the home; thus, working women with traditional gender role orientations are likely to believe their true devotion should not be to their work, but to home. It reflects an espousal of social roles that at one time placed women squarely in

the domestic realm and men in the career realm. In the early 1900s, marriage was held out as the ideal for all women; women were expected to choose between marriage and a career, as married women were barred from most employment (see Land, 1980). Although married women, of course, are no longer legally barred from employment, a wife's role as a wage earner continues to be viewed as peripheral (Morris, 1987). The impact of this perception may be to preserve historical economic advantages for men, and disadvantages for women, even in contemporary society when men and women participate equally in the labor force.

We posit that a gender role orientation creates a self-fulfilling prophecy (Merton, 1968), such that traditional individuals create reality out of their expectations, leading to a greater acceptance of lower earnings by traditional women (vs. egalitarian women) and an expectation of higher earnings for traditional men (vs. egalitarian men). Thus, we believe that for traditional individuals, a belief grounded in their gender role orientations (e.g., work is more important for men, thus they should be paid more) evokes behaviors that bring about that very outcome (e.g., men being paid more than women). The dynamics through which traditional gender role orientation creates a self-fulfilling prophecy may vary by employee and employer. One straightforward possibility is that traditional gender role orientation advantages men and disadvantages women because traditional men show greater dedication to their work and traditional women show greater dedication to their homes. Although there is obvious merit to this argument, we believe that the effect does not stop there—that there are other reasons to believe that a traditional gender role orientation produces economic inequality, even when work and family commitments are held constant.

One mechanism lies in expectations. Traditional men, especially when compared with traditional women or egalitarian individuals, may negotiate their salaries more aggressively and effectively (Stuhlmacher & Walters, 1999). For instance, we know that situational power affects negotiation behavior even more so than gender (Watson, 1994), suggesting that a man who feels his purpose or agency is drawn from his work (i.e., a man with a traditional gender role orientation) will likely negotiate more aggressively than a man who subscribes less strongly to an agentic identity (i.e., a man with a less traditional or egalitarian gender role orientation). Men who are more agentic (Duehr & Bono, 2006)—who believe that their appropriate role and value to their family is as a breadwinner—will place a higher value on pay, and thus be more likely to translate that into income. Similarly, traditional women may be more satisfied with lower pay (Graham & Welbourne, 1999), making it easier for employers to pay them less. Yet another possibility is that men and women may select themselves (or be selected) into different occupations, which we consider next.

Hypothesis 6: Gender will predict the effect of gender role orientation on earnings such that the association between traditional gender role orientation and earnings will be more positive for men and more negative for women.

Mediators of the Effect of Gender on the Gender Role Orientation–Earnings Relationship

As suggested above, one of the mechanisms that might explain why gender role orientation produces different outcomes for men

and women is occupational choice. Indeed, England (1992) suggested that gender role socialization leads men and women to find different jobs consistent with their gendered identities. Thus, if women espousing traditional gender role orientations seek out jobs that confirm their ideals (choose work that is peripheral to their identity) and men do the same (select work that confirms their agentic identity), traditional women may find themselves in lower paying, female-dominated positions (e.g., England, 1992; Subich, Barrett, Doverspike, & Alexander, 1989). Cognitive dissonance theory suggests that individuals would likely not choose occupations if they believed they would cause them discomfort (e.g., Kobberg & Chusmir, 1991). Thus, a woman with a more traditional gender role orientation may feel uncomfortable in a high-paying, complex job or in those jobs in which she is surrounded by men. For our purposes, we analyze occupational choice via two distinct variables: occupational attainment via job complexity and occupational segregation via the gender composition of one's occupation.²

To support job complexity and occupational segregation as mediators of the effect of gender on the gender role orientation–earnings relationship, we must establish four steps in the mediation process (as suggested by Baron & Kenny, 1986). Predicting mediation of a moderating effect is often complex; thus, we lay out each step in the mediating process before presenting our mediating hypothesis and again in the Results section. The four steps we must establish are (a) that gender affects the gender role orientation–earnings relationship ($X \rightarrow Y$, or path c); (b) that gender is associated with job complexity and occupational segregation ($X \rightarrow M$, or path a); (c) that job complexity and occupational segregation affect the gender role orientation–earnings relationship (path b); and (d) that the effect of gender on the gender role orientation–earnings relationship becomes weaker when job complexity and occupational segregation are taken into account (path c becomes weaker; path b is controlled). Because Step a was posited in supporting Hypothesis 6, we consider Steps b–c below.

In reference to Step b, gender differences in work complexity exist such that women are more likely to be involved in less complex work than are men (Hyllegard & Lavin, 1992). Indeed, even when women are in low-complexity occupations, they tend to be pleased with their level of perceived job complexity and may even perceive their jobs as being more complex than they actually are (Lopata, Norr, Barnewolt, & Miller, 1985). Additionally, gender stereotypes during hiring may sort women into less complex jobs (e.g., Biernat & Fuegen, 2001). The relationship between gender and occupational segregation is, in a sense, axiomatic, as

² Although referring to one's current occupation as one's "occupational choice" implies that one is freely able to pursue one's preferences, we are not suggesting that individuals' choices are totally exogenous—free from constraints or imperfect information. McRae (2003) noted that women face significant barriers in how (and whether) they pursue work careers, and we recognize that factors such as labor market conditions, employment discrimination, and family financial situation may have an impact on the degree to which an individual can pursue his or her occupational preference. Nevertheless, occupations do require some degree of choice, whether that choice is freely made or endogenous to other factors, and because we are unable to decompose which components of one's occupation are a result of preference and which of constraint, we refer to characteristics of one's current occupation as indicative of one's occupational choice.

occupational segregation could not exist at the occupational level without differential entry by gender at the individual level. Although individuals cross such gender boundaries (e.g., Bagilhole & Cross, 2006; Jacobs, 1993), they often switch back to occupations dominated by their own gender in relatively short order (Jacobs, 1993).

To establish Steps b–c, we turn to an examination of the context in which many complex jobs are observed. Historically, complex jobs were thought to rest squarely in the traditionally masculine domain (e.g., Schein, 1973). In such “men’s work,” role congruity theory (Eagly & Karau, 2002) would predict that traditional men would be disproportionately rewarded in complex jobs because they are acting in a role-congruent manner. Indeed, men who lack masculine attributes may be especially derogated in male stereotypic positions (Kite, 2001). Thus, we believe that job complexity will partially explain, for instance, why men may experience lower earnings when they espouse a less traditional gender role orientation (rather than a more traditional orientation).

As for occupational segregation and the gender role orientation–earnings relationship, in highly segregated labor markets female-dominated positions are socially devalued (Cohen & Huffman, 2003), likely leading to higher pay for men who tend to endorse gender segregation in the labor force. Reskin (1993), in her review of occupational gender segregation, noted that “women’s work” is devalued and paid less, whereas male-dominated positions reward those who fit the typical male worker mold. Thus, like role congruity theory and job complexity, men who “toe the line” in conforming to traditionally masculine ways should be disproportionately rewarded in male-dominated occupations, whereas the converse (women who conform to feminine stereotypes in female-dominated occupations) should similarly reinforce the lower value of women’s work (e.g., Eagly & Karau, 2002). We believe that occupational segregation will partially explain why women may experience lower earnings when they espouse traditional gender role orientations (as they might select into jobs with higher percentages of women) and why men who espouse traditional gender role orientations may experience higher earnings (as they select into jobs with higher percentages of men).

Hypothesis 7: Occupational attainment (as measured by job complexity [Hypothesis 7a]) and occupational segregation (as measured by percentage of women in the occupation [Hypothesis 7b]) will partly mediate the effect of gender on the gender role orientation–earnings relationship, such that the gender effect will become weaker once occupation is controlled.

Control Variables

Because individuals did vary in age (by up to 8 years), and age is correlated with both earnings (Goldberg, Finkelstein, Perry, & Konrad, 2004) and gender role orientation (Ciabattari, 2001), we used age as a predictor variable in all analyses to avoid confounding age with any of the effects observed. In addition to gender and age, on the basis of prior research (Budig & England, 2001; Shannon & Kidd, 2003; Sicilian & Grossberg, 2001), we instituted

race, marital status, education, hours worked by participant and spouse, number of children, job complexity, and occupational segregation as control variables in predicting the earnings intercept (between-individual differences in earnings). In addition to the hypothesized effect of gender on the gender role orientation–earnings relationship, because of observed widening in the gender wage gap over time (e.g., Loprest, 1992), as a control, we also included gender as a predictor of the slope of time in predicting earnings.

Finally, one concern with our research design is that the presumed causal nature of the relationship between gender role orientation and earnings could be questioned (some of the association between gender role orientation and earnings could be because earnings cause gender role orientation). One means of addressing this concern is to control for prior levels of earnings to eliminate the possibility that the relationship between gender role orientation and earnings was caused by initial earnings advantages. Accordingly, we controlled for individuals’ initial (Time 1) level of earnings in predicting the earnings intercept and the slopes of the Level 1 variables (time and gender role attitudes) in predicting earnings.

Method

Sample, Participants, and Procedure

Participants were a subset of those individuals enrolled in the National Longitudinal Survey of Youth (NLSY), a panel study administered by the Bureau of Labor Statistics of the U.S. Department of Labor. The full NLSY is a nationally representative sample of 12,686 individuals who were 14–22 years old when first surveyed in 1979 (and thus were 42–50 years old in 2007). Participants were interviewed, typically in their homes, annually through 1994 and are currently interviewed on a biennial basis. The most recent round of interviews took place in 2004–2005. The average interview lasts 60 min. Over the course of the study, participants have been interviewed about many topics, including the variables of interest in this study. NLSY participants reside in all 50 states and include a broad cross-section of individuals in terms of socioeconomic background, race and gender, and family background.

To preserve confidentiality, NLSY participants are identified not by name, but rather by a unique ID number (which ranges from 1 to 12,686). Sample attrition from the NLSY has occurred in several ways. First, because of funding constraints, 1,079 and 1,643 individuals were dropped in 1984 and in 1990, respectively. Second, by the 2004–2005 interview, 399 participants were deceased, 116 participants were classified as “extremely difficult to interview,” and another 452 participants were unable to be located. Finally, despite considerable efforts to contact participants, even when they move (post offices, departments of motor vehicles, and other sources of public records are searched for participants who initially cannot be located; if that search fails, the case is transferred to a field manager who undertakes additional locating strategies), over the course of the study, a total of 1,134 participants refused further participation. Thus, from the original sample, 60.4% remain in the study. If one considers those who died or were

dropped from the study (in 1984 and 1990), the effective response rate is 80.1%.³

Level 1 (Within-Individual) Measures

For the Level 1 variables below, each was measured for the 4 years that gender role orientation was measured: Time 1 = 1979, Time 2 = 1982, Time 3 = 1987, and Time 4 = 2004. Thus, for each of these variables there were four possible observations per person.

Earnings. For each of the four time periods, the amount of pay received each year from wages and salary was assessed with participants' responses to the following open-ended interviewer question: "Not counting any money you received from your military service during [YEAR], how much did you receive from wages, salary, commissions, or tips from all jobs, before deductions for taxes or anything else?" We included military income in our calculation of total earnings on the basis of participants' responses to a separate question. To measure wages in real terms, and thus separate real wage growth from inflationary growth, we adjusted wage rates based on the Consumer Price Index for each year. Thus, all wages were adjusted to reflect 2006 dollars using the Consumer Price Index (see <http://www.bls.gov/cpi/>).

Gender role orientation. Gender role orientation was measured with a five-item scale that assessed the degree to which individuals endorse traditional versus egalitarian views about the role of women in the workforce and the balance of gender roles at work and home. The five items were (a) a woman's place is in the home, not the office or shop; (b) a wife with a family has no time for outside employment; (c) employment of wives leads to more juvenile delinquency; (d) it is much better if the man is the achiever outside the home and the woman takes care of the home and family; and (e) women are much happier if they stay home and take care of children. Each item was evaluated on the following response scale: 1 = *strongly disagree*, 2 = *disagree*, 3 = *agree*, and 4 = *strongly agree*. The coefficient alpha reliability estimate for this scale was at Time 1, $\alpha = .78$; Time 2, $\alpha = .83$; Time 3, $\alpha = .82$; and Time 4, $\alpha = .81$.

Because these items had not been validated in prior research, we sought to establish their concurrent validity with other measures of gender role orientation. We asked a sample of 350 undergraduate students to complete the five items used above ($\alpha = .89$) and the Traditional-Egalitarian Sex Roles scale ($\alpha = .88$; Larsen & Long, 1988), the Attitudes Toward Women Scale ($\alpha = .82$; Spence & Helmreich, 1972), and the Bem (1974) Sex Role Inventory ($\alpha_s = .86$ and $.83$ for the Masculinity and Femininity subscales, respectively), all of which have been validated and used in prior research. We observed high correlations between the measure used in this study and the two gender role orientation scales (Traditional-Egalitarian Sex Roles scale, $r = .74$, $p < .05$, and Attitudes Toward Women Scale, $r = .65$, $p < .05$). We observed a relatively weak correlation between the measure used in this study and the Bem Sex Role Inventory ($r = -.05$, *ns*, with the Masculinity subscale, and $r = -.22$, $p < .05$, with the Femininity subscale), which was expected, as the Bem Sex Role Inventory purports to measure gender role traits as opposed to gender role orientation as a statelike variable. These findings suggest that the items used in the NLSY are valid assessments of gender role orientation.

Time. Consistent with Bryk and Raudenbush (1987), we created a time variable by coding the four time periods as 1, 2, 3, and 4.⁴

Level 2 (Between-Individual) Measures

Gender. Participants' gender was measured with a variable created at the time of the initial interview in 1979 (coded 1 = *male*, 2 = *female*).

Age. Date-of-birth information was collected from each NLSY respondent during the 1979 interview. We then constructed the age variable from the birth date information. Ages ranged from 14 to 22 at the start of the study; in 2004, the age range was 39 to 47.

Race. Race was measured with a question on the initial survey that asked participants to report their race. Responses were coded into two variables: Caucasian (1 = Caucasian [68.9% of sample], 0 = other) and African American (1 = African American [24.9% of sample], 0 = other).

Percentage of time married. Percentage of time married was measured by averaging the variable representing whether the participant was married (coded 1) or unmarried (single, divorced, widowed, or separated; coded 0) over each time period. Thus, the variable represents the percentage of time periods that the participant was married.

Years of education. Interviewers asked participants to indicate the highest grade they completed, counting each year in college as 1 year. Responses ranged from none (coded 0) to 8 years of college or more (coded 20). Using participants' responses to the most recent (2004) survey, 3.4% had 8 or fewer years of education, 63.9% had 9–12 years of education, 27.1% had 13–16 years of education, and 5.6% had more than 16 years of education.

General mental ability. In 1980, NLSY participants took the Armed Services Vocational Aptitude Battery (ASVAB). Participants were paid \$50 for taking the test (and were informed they were to be paid irrespective of their scores). Groups of 5 to 10 persons were tested at more than 400 test sites. The ASVAB consists of a battery of 10 tests that measure knowledge and skill in areas ranging from arithmetic reasoning to mechanical comprehension. To compute an overall composite score representing general mental ability, the standard scores for the 10 scales were averaged. A general factor can be recovered from ASVAB scores, and as such an ASVAB composite can be interpreted as a measure of general mental ability (Ree & Carretta, 1994).

Religious upbringing. In 1979, interviewers asked participants, "In what religion were you raised?" Responses were cate-

³ We included all members of the sample, including those who did not hold jobs outside of the home, because we perceive a difference between homemakers and those who are unemployed. Given that the workload of all households includes familial responsibilities and what Becker (1965) called "household production," we did not specifically limit our analyses to those who work a certain number of hours outside the home. However, because we control for hours worked per week (outside the home), our results do take into account the degree to which individuals work outside the home, and we did perform supplementary analyses limited to those who are employed outside the home.

⁴ We recognize the time periods are not evenly spaced (1 = 1979, 2 = 1982, 3 = 1987, and 4 = 2004). Results using the actual year were very similar to the analyses reported here, based on equidistant time intervals.

gorized by major denomination (e.g., Protestant, Baptist, Methodist, Roman Catholic, Jewish, other). A variable representing religious upbringing was coded 1 if individuals indicated they were raised in any of the denominations and 0 if they indicated "none, no religion."

Percentage of time living in city. The percentage of time the individual resided in a city was measured with a variable created from information on whether the participant's current residence was in a central city (based on zip code, state, and county matches with metropolitan statistical designations). From that information, over the four time periods, we created a variable representing the percentage of time the participant lived in a city.

Region of U.S. residence. The area of the United States in which the participant currently lived was assessed during each interview. From that information, over the four time periods, we created one variable representing the proportion of time the participant lived in the South (1 = southern U.S., 0 = otherwise) and in the Northeast (1 = northeastern U.S., 0 = otherwise).

Mother's and father's years of education. Years of education completed by the participant's mother and father were assessed with two questions in which the interviewer asked the participant, in the initial 1979 interview, "What is the highest grade or year of regular school that your father (mother) ever completed?" Participants' answers ranged from none (coded 0) to 8th year of college or more (coded 20). For fathers, 25.0% had 8 or fewer years of education, 51.8% had 9–12 years of education, 17.5% had 13–16 years of education, and 5.8% had more than 16 years of education. For mothers, 19.1% had 8 or fewer years of education, 64.2% had 9–12 years of education, 14.7% had 13–16 years of education, and 1.9% had more than 16 years of education. (Numbers do not total exactly 100% because of rounding error.)

Mother employed outside home. In the 1979 and 1980 surveys, interviewers asked the participant, "Did your mother/stepmother work for pay all of the year, part of the year, or not at all?" We coded this variable as 1 if the participant indicated his or her mother worked for all of the year and 0 otherwise and then averaged the variable over these 2 years.

Participant hours worked. In each of the four time periods, participants were asked to identify up to five jobs they had held over the past year. Interviewers then asked participants, "How many hours per week do/did you usually work at this job?" These hours were summed across jobs for each year and then averaged to create an index of the average number of hours participants usually worked per week.

Hours worked by spouse. The number of hours worked by participants' spouses was assessed, for each time period, with an interview question inquiring whether the participant's spouse worked outside the home and, if so, how many hours the spouse worked. This variable was coded as 0 for participants who were unmarried. These scores were then averaged over the four time periods.

Number of children. Participants were asked to report the number of biological or adopted children in the household at each of the four time periods. We averaged these responses to represent the average number of children in the household over the four time periods.

Initial earnings. Individuals' initial level of earnings was assessed by coding participants' earnings at Time 1. This variable

was coded as 0 for those who did not report earnings for that time period.

Job complexity. To assess the job complexity of participants' occupations, we matched the 2000 Standard Occupational Codes to occupational information contained in O*NET, which represents the most comprehensive information on occupations ever compiled (Campion, Morgeson, & Mayfield, 1999; Peterson et al., 2001). Because the 2000 Standard Occupational Codes were available only for 2002 and 2004, we averaged job complexity scores over those two periods.

Job complexity of participants' occupation was assessed with O*NET ratings in three areas: knowledge (sum of up to 35 specific areas of knowledge required in a job), skills (sum of 50 specific skills required in a job [e.g., complex problem-solving skills and social skills]), and abilities (sum of 52 specific abilities required in a job, which can be classified into four categories: cognitive, physical, psychomotor, and sensory). We summed these specific ratings to form an overall composite index of job complexity, matched to the participants' Standard Occupational Codes for 2002 and 2004, and then averaged them over those two time periods. In our database, the most complex occupations were aircraft pilots and dentists; the least complex were tire builders and pile driver operators.

Occupational segregation. Occupational segregation—the degree to which occupations are "gendered" (male or female dominated)—was assessed by matching the 2002 and 2004 Standard Occupational Codes to the U.S. Census Bureau's information on the percentage of women in each occupation. The figures were averaged over 2002 and 2004 to determine the percentage of women in each occupation as an indicator of occupational segregation. Occupations ranged from 1.0% and 1.1% female (heavy vehicle service mechanic and brick-, block-, or stonemason, respectively) to 98.7% and 98.8% female (dental hygienist and preschool and kindergarten teacher, respectively). The average occupation was 45.1% female ($SD = 22.6\%$).

Analyses

Data were analyzed with Hierarchical Linear Modeling (HLM 6.0; Raudenbush, Bryk, Cheong, & Congdon, 2004). In HLM, Level 1 variables are those that are modeled to vary over time, in this case over the four time periods. In estimating changes (growth trajectories) in gender role orientation and in earnings, we used the analytical approach recommended by Bryk and Raudenbush (1987). Specifically, to study changes in an outcome variable, we used time as a within-individual measure of growth rate and then used the Level 2 variables (between-individuals differences) to predict changes over time in the outcome of interest. The Level 1 independent variables (time and gender role orientation) were group-mean (or individual-mean) centered.⁵

⁵ Because we group- (individual-) mean centered the Level 1 independent variables, estimation of initial earnings is distinct from estimation of the intercept. When variables are group-mean centered, the intercept is positioned at the average level of earnings, rather than the initial value. Thus, initial earnings as a predictor of average between-individual differences in earnings (averaged across all time periods) is both possible to estimate and interpretable.

A preliminary step in conducting HLM analyses is to determine that the data are indeed multilevel, which entails demonstrating substantial between- and within-individual variability (e.g., showing that the two outcome variables—gender role orientation and earnings—differ significantly between and within individuals). Estimation of null models revealed that 93% of the total variability in earnings was within individual. (Although this number appears high, it is important to keep in mind that this reflects the 25-year time span of the study and its attendant substantial wage growth for most individuals.) For gender role orientation, 58.0% and 42.0% of the total variability was within and between individuals, respectively. Because estimation of null models demonstrated significant between- and within-individual variability, multilevel modeling of the data is appropriate for both outcome variables.

Results

Descriptive statistics and intercorrelations among the study variables are provided in Table 1. In interpreting the matrix, several caveats should be kept in mind. First, time is excluded from the matrix because it is constant across individuals. Second, the statistics for the Level 1 variables (gender role orientation and earnings) are for those variables averaged over time. As such, they are of little value in interpreting Level 1 relationships among the variables or in interpreting the relationship between the Level 1 and Level 2 variables.

Predictors of Gender Role Orientation

The results predicting gender role orientation are provided in Table 2. The hierarchical linear model was specified as using the Level 2 variables (individual differences) to predict the intercept of gender role orientation, which represents the average differences (between-individual variability) in gender role orientation. Because we also investigated whether gender role orientation has changed over time, we also included time as a Level 1 predictor of gender role orientation. Finally, although not hypothesized, we controlled for gender as a predictor of the effect of time on gender role orientation to ensure that possible gender differences in gender role orientation (Hypothesis 1a) are not confounded with possible gender differences in the rate of change of gender role orientation over time.

As shown in Table 2, supporting Hypothesis 1a, gender negatively predicted the intercept of traditional gender role orientation ($B = -.361, p < .01$), meaning that women have a more egalitarian orientation than men. Age did not significantly predict the intercept ($B = .001, ns$); thus, Hypothesis 1b was not supported. One of the race variables—African American—significantly negatively predicted the intercept ($B = -.144, p < .01$), meaning that African Americans had more egalitarian gender role orientation (supporting Hypothesis 1c). Percentage of time married positively predicted the intercept ($B = .089, p < .01$), meaning that those who were married were more likely to have a traditional gender role orientation. Thus, Hypothesis 1d was supported.

Education ($B = -.026, p < .01$) and general mental ability ($B = -.016, p < .01$) negatively predicted the intercept of gender role orientation, meaning that more educated people and more intelligent individuals were less likely to have a traditional gender role orientation, supporting Hypotheses 2a and 2b, respectively. Being

raised in a religious household positively predicted the intercept ($B = .042, p < .01$), meaning that—consistent with Hypothesis 2c—individuals raised in religious households were more likely to have a traditional gender role orientation.

Percentage of time living in a city negatively predicted ($B = -.032, p < .05$), percentage of time living in the South positively predicted ($B = .042, p < .01$), and percentage of time living in the Northeast negatively predicted ($B = -.052, p < .01$) the intercept of gender role attitudes, meaning that individuals living in cities, outside the South, and in the Northeast had less traditional gender role orientations. Thus, Hypothesis 3 was supported.

Participants' mother's education did not predict the intercept of gender role orientation ($B = -.002, ns$), failing to support Hypothesis 4a. Supporting Hypotheses 4b and 4c, education of the father ($B = -.006, p < .01$) and the mother working outside the home ($B = -.102, p < .01$) significantly negatively predicted the intercept of traditional gender role orientation, meaning that participants whose fathers were more educated and whose mothers worked outside the home were less likely to have a traditional gender role orientation.

As hypothesized, intercept of the slope of time negatively predicted traditional gender role orientation ($B = -.149, p < .01$), meaning that participants became less traditional in their gender role attitudes over time. This supports Hypothesis 5. Although not hypothesized, gender positively predicted the slope of time on gender role orientation ($B = .046, p < .05$), meaning that the negative effect of time on gender role orientation was stronger for men than for women. When this result is interpreted in the context of gender predicting the gender role orientation intercept, it means that although women are less traditional than men, these differences are narrowing over time.

Gender and Gender Role Orientation as Predictors of Earnings

Hypothesis 6 predicted that gender would moderate the effect of gender role orientation on earnings, such that the association between traditional gender role orientation and earnings would be more positive for men than for women. To test this hypothesis, we specified a hierarchical linear model in which gender role orientation was a Level 1 predictor of earnings. As mentioned previously, we controlled for gender, age, race, marital status, education, hours worked by participant and spouse, number of children, initial earnings, job complexity, and occupational segregation as predictors of the earnings intercept. We also included time as a Level 1 predictor of earnings and initial earnings as predictors of the Level 1 (gender role orientation and time) slopes.

Results of this analysis are provided in Table 3. As the table shows, most of the control variables predicted the earnings intercept (representing between-individuals differences in earnings): gender ($B = -\$6,351.97, p < .01$), Caucasian ($B = \$1,228.55, p < .01$), marital status ($B = \$6,066.13, p < .01$), education ($B = \$1,754.55, p < .01$), hours worked ($B = \$23.16, p < .01$), number of children ($B = \$468.36, p < .05$), initial earnings ($B = \$0.57, p < .01$), job complexity ($B = \$2.34, p < .01$), and occupational segregation ($B = -\$24.87, p < .01$), meaning that men, Caucasians, those who were married, those who were highly educated, those working more hours, those with more children, those whose initial pay was high, and those working in complex jobs earned

Table 1
Descriptive Statistics and Intercorrelations of Study Variables

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1. Gender (male = 1, female = 2)	1.49	0.50	—																					
2. Age at onset of study	17.85	2.30	.01	—																				
3. Caucasian race	0.69	0.46	.01	.04	—																			
4. African American race	0.25	0.43	-.01	-.04	-.86	—																		
5. % time married	0.40	0.32	.12	.21	.23	-.25	—																	
6. Years of education	13.03	2.49	.07	.03	.06	-.03	.00	—																
7. General mental ability	47.06	8.12	-.09	.22	.42	-.40	.17	.52	—															
8. Religious upbringing (1 = yes, 0 = no)	0.88	0.32	.07	-.05	-.01	.01	.06	.07	.00	—														
9. % time living in city	0.15	0.24	.01	-.07	-.31	.28	-.18	.03	-.18	.01	—													
10. % time living in South (U.S.)	0.31	0.40	.04	-.07	-.22	.28	.03	-.01	-.19	.04	.01	—												
11. % time living in Northeast (U.S.)	0.14	0.30	.00	-.02	.00	-.01	-.05	.06	.03	.01	.20	-.31	—											
12. Mother's years of education	10.97	3.65	-.01	.02	.15	-.08	-.02	.37	.39	.01	-.02	-.08	.06	—										
13. Father's years of education	10.89	3.07	-.02	.04	.11	-.01	-.01	.36	.39	.01	-.03	-.05	.02	.59	—									
14. Mother employed (1979-1981)	0.55	0.43	.02	-.03	-.01	.05	.01	.11	.10	.02	-.04	.07	-.03	.11	.20	—								
15. Hours worked per week	50.69	18.36	-.25	.06	.01	-.02	-.05	-.13	-.02	-.06	-.04	.05	-.06	-.04	-.03	.01	—							
16. Hours worked per week by spouse	9.59	10.78	.31	.17	.16	-.16	.67	.02	.10	.05	-.11	.09	-.03	-.01	.00	.04	-.08	—						
17. Number of children	0.51	0.59	.26	.16	-.05	.03	.44	-.15	-.13	.02	.01	.06	-.03	-.14	-.15	-.04	-.03	.43	—					
18. Initial earnings (Time 1)	4,481.93	8,169.20	-.12	.50	.10	-.10	.19	-.04	.18	-.04	-.08	-.07	-.01	.00	.03	-.01	.10	.12	.06	—				
19. Job complexity	4,351.30	571.29	-.15	.01	.07	-.07	.04	.18	.18	.01	-.04	-.01	.01	.08	.09	.01	.03	-.02	-.06	.03	—			
20. Occupational segregation	45.14	22.96	.49	.02	.00	.00	.05	.13	-.01	.04	.04	.00	.03	.04	.03	.01	-.16	.18	.13	-.06	-.32	—		
21. Traditional gender role attitudes ^a	2.09	0.44	-.27	-.03	.00	-.04	.02	-.36	-.31	.00	-.04	.04	-.08	-.21	-.24	-.17	.08	-.09	.07	.03	-.05	-.16	—	
22. Earnings ^a	15,104.3	14,005.46	-.25	.21	.13	-.12	.20	.28	.38	.02	-.03	-.02	.08	.16	.16	.06	.08	.10	.00	.39	.22	-.16	-.11	—

Note. Because time is constant (invariant) between individuals, it is excluded from the table.
^aLevel 1 variables were averaged over all time periods; thus, the correlations reported above for gender role orientation and earnings do not accurately estimate true Level 1 relationships among Level 1 variables, or interactive effects of Level 2 variables on Level 1 slopes. Correlations greater than .03 are significant at the $p < .01$ level.

Table 2
Hierarchical Linear Modeling Results Predicting Traditional Versus Egalitarian Gender Role Orientation

Variable	<i>B</i>	<i>SE</i>	<i>T</i> statistic
Intercept, <i>B0</i>	3.979	0.041	98.364**
Gender (male = 1, female = 2), <i>B01</i>	-0.361	0.012	-30.240**
Age at onset of study, <i>B02</i>	0.001	0.002	0.897
Caucasian race (0 = no, 1 = yes), <i>B03</i>	0.000	0.015	0.028
African American race (0 = no, 1 = yes), <i>B04</i>	-0.144	0.016	-9.010**
% time married, <i>B05</i>	0.089	0.012	7.636**
Years of education, <i>B06</i>	-0.026	0.002	-14.759**
General mental ability (1981), <i>B07</i>	-0.016	0.001	-26.087**
Religious upbringing (1979), <i>B08</i>	0.042	0.010	4.039**
% time living in city, <i>B09</i>	-0.032	0.015	-2.131*
% time living in South (U.S.), <i>B10</i>	0.042	0.009	4.479**
% time living in Northeast (U.S.), <i>B11</i>	-0.052	0.012	-4.331**
Mother's years of education, <i>B12</i>	-0.002	0.001	-1.651
Father's years of education, <i>B13</i>	-0.006	0.001	-4.183**
Mother employed (1979-1981), <i>B14</i>	-0.102	0.008	-12.594**
Slope of time, <i>B1</i>	-0.149	0.007	-22.046**
Gender (male = 1, female = 2), <i>B11</i>	0.046	0.004	10.580**

Note. High scores represent traditional gender role orientation. *B* = unstandardized hierarchical linear modeling coefficient.
 * $p < .05$. ** $p < .01$.

more, whereas women and those working in female-dominated occupations earned less.

Turning to the slope coefficients (representing the effect of one Level 1 variable [time or gender role orientation] on another [earnings]), time positively predicted earnings ($B = \$22,252.91$, $p < .01$), meaning that earnings increased significantly over time. Initial earnings negatively predicted the time slope ($B = -\$0.25$, $p < .01$), meaning that the incomes of those who started out earning more grew less quickly over time. Gender negatively predicted the slope of time in predicting earnings ($B = -\$6,980.96$, $p < .01$), meaning that incomes grew at a more rapid pace for men than for women.

The remaining coefficient estimates to be discussed in Table 3 concern gender role orientation as a predictor of earnings. The slope of gender role orientation on earnings was positive and significant ($B = \$9,401.15$, $p < .01$), meaning that the more traditional individuals' gender role attitudes became, the more their earnings increased. As hypothesized, gender negatively predicted the slope of the gender role orientation-earnings relation-

ship ($B = -\$5,021.95$, $p < .01$), meaning that traditional gender role orientation was more positively associated with income for men than for women. A graphical illustration of the effect of gender on the gender role orientation-earnings relationship is provided in Figure 2. As the figure shows, whereas for men traditional gender role orientation positively predicted income, for women the opposite pattern emerged—traditional gender role orientation negatively predicted income. Thus, Hypothesis 6 was supported by the results.⁶

Occupation (Job Complexity and Occupational Segregation) as Mediator

Hypothesis 7 predicted that job complexity (Hypothesis 7a) and occupation segregation (Hypothesis 7b) partly mediates the effect of gender on the gender role orientation-earnings relationship, which would be expected if some of this relationship were a result of differences in occupational choice. Adapting the mediational framework of Baron and Kenny (1986) to the multilevel nature of this study, mediation of an effect of variable A (gender) on variable C (the gender role orientation-earnings relationship), via variable B (job complexity and occupational segregation), would be present if (a) A predicts C (gender predicts the gender role orientation-earnings slope); (b) A predicts B (gender predicts job complexity and occupational segregation); (c) B predicts C (job complexity and occupational segregation predict the gender role orientation-earnings slope); and (d) the effect of A on C decreases once B is controlled (the effect of gender on the gender role orientation-earnings slope declines once job complexity and occupational segregation are controlled).

The first step was hypothesized (see Hypothesis 6) and supported (see Table 3 and Figure 2). As for the second step, the correlations in Table 1 reveal that gender was significantly correlated with job complexity ($r = -.15$, $p < .01$) and percentage of the participants' occupation held by women ($r = .49$, $p < .01$) in the expected directions. The third and fourth steps were tested by adding job complexity of participants' occupation and occupational segregation (percentage of women in participants' occupation) as Level 2 predictors of the gender role orientation-earnings relationship.

As shown in Table 4, the third step was apparently supported in that both job complexity ($B = -\$1.40$, $p < .05$) and occupational segregation ($B = -\$28.25$, $p < .01$) significantly predicted the slope of the gender role orientation-earnings relationship. As shown in Figure 3, occupational segregation worked in the direction hypothesized, such that the gender role orientation-earnings relationship was more positive in male-dominated than in female-dominated jobs. However, job complexity operated in a way opposite to that expected. Specifically, the gender role orientation-

⁶ Another means of testing the degree of moderation posited in Hypothesis 6 is to test the simple slopes of the gender role orientation-earnings relationship for men and for women. We did this by constructing two new data sets; one data set consisted only of men, the other data set consisted only of women. When we did so, and repeated the regressions reported in Table 3, the coefficient of gender role orientation in predicting earnings was positive and significant for men ($B = \$3,950.92$, $T = 7.34$, $p < .01$) and negative and significant (albeit substantially weaker in magnitude) for women ($B = -\$785.52$, $T = -2.33$, $p < .05$).

Table 3
Hierarchical Linear Modeling Results Predicting Earnings

Variable	B	SE	T statistic
Intercept, B0	-15,073.792	1,555.842	-9.689**
Gender (male = 1, female = 2), B01	-6,351.971	275.164	-23.084**
Age at onset of study, B02	68.385	58.228	1.174
Caucasian (0 = no, 1 = yes), B03	1,228.546	388.225	3.165**
African American (0 = no, 1 = yes), B04	-430.908	409.662	-1.052
Marital status, B05	6,066.127	509.101	11.915**
Education, B06	1,754.551	57.861	30.323**
Hours worked per week, B07	23.156	5.794	3.996**
Hours worked by spouse, B08	-3.172	15.164	-0.209
Number of children, B09	468.355	217.364	2.155*
Initial earnings (Time 1), B010	0.569	0.022	26.327**
Job complexity, B011	2.344	0.204	11.513**
Occupational segregation, B012	-24.865	5.153	-4.825**
Time slope, B1	22,252.909	550.570	40.418**
Initial earnings (Time 1), B11	-0.247	0.021	-11.917**
Gender (male = 1, female = 2), B12	-6,980.956	295.614	-23.615**
Gender role orientation slope, B2	9,401.147	1,132.765	8.299**
Initial earnings (Time 1), B21	-0.011	0.046	-0.240
Gender (male = 1, female = 2), B22	-5,021.946	629.387	-7.979**

Note. High scores represent traditional gender role orientation. B = unstandardized hierarchical linear modeling coefficient.
* $p < .05$. ** $p < .01$.

earnings relationship was stronger in low-complexity jobs, not weaker as expected.

As for the final step, including occupational segregation and job complexity reduced the coefficient on gender, but only to a relatively modest degree. Including these variables reduced the coefficient on gender by 8.8%, from $-\$5,021.95$ to $-\$4,578.07$. Thus, Hypothesis 7 was only partially supported by the results.

Analysis Limited to Participants Working Outside Home

The results to this point have included all available participants, even those not working outside the home at any given period.

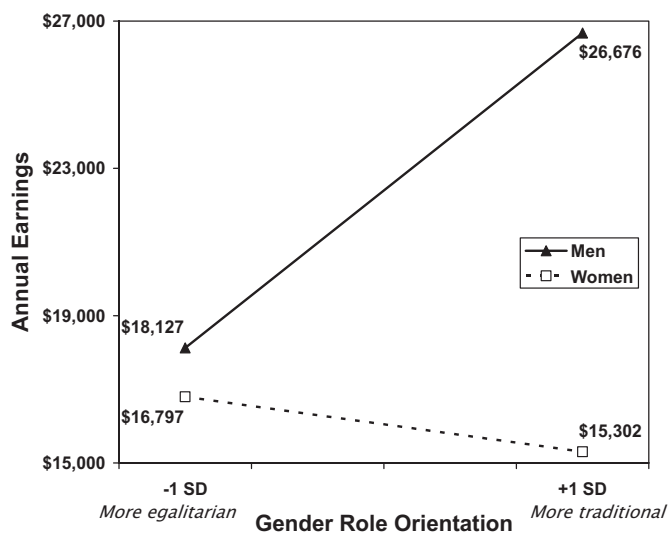


Figure 2. Gender as a predictor of the effect of gender role orientation on earnings. High scores indicate traditional (vs. egalitarian) gender role orientation.

Although this extends the generalizability of the results to dual- and sole-income married couples, it is important to determine what happens to the results when the analyses are confined only to those individuals who work outside the home. Accordingly, we respecified the hierarchical linear models, but limited the analyses to cases in which the participant worked outside the home in the given year. The results of this analysis were quite similar to those reported in Tables 3 and 4, and the significance of no variable changed. The effects of gender and occupational segregation on the gender role orientation-earnings relationship, limited to dual-income couples, are graphed in Figures 4 and 5, respectively. As the figures show, the form of the interaction is very similar to that for all individuals (see the corresponding Figures 2 and 3), except that the intercept is somewhat higher, as one would expect, given that individuals with no outside income to report were eliminated from the analysis. Thus, it appears that the results generalize to both sole- and dual-career couples.

Effect Size Estimates

Although the figures provide an indication of the practical nature of the effects, to further illustrate the effects, using the HLM results, we calculated predicted earnings on the basis of the HLM results and focused on the three focal variables: gender role orientation, time, and gender. We calculated predicted earnings both for all participants and for only those working outside the home. The results of these calculations are provided in Table 5. The table illustrates several key findings. First, earnings clearly increase over time, starting at a relatively low level when most study participants were completing their education and increasing to much higher levels at mid-career. Second, earnings increase more rapidly for men over time; on average, pay increases by 120% over the 25 years for women, but by 317% over the same time period for men. Third, whereas traditional gender role orientation is associated with increased earnings for men, it is associated with

Table 4
Hierarchical Linear Modeling Results: Mediating Role of Occupational Choice

Variable	B	SE	T
Intercept, <i>B0</i>	-15,073.679	1,555.832	-9.688**
Gender (male = 1, female = 2), <i>B01</i>	-6,351.916	275.160	-23.084**
Age at onset of study, <i>B02</i>	68.370	58.227	1.174
Caucasian (0 = no, 1 = yes), <i>B03</i>	1,228.527	388.223	3.164**
African American (0 = no, 1 = yes), <i>B04</i>	-430.887	409.659	-1.052
Marital status, <i>B05</i>	6,065.993	509.094	11.915**
Education, <i>B06</i>	1,754.546	57.861	30.323**
Hours worked per week, <i>B07</i>	23.157	5.794	3.996**
Hours worked by spouse, <i>B08</i>	-3.167	15.164	-0.209
Number of children, <i>B09</i>	468.398	217.362	2.155*
Initial earnings (Time 1), <i>B010</i>	0.569	0.022	26.327**
Job complexity, <i>B011</i>	2.344	0.204	11.513**
Occupational segregation, <i>B012</i>	-24.866	5.153	-4.826**
Time slope, <i>B1</i>	22,265.120	550.518	40.444**
Initial earnings (Time 1), <i>B11</i>	-0.247	0.021	-11.926**
Gender (male = 1, female = 2), <i>B12</i>	-6,984.249	295.637	-23.624**
Gender role orientation slope, <i>B2</i>	16,093.986	2,888.010	5.573**
Initial earnings (Time 1), <i>B21</i>	-0.009	0.046	-0.194
Job complexity, <i>B22</i>	-1.402	0.617	-2.273*
Occupational segregation, <i>B23</i>	-28.253	12.517	-2.257*
Gender (male = 1, female = 2), <i>B24</i>	-4,578.066	732.859	-6.247**

Note. Job complexity and occupational segregation were averaged over 2002 and 2004. High scores represent traditional gender role orientation. *B* = unstandardized hierarchical linear modeling coefficient.

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

slightly decreased earnings for women. For men, moving from 1 standard deviation below the mean on gender role orientation to 1 standard deviation above the mean results in a predicted earnings increase of \$8,548 for the entire sample and of \$11,930 when restricted to participants working outside the home. For women, such a move (from relatively egalitarian to relatively traditional) results in a predicted earnings decrease of -\$1,495 and -\$1,051, respectively. Finally, we should note that the hierarchical linear model does not account for the interactive effect of time and

gender role orientation (Gender × Time × Gender Role Orientation) on earnings. However, when we estimated a model including a Level 1 Time × Gender Role Orientation interaction, sex did not significantly predict it (*T* = -1.31, *ns*).

Discussion

For some time, the gender pay gap has been one of the more intensively studied topics in social science research. One can find

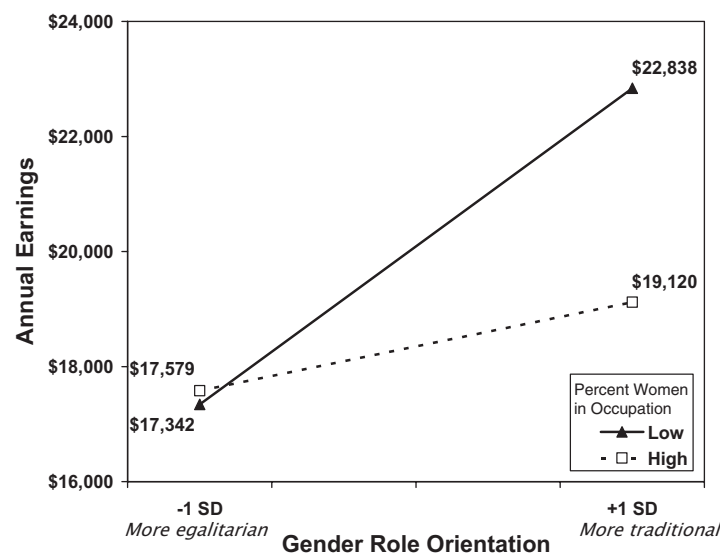


Figure 3. Occupational segregation as a predictor of the effect of gender role orientation on earnings. High scores indicate traditional (vs. egalitarian) gender role orientation.

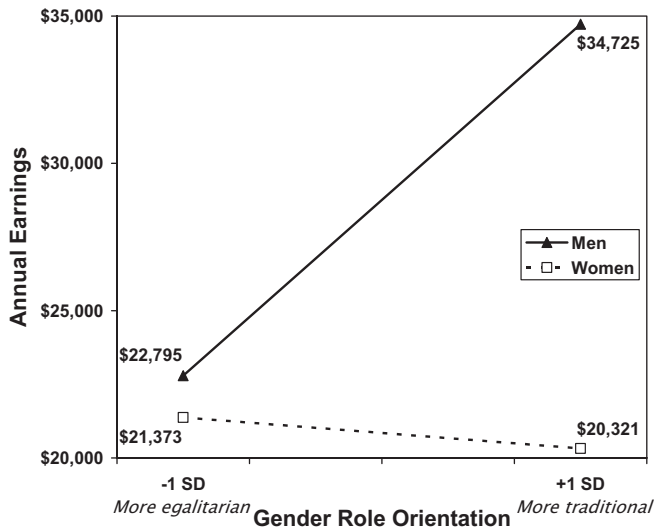


Figure 4. Gender as a predictor of the effect of gender role orientation on earnings, restricted to those working outside the home. High scores indicate traditional (vs. egalitarian) gender role orientation.

recent studies on the topic in a diverse set of literatures, including economics (Shannon & Kidd, 2003), industrial relations (Blau & Kahn, 2006), sociology (Marini & Fan, 1997), and gender studies (Renzulli, Grant, & Kathuria, 2006). More recently, another literature has developed on gender role orientation. This literature is also substantial (although not as voluminous as the literature on the gender wage gap) and multidisciplinary in its own right (see Brooks & Bolzendahl, 2004). Given that gender is the central variable in both literatures, it is surprising that relatively little research has integrated them. That may be because whereas research on the pay gap has generally been the province of labor economists, attitude toward gender roles is a psychological variable. As Earl (2005) has noted, only recently has research in the social sciences begun to cross the chasm between, arguably, its two most prominent disciplines—economics and psychology. Firestone, Harris, and Lambert (1999) found that traditional gender role orientations negatively predicted earnings; however, they did not examine a Gender \times Gender Role Orientation interaction, nor did they look at longitudinal changes in attitudes and earnings.

In the current research, we sought to bridge the gap between psychology and economics by presenting a model (see Figure 1) that integrates focal variables of both key disciplines: gender, gender role orientation, and earnings. Specifically, we posited that gender role orientation would be predicted by various antecedents and that gender would moderate the relationship between gender role orientation and earnings. With an important exception (Hypothesis 7a), most of the hypothesized relationships were supported. We begin by discussing the results of the Gender \times Gender Role Orientation interaction on earnings (Hypothesis 6).

Results of the present study suggest that this interaction, or the degree to which gender and gender role orientation jointly affect earnings, may explain part of the gender wage gap. Specifically, the wage gap—the difference between men's and women's earnings—was exacerbated in the presence of traditional gender role orientations. In comparing those who score in the upper and lower

quartiles (top and bottom 25%) on gender role orientation, the gender gap is twice as large for those with relatively traditional versus egalitarian gender role orientations. (These differences are magnified even further if one limits the analysis to those working outside the home.) This supports an approach to the gender wage gap in which individuals contribute to the gender wage gap through their Gender \times Gender Role Orientation configuration (e.g., Hollenbeck et al., 1987).

We suggested that traditional women (vs. egalitarian women) would suffer wage penalties, and traditional men (vs. egalitarian men) would enjoy wage premiums through the premise of self-fulfilling prophecies (Merton, 1968) and social role theory (Eagly, 1987). Our results illustrate that gender role orientation, as a means of preserving the historical separation of work and domestic roles, tends to do exactly that, even in today's workforce of roughly equal participation rates for men and women. Specifically, traditional gender role orientation provides men with strong earnings advantages, even when relevant control variables are taken into account. Conversely, whereas men benefit from traditional gender role orientation, one might expect women to benefit from egalitarian gender roles, but essentially we found that gender role orientation was much less predictive of earnings for women than for men. This implies that traditional men are rewarded in the workplace for seeking to preserve the social order, whereas traditional women seeking to do the same are not necessarily penalized. Indeed, women in general tend to make less than men, regardless of their gender role orientations.

Why might this be so? It is possible that the emphasis on the social norm that women are secondary breadwinners and their primary domain is in the home unduly affects both traditional and egalitarian women, such that although traditional women may experience lower earnings because of self-fulfilling prophecies, they may bring egalitarian women down with them by setting the precedent of lower pay for women. Women who are less committed to the workforce not only confirm the expectations of an individual with a traditional gender role orientation, they may

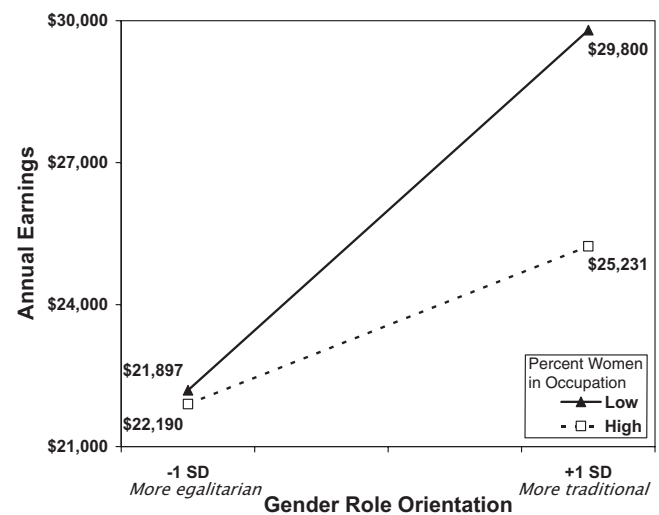


Figure 5. Occupational segregation as a predictor of the effect of gender role orientation on earnings, restricted to those working outside the home. High scores indicate traditional (vs. egalitarian) gender role orientation.

Table 5
Predicted Values Illustrating Effects of Gender, Gender Role Orientation, and Earnings Over Time

Time	Males			Females		
	-1 SD GRO	0 SD GRO	+1 SD GRO	-1 SD GRO	0 SD GRO	+ 1 SD GRO
All participants						
Time 1	\$ 5,193	\$ 9,457	\$13,741	\$10,844	\$10,096	\$ 9,348
Time 2	\$13,858	\$18,133	\$22,407	\$14,832	\$14,085	\$13,337
Time 3	\$22,395	\$26,669	\$30,944	\$18,761	\$18,014	\$17,226
Time 4	\$31,061	\$35,335	\$39,610	\$22,750	\$22,002	\$21,255
Limited to participants working outside the home						
Time 1	\$ 6,502	\$12,467	\$18,432	\$13,519	\$12,994	\$12,468
Time 2	\$17,418	\$23,383	\$29,348	\$18,781	\$18,225	\$17,730
Time 3	\$28,172	\$34,137	\$40,102	\$23,965	\$23,439	\$22,913
Time 4	\$39,088	\$45,053	\$51,018	\$29,226	\$28,701	\$28,175

Note. GRO = gender role orientation (+1 SD GRO = relatively traditional; -1 SD GRO = relatively egalitarian).

confirm an overarching societal stereotype concerning women in general.

Moreover, the mediation analysis suggests that the Gender \times Gender Role Orientation interaction may lead women and men to make different occupational choices (or have them made for them). Considerable research has shown that the male-female earnings differential can be traced, in part, to differences in occupational choice (e.g., gender segregation; Marini, 1989). Our results suggest that traditional men (vs. egalitarian men) and traditional women (vs. egalitarian women) make different occupational choices concerning gender-segregated jobs and the complexity of jobs. For instance, traditional gender role orientations led to higher earnings in male-dominated jobs than in female-dominated jobs, and men were more likely to hold male-dominated jobs. We did not, however, observe the hypothesized effect for job complexity, finding that the gender role orientation-earnings effect was stronger rather than weaker in low-complexity jobs. This may be because lower complexity jobs are often populated by individuals who are from backgrounds that are less conducive to having egalitarian gender role orientations (see the results of Hypotheses 1-5 below). Thus, some low-complexity (blue-collar) jobs may become hypermasculinized and seek to reward those who are the most traditional in terms of gender roles. Indeed, the height of the battle against equal pay for equal work originated in some of the least complex workplaces (e.g., factories; Land, 1980).

The impact that the inclusion of gender role orientation has on the prediction of earnings underscores the importance of understanding the causes of gender role orientation, which was another purpose of this study (as assessed in Hypotheses 1-5). The predictors of gender role orientation had yet to be investigated on a broad scale; thus, we presented Hypotheses 1-5 as an attempt to understand the driving forces behind one's gender role orientation. Indeed, because gender role orientation does seem to have an effect (in conjunction with gender) on earnings, understanding why some individuals are traditional and others are egalitarian becomes more important. As expected, women and African Americans were likely to have more egalitarian gender role orientations. Marriage was associated with more traditional gender role orientations, and intelligence and education led to more egalitarian orientations. We also found the predicted relationships of religion, place of upbringing, and mothers' outside employment with gen-

der role orientation. Thus, one's gender role orientation tends to be affected not merely by one's experiences while growing up, but also by one's education, marital status, and intelligence. This suggests that not unlike other attitudes, gender role orientation is a result of many influences and may even be altered by some of the predictors investigated in this study.

Hypothesis 5 investigated the effect of time on gender role orientation, suggesting that individuals are becoming less traditional (more liberal or egalitarian) over time. These findings are significant for several reasons. First, the study design separated cohort from temporal effects, and we found support for both. Specifically, younger people were less likely to endorse traditional gender role orientations. However, gender role orientations also liberalized over time on a within-individual basis, meaning that the average individual in the study became less traditional in his or her gender role orientation over time. The results showed that men's gender role orientations have changed more rapidly over time than have women's. However, this may be because men began (in 1979) as considerably more traditional, and, indeed, although the gap was much smaller in 2004 than in 1979, it still was significant. Overall, though, the results show that gender role orientations can and do change, which suggest implications we consider shortly.

Limitations and Strengths

One limitation of the study was the exclusion of personality from the prediction of gender role orientation. Because personality has been found to be an important predictor of work-related attitudes (Hulin & Judge, 2003), the absence of dispositional variables from the equation predicting gender role orientation is conspicuous. Although little research has used personality variables to predict gender role orientation (e.g., we are aware of no research linking the Big Five personality traits to gender role orientation), to gain a full picture of individual differences in these attitudes, the inclusion of personality variables is necessary. Another limitation is that whereas the effects of gender role orientation on most individuals are played out within the dynamics of married life (e.g., Deutsch & Saxon, 1998; Komter, 1989), we did not study intact couples. For example, it would be interesting to study the earnings of different constellations of married couples (traditional husbands with egalitarian wives, traditional wives with

egalitarian husbands, etc.), as well as their potentially separate effects on individual and joint earnings. A final limitation involves our inability to separate occupational choice into individual-driven decision making (i.e., one's intrinsic preference) and firm- or family-driven decision making (e.g., exogenous forces such as economic necessity or labor market discrimination). Although truly free choice is an easier concept to imagine than measure, future research should attempt to investigate these issues further.

These limitations notwithstanding, the study also has several strengths. First, we conceptualized and assessed two of the focal variables—earnings and gender role orientation—as time-variant variables that vary both between and within individuals. The results bore out this conceptualization because a substantial part of the variability in these variables was within individual. Second, the design of the study allowed a powerful test of what is, in essence, an interaction effect (Gender \times Gender Role Orientation) in predicting income. Given the high power requirements of statistical interactions (McClelland & Judd, 1993) and the high power afforded by multilevel designs (Bryk & Raudenbush, 1987), this study was able to detect an interaction that seems practically and conceptually important. Moreover, the design allowed us to separate cohort effects (age differences) from within-cohort temporal change. Because generational effects on social attitudes are often important (Ford & Donis, 1996), this was an important advantage.

Practical Implications

The results presented in this study have implications for individuals, for institutions, and, indirectly, for public policy. For some individuals, particularly those in some cultures or subcultures, traditional gender role orientations—those that prescribe different roles for men and women—are accepted or even endorsed. However, if gender equality is a universal virtue ethic (Anscombe, 1958), then our findings suggest that traditional gender role orientations work against the achievement of this value. To describe it in another way, few women working outside the home, even those with traditional values, would likely endorse women earning dramatically lower salaries than men for comparable work (i.e., the same types of jobs), yet this is exactly what our results show for traditional men and women because our analyses controlled for hours worked, job complexity, and occupational segregation. If traditional women are unhappy with this outcome, then the attitude that produces the outcome might merit reexamination.

Our results concerning the predictors of gender role orientation suggest implications for institutions. In particular, children raised by educated parents, those raised in urban environments, and those who are educated themselves are less likely to have traditional gender role orientations and, presumably, less likely to experience gender wage gaps. Time may appear to be on the side of the egalitarians (gender role orientations are growing more egalitarian over time), but historical trends often stall or reverse themselves, as witnessed by the recent widening of the gender wage gap after years of narrowing (Blau & Kahn, 2006). Parents, educators, employers, and media reinforce social norms and mores; given the results observed here, these groups should carefully attend to the values and attitudes that are communicated through messages, policies, and behavior. Indeed, as noted by Firestone et al. (1999), “Strong forces of socialization and gender-role norms teach children at very young ages that certain jobs are identified with either

men or women” (p. 194). Collectively, institutions that socialize children to accept traditional gender role orientations may be sowing the seeds of gender economic inequality.

From a public policy perspective, the passage of the 1963 Equal Pay Act (United States Equal Employment Opportunity Commission, 1997) demonstrates political recognition of the structural and external causes of the gender wage gap (as does the more recent political debate over the Fair Pay Act of 2007). The Equal Pay Act specifically states that employers should provide equal pay for work of equivalent value, as a composite of skills, effort, responsibility, and working conditions, regardless of whether the jobs themselves are different. For instance, the skills required by a job may be equal (e.g., social workers and probation officers), but because of occupational segregation (e.g., social workers are predominately female and probation officers predominately male), pay is not equal, favoring the male-dominated positions. At a practical level, our results confirm the problem that the Equal Pay Act sought to address in that in our sample, women received significantly less pay than men even when factors such as education, hours worked, and even job complexity are held constant (see Table 3). There is another way, though, that our results challenge legislative, external solutions to the gender wage gap, which is a subject to which we turn our attention next.

Future Research

We noted above that our results suggest that women do appear to suffer a wage penalty in that they are paid less even when background (e.g., education), work input (e.g., hours worked), and occupational (e.g., job complexity) factors are held constant. Although this might support the precepts of corrective measures such as the Equal Pay Act, however, our results also suggest that unless the passage of such legislation changes attitudes and social mores, the gender wage gap is likely to persist. Specifically, the substantial earnings differential observed in Table 4 controls for both job complexity and occupational segregation. This suggests that even eliminating the empirical effect of these factors will not eliminate the pay gap when employees have a traditional conception of gender roles. Thus, one area for future research is to investigate other factors that might explain why traditional gender role orientations operate to disadvantage women's pay. For example, does gender role orientation explain why women set less aggressive goals during salary negotiations (Stuhlmacher & Walters, 1999)? Or are there other ways in which men and women with traditional gender role orientations create self-fulfilling prophecies for themselves?

Another potentially fruitful area for research is in international and cross-cultural comparisons. Crompton, Brockmann, and Lyonette (2005) examined changing attitudes toward women working across individuals in three countries. They found that workers in the Czech Republic had the most traditional attitudes and workers in Norway the most liberal, with British employees lying between the two. Treas and Widmer (2000) examined attitudes among individuals in 23 countries, finding strong cross-national differences (e.g., individuals in Poland, Russia, or Italy had much less positive views about women working outside the home than those in Israel, Norway, or Sweden). Because all the participants in this study were Americans, it would be useful to see if the observed results generalize to other countries and cultures.

Finally, it would be interesting to investigate the role of happiness and job attitudes as outcomes of gender and gender role orientation. Our results have a certain normative assumption—that earning money is a social “good.” Although at a subsistence level, the social benefits of earning a living wage are inarguable, it is important to recognize that in industrialized nations such as the United States, the correlation between income and happiness is relatively modest (Rojas, 2007). This suggests caution in assuming, therefore, that women with traditional gender role orientations “suffer” as a result. Our study did not investigate happiness or well-being, and given that gender differences in happiness are quite small (Hyde, 2005), it is conceivable that future research on the topic would show that traditional women are not less happy than men or women with more egalitarian gender role orientations.

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