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Jennifer H. Lundquist, *University of Massachusetts - Amherst*



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Author(s): Jennifer Hickes Lundquist

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# When Race Makes No Difference: Marriage and the Military\*

JENNIFER HICKES LUNDQUIST, *University of Massachusetts-Amherst*

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## *Abstract*

*While “retreat from marriage” rates have been on the rise for all Americans, there has been an increasing divergence in family patterns between blacks and whites, with the former experiencing markedly higher divorce, nonmarital childbearing and never-marrying rates. Explanations generally focus on theories ranging from economic class stratification to normative differences. I examine racial marriage trends when removed from society and placed in a structural context that minimizes racial and economic stratification. I compare nuptial patterns within the military, a total institution in the Goffmanian sense, which serves as a natural control for the arguments presented in the literature on the retreat from marriage. Through a combination of event history and propensity score matching analyses using the NLSY79, I find that black-white difference in marriage patterns disappears in the military.*

Concern regarding marital dissolution, the increasing trend not to marry at all, and the correlation of these behaviors with nonmarital parenting is not new; however, the allocation of federal resources directed to combat these trends by encouraging people to marry is. The government now reallocates federal funds to aid marriage promotion policies in an attempt to regulate family formation among the welfare-receiving population (Bush 2002). This has special saliency for many African American families, disproportionate numbers of whom fall below the poverty line and thus are more likely to experience these policies directly.

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Pronounced black-white differences in U.S. family formation have been repeatedly documented in the literature, particularly as increasing attention is paid to overall family change in the past four decades. African Americans are more likely than whites to remain unmarried, have nonmarital births, and, if married, experience marital instability (Goldstein & Kenney 2000; Ventura & Bachrach 1999). The causality behind this racial divergence is complex, and a proliferation of opposing theories and contradictory findings has sparked a continuous, if circular, scholarly debate.

The military context provides a unique structural context to reassess these issues. I compare black-white marriage patterns in the civilian population and the US military, a total institution in the Goffmanian sense, which serves as a near natural control for many of the arguments presented in the literature on the retreat from marriage. In the case of the military, I find that the racial differences in marriage that are so prevalent in the civilian population disappear. My findings shed light on race-based arguments commonly cited to explain differences in family formation behavior, ranging from economic class and racial stratification to historic and present cultural differences.

Explanations for why family formation patterns differ by race in the U.S. population can be broadly grouped into two approaches: economic and normative. The economic argument centers on reduced incentives for marriage in an environment where male unemployment rates are high and wages low. Primarily a compositional explanation, the economic argument posits that the disproportionate poverty experienced by African Americans leads to lessened marriage rates among larger portions of the black population than the white population. This trend is exacerbated for black families due to historical and ongoing labor market stratification, as well as more recent declines in the manufacturing sectors that have differentially impacted black males (Lichter & McLaughlin 1992; Sampson 1995; Wilson 1987, 1996). The economic argument also indirectly incorporates the skewed gender ratio in the African American community, where higher mortality, morbidity and incarceration rates for black males, in addition to their high rates of joblessness, further reduce the availability of marriageable partners (Cherlin 1992; Hayward 2002).

Other research has questioned the magnitude of the role of economics in explaining racial differences in marriage. African American marriage behavior has been found to be linked only minimally to declines in employment rates (Mare & Winship 1991); and black family formation differences persist even among those with higher education and earnings levels (Cherlin 1998; Ellwood & Crane 1990; Lichter, Graefe & Brown 2003). Such findings have lent support to cultural arguments based in historical and continued race differences, including hypotheses on increased female independence (Stack 1997), more extensive kinship norms (Collins 2000; Farley & Allen 1987), and greater acceptance of nonmarital childbearing (Pagnini & Morgan 1996). Many of these explanations are rooted in theories of Western African cultural modes of family (Bledsoe 1980; Herskovits

1941; Littlejohn-Blake & Darling 1993; McDaniel & Morgan 1996; Price 1999; Sudarkasa 1981) or theories of cultural adaptation to slavery and its legacy (DuBois [1896] 1996; Frazier 1949; Patterson 1998).

The strength of difference in social customs as an explanation for racial family difference, however, is considerably weakened once attitudes are taken into account. Blacks do not differ from whites in their hopes of marrying (Ellwood & Jencks 2003; Furstenberg 2001; Oropesa & Gorman 2000; Tucker & Mitchell-Kernan 1995). Extensive interviews with low-income blacks suggest that a driving factor of marriage avoidance is less an aversion to marriage and more an aversion to the high likelihood of divorce in an unstable environment (Edin 2000). Contradictions in preference and behavior suggest that the high likelihood of divorce in an unstable environment, rather than an aversion to marriage, is a driving factor in marriage avoidance. Contradictions between preference and behavior suggest that structural forces impede the realization of a projected set of normative values; antecedent normative disparities are less likely to explain racial differences in marriage rates.

The U.S. armed forces are a relevant testing ground for examining the black-white marriage differential more closely because the military environment serves as a foil to the foregoing economic arguments. Goffman's classic analysis of the total institution (1961) describes a highly regulated and authoritative environment with an explicit hierarchy imposed upon members at all levels of the organization. While there has been no systematic study comparing the military to the general population in terms of race differences in family patterns, the receding importance of race as a stratifying variable in the military has been noted in other arenas, such as economic status. Unlike in the general population, similarly educated whites and blacks in the military differ little in terms of pay scale and career promotion.

The military was among the first U.S. institutions to become racially integrated, and disproportionate minority enlistment rates<sup>1</sup> suggest that it may compensate for labor market discrimination and lack of career opportunity elsewhere (Mare & Winship 1984; Moskos 1983; Sampson & Laub 1996). Survey responses from the 1999 Department of Defense Survey of Active Duty Personnel indicate that African Americans have different reasons for enlisting with the military than whites, with blacks more likely to join for military pay and job security (Lundquist 2004). Moskos and Butler (1996) find a greater degree of African American job mobility and superior opportunities for advancement in the Army relative to the civilian labor force. Relative to the civilian sector, returns to lower education levels are quite high in the military. Military wages are lower than the civilian average; however, on a relative scale, military wages are high for those who lack alternatives. And military service comes with compensatory benefits. Free on-base lodging or housing and subsistence allowances for off base living, tuition benefits, full medical coverage, subsidized childcare, and retirement pensions are perks that do not usually accompany the types of civilian jobs available to young people just out of high school.

The skewed gender ratio for black females in the civilian marriage market is also eliminated in the military context, in sheer quantity, as well as quality, of available males. Black men outnumber black women by a ratio of four to one in the enlisted military and all military men are, by definition, employed. Some researchers have theorized that an undersupply of females in a marriage pool results in higher overall marriage rates (Guttentag & Secord 1983). If this theory holds, however, it would have only a minor impact on total marriage rates, as females comprise a small minority of the armed forces. Although the military is a total institution, its borders are porous, with large numbers of civilians employed on base and large numbers of enlisted personnel living off base. Therefore, while it is unlikely that membership in the military narrows the marriage market to only those in the immediate military pool, the localized marriage market for black females is vastly improved relative to the civilian market.

In addition to, and perhaps because of, equal economic employment opportunities, military culture appears to override racial discrimination in other, less definable ways. The military's lack of residential racial segregation is a particularly significant departure from civilian life. All on-base housing is explicitly racially integrated, and there is evidence that off-base housing patterns—those subject to free market housing choices — are also highly racially integrated. Metropolitan areas with a strong military presence, such as Fayetteville and Jacksonville, N.C., fall among the top five least segregated cities in the United States (Farley & Frey 1994). Given the constellation of negative outcomes associated with racial segregation that affects blacks at all income levels (Massey & Denton 1993), its absence likely translates to a more equitable acquisition of human, capital and social capital; as well as to greater overall social cohesion among the races in the military community.

The dual impact of increased interracial contact and equal employment opportunity may contribute to diminished undertones of racial discrimination in the military environment. Blacks report that race relations are better in the military than in civilian life (Moskos & Butler 1996). This is not to say that racial discrimination is absent in the military context, however. Recent studies have shown that, within the military, more black soldiers than white soldiers perceive racial discrimination and are less satisfied than whites with the military's equal opportunity policy (Holmes 1999; Moore & Webb 2000). Yet, racial discrimination does appear to be more subdued in the military than it is in society as a whole. The prevalence of interracial marriage could be interpreted as an indicator of the quality of black-white relations. African American female soldiers are over three times more likely to marry outside their race than their civilian comparisons and African American male soldiers are twice as likely to do so (Farley 1999).

For the purposes of this paper, one of the most important ways that the military environment differs from larger society is that its equal opportunity policy seems to work more effectively, largely because its institutional norms deemphasize pre-enlistment social class and demand equal contact among the races. For this reason,

a comparative analysis of race in the military context accomplishes what most of the economic-based literature on black-white difference cannot. While the latter studies control for class-related variables, such as employment status, educational attainment, and earnings, it is difficult to devise a variable that encompasses the more insidious effects of racial discrimination beyond socioeconomic stratification. Ruling out cultural explanations for the moment, the persistence of differences between white and black family formation patterns even in cases of economic parity lends support to the hypothesis that racial discrimination manifests itself in ways less visible than class. Destabilizing side effects of racism — whether transmitted through residential segregation, higher overall stress levels, or other mechanisms — are one explanation for why even well-off African Americans experience higher levels of marital uncertainty than whites. If the military is indeed a superior employer in terms of both economic stability and racial equality (and an improved marriage market for black females), the military context serves as a natural experiment for non-cultural explanations for racial difference.

However, the argument is not quite that tidy. While the institutional aspect of the military disposes it well for research purposes, it also introduces constraints that potentially muddy the analysis. In addition to the military's economic stability and its generous benefits package, themselves potential stimuli of marriage, there may be additional incentives associated with marriage in the military. Marriage is a way to leave barrack life during the first term of enlistment. Living in the barracks, though not necessarily required, is free. Marriage enables the enlistee to move off base with a housing allowance. Furthermore, military members with dependents (which include children and/or a spouse) receive a higher housing allowance than members without dependents when there is not housing available on base. While it is unlikely that soldiers marry solely for the extra allowance, it may influence family formation decisions. An Air Force mechanic, for example, says that pay was not the reason he got married but "it helped the decision; it was something in the back of my mind." (Pexton and Maze 1995).

The institutionalist aspect of the military means that it can command conformity of its soldiers in a number of ways, as demonstrated in the case of its equal opportunity policy enforcement. At heart a conservative institution, the military may impose a system of traditional family values on its soldiers. This was not the case for enlisted troops historically, who were discouraged from marriage, hence the old Army adage, "If the Army wanted you to have a wife, it would have issued you one." In most companies, enlisted men had to receive permission from their company commanders in order to marry and were required to meet with a chaplain prior to the marriage (Janowitz 1971). The volunteer-era military, on the other hand, acknowledged that stable families were key to retention and, thus, prioritized support for soldiers' families (Bourg and Segal 1999). The military has created a strong support structure for families, including housing, daycare centers, parent support services, and school-age activity centers and programs, many of which are subsidized by the government. But this does not necessarily mean that

the Pentagon actively encourages the formation of new families. In fact, citing readiness issues in 1993, the Commandant for the Marine Corps announced a marriage ban on first-term enlistees (Connable 2002). Although the proposed marriage restriction was later rejected as a breach of personal rights, it suggests that family formation among low ranking soldiers may be seen as more problematic than advantageous. Still, even if family promotion is not a formal Pentagon goal, the informal diffusion of pro-family values within the military community generally cannot be ruled out as an additional influence, nor as a potential self-selector of individuals into the Armed Forces.

I have made a case for why the military serves as an excellent control for issues of socioeconomic status and race stratification, both of which undermine African American family formation behavior in larger society. I also acknowledge that my research design is not equipped to fully uncover underlying causal mechanisms. Definitely disentangling whether the results stem more from structural influences specific to the military or from an environment that mitigates racial discrimination and economic disparities is an analytical weakness. Nevertheless, the military context provides a unique counterfactual scenario. Addressing if and how an alternative environment interacts with race provides important insight into the ways we currently conceptualize race difference in civilian society.

## **Data and Methods**

The analysis in this paper uses data from the National Longitudinal Survey of Youth (NLSY79), which contain interviews with both black and white civilians and military enlistees<sup>2</sup> for a six-year period from 1979 to 1984. The military sub-sample lost its funding subsequent to the 1985 interviews and was thereafter dropped from the NLSY. While the dataset is dated for this reason, it is the only one that can be used to test this particular question.<sup>3</sup> The NLSY is unique in that it is the only longitudinal database with both a sizable military sub-sample and a civilian sample for direct comparison; most surveys exclude institutionalized individuals, including military members. One advantage to the early date of survey is that it represents a time period when urban poverty was deepening and becoming more spatially concentrated, the same decade in which Wilson (1987) developed his “marriageable male” hypothesis.

The NLSY has a multi-staged sampling design consisting of stratified random samples and a small rate of nonresponse.<sup>4</sup> The military sub-sample comprises enlisted personnel from all four military branches, over-sampled by sex. The comparison civilian sample is a cross-section of civilian youth augmented by an oversample of both minorities and economically disadvantaged nonminorities.<sup>5</sup> After limiting the sample to ages 18 and over, to blacks and whites only, and by unmarried status, the analytic sample is reduced from the initial 12,600 to 5,036 individuals. It is important to note that the young age of the NLSY cohort, with

ages ranging from 22 through 26 years at the end of the observation period, necessarily constrains the marriage analysis to be one of early marriage — not percent *ever* marrying.

In this article, I run two different multivariate analyses to examine black-white difference in marriage. I use event history multivariate analysis followed by propensity score matching analysis to further elucidate findings from the first analysis. I conclude with a graph of current military-civilian marriage rates, using cross-sectional data from the 1999 Survey of Active Duty Personnel and the 1999 Current Population Survey.

#### EVENT HISTORY LOGISTIC REGRESSION ANALYSIS

I construct an event-history file for each person-year beginning in 1979, when the sample was selected. In order to assess the risk of transitioning into marriage in years to come, I limit the sample to individuals who were either never married or divorced as of the year of sample selection. I then employ discrete-time event history models using these person-years as units of analysis and run two models estimating the probability of marriage: the first for the civilian sample, and the second for the military sample. In each, I examine predictors of marriage specific to the subsample, but the focus is on the race variable. Rather than running a third pooled model to test for an interaction between military/civilian status and race, I calculate a test statistic for the difference between the race coefficients in each model.

#### MULTIVARIATE PROPENSITY SCORE MATCHING ANALYSIS

After testing in the first multivariate analyses whether black-white differences in the propensity to marry exist in the military as they do in the civilian sector, matching analyses serve to more closely compare black civilians to black military enlistees and white civilians to white military enlistees in their propensities to marry. Selection of “elite” blacks into the military is a concern, as shown in the descriptive data of Table 1, and matching African Americans in the military to civilians who look exactly like them on all measurable characteristics is a means of testing the robustness of my findings in the first set of analyses. Compared to regression analysis, matching eliminates comparisons across dissimilar groups, maximizing efficiency and potentially improving the ability to draw causal inference (Rosenbaum & Rubin 1985; Rubin 1979; Smith 1997). By excluding all civilian respondents who do not match up with military respondents from the analysis, the matching process eliminates potential bias created by the unequal distribution of covariates across treatment and control groups. The NLSY data afford an excellent opportunity for propensity score matching analysis, with a small military “treatment” sample and a comparatively large sample of civilian “controls” from which to select as appropriate matches. Unlike regression analysis, matching also

avoids the potential for misspecification by eliminating the need to make assumptions about what functional form the analysis should take.

In two models separated by race, I match black civilians to black military enlistees, and white civilians to white military enlistees. The matching process is repeated for each year of the analysis and is based on a combination of (1) shared propensity scores (close to exact characteristics on all covariates); and (2) exact characteristics. I then evaluate annual marital outcomes on the basis of these matched groupings. The propensity scores are created by a linear estimation of covariates predicting whether civilians have the same characteristics as those who join the military.<sup>6</sup> All individuals are assigned a propensity score based on their fitted logit from the regression results. Using a matching algorithm program, each military "treatment" is then matched to up to six civilian "controls" according to two criteria: (1) that their propensity scores match within a very small range of scores, as specified by a caliper of  $\pm 0.1$  fitted logits; and (2) that variables for sex, race, unmarried status, and sample status are used as *exact* matching criteria, and for that reason are not included in the propensity score calculation.<sup>7</sup>

The matching process is randomly ordered within exact strata. Once a match is made, that civilian is removed from the pool of available controls, so that no control is matched to more than one treatment. To avoid biasing results toward those treatments assigned a higher number of matches, the groups of control matches are inversely weighted by their total number. Once all military members have been accordingly matched, the process is straightforward. I predict the logistic likelihood of marriage for the military treatments versus their civilian controls, both of which, postmatching, have become very similar groups.

## **Descriptive Data**

A concern in this article is the asymmetry of characteristics between those who elect into the military and those who do not. Table 1 is a descriptive chart showing distributions for the four groups that I analyze from the NLSY: military blacks, military whites, civilian blacks and civilian whites. The independent variables used in the analyses are a mix of controls associated with the prediction of marriage and those associated with socioeconomic selection into the military, many of which overlap. Most are constant over time, although age, educational attainment, school enrollment, full-time employment, and number of children fluctuate throughout the time period of observation. There is also sample crossover between civilian and military status. Attrition from the military is quite high over the six-year period of observation; I censor observations when they drop from the military into the civilian sample or, less frequently, switch from the civilian sample into the military sample. In the section that follows, I address statistically significant trends presented in Table 1.

Table 1 reveals the extent to which selection criteria differentiate those in military service from those in the civilian world. Gender composition is the most obvious difference, given that the military until 1973 was a predominately male institution. Whereas today women comprise 14% of the total military, as of 1979 the proportion was half that (African American female representation has since tripled). In the case of blacks, socioeconomic selection is salient in the respondents' education level. Blacks in the military are much more likely than black civilians to hold a high school degree, yet at the same time are significantly less likely to have attended college. This reflects the military's recruitment preference for high school graduates, and also suggests that those who join the military at ages 18 through 22 are either delaying or replacing college with enlistment in the military. Twenty-four percent more enlisted blacks than civilian blacks have a high school diploma, yet 16% fewer black enlistees than black civilians attended college. Black enlistees are statistically, although marginally, *more* likely than white enlistees to have graduated from high school, and equally likely to possess a college education, both of which are in opposition to racial trends in civilian life. Since socioeconomic selection is positively correlated with the likelihood of marriage, such differences are of interest.

Some research has identified a weak degree of positive selectivity of African Americans into the armed forces (Teachman, Call & Segal 1993). If, as has been suggested, blacks encounter superior labor opportunities in the military than in the civilian world, there may be greater competition to enlist, eliciting higher average selectivity of blacks than whites. Further support for the selectivity hypothesis is seen in mother's level of education, an NLSY variable on which military blacks differ from civilian blacks by about half a year of education. (While father's level of education might be a more accurate reflection of socioeconomic status, substantially fewer respondents knew their father's education level.)

AFQT scores (the Armed Forces Qualifying Test, a standardized test of trainability which was administered to everyone in the NLSY) are also higher for military blacks than for civilian blacks; however, the black-white difference is much greater than the military-civilian difference. Civilian blacks are significantly more likely to be single parents than are military blacks; some of this difference is due to the fact that they are also more likely to have been previously married. Other characteristics may balance out positive selectivity. Civilian blacks are significantly more likely than military blacks to have attended a private high school and to have attended college. They are also less likely to have been living in a single parent household at age 14, they come from smaller families, and they are less likely to have been raised in an urban setting, although the difference in residence is not statistically significant. Remaining variables on childhood residence and religious orientation indicate more similarity than difference across the African American samples.

TABLE 1: NLSY Variable Averages and Means Upon Original Sample Selection

	Unmarried, Black and White NLSY Respondents, Ages 18 to 22			
	Military Sample		Civilian Sample	
	Black Enlisted	Black Civilian	White Enlisted	White Civilian
	(22%)	(78%)	(15%)	(85%)
Independent variables				
Male (percentage)	94	93	50	55
Age	20.1	20.0	19.5	19.5
Rotter score	8.98	8.43	8.97	8.39
Conservative values	17.26	17.52	16.89	16.68
High school graduate (percentage)	95	89	71	89
Attended private high school (percentage)	1	5	5	9
Attended college (percentage)	17	17	33	47
Rural or suburban residence, age 14 (percentage)	15	26	18	21
Single parent, age 14 (percentage)	41	16	37	11
Religion in which raised (percentage)				
Catholic	10	33	7	36
Jewish	0	1	0	2
General Protestant	81	54	78	47
Other	5	8	10	13
No religion	3	5	5	4
Religious attendance (percentage)				
Never	21	31	18	23
Infrequently	33	38	24	32
Once a month	10	12	12	9
2-3 times a moth	16	8	19	9
Once a week	15	8	18	18
More than once a week	6	3	9	8
AFQT Score	32.6	59.0	25.0	60.5
Mother's education (years)	11.3	11.9	10.8	12.2
Currently enrolled in schoolfull time (percentage)	0	0	29	33
Currently employed full-time (percentage)	100	100	40	54
Previously married (percentage)	.01	.07	.06	1
Own children in household (percentage)	1	1	16	2
Number of siblings	4.9	3.5	4.7	3.0
N	926		4,110	

(N = 6,057)

Of relevance is the occurrence of a miscalibration error in the Armed Forces Vocational Aptitude Battery (ASVAB) during the period from 1976 to 1980, inflating test scores at the low end of the curve (Sticht et al. 1987). As a result, almost half of all enlistments during that time were mistakenly categorized into higher ASVAB percentiles than their scores merited; many of these enlistees would not otherwise have gained entrance into the military. This disproportionately benefited blacks, who are turned down from military service at higher rates than whites due to lower average test scores (blacks apply to the military at higher rates). Since sample selection for the NLSY took place in 1978, the NLSY military subsample was affected by this statistical norming error, which may exert a leveling effect on otherwise positive selectivity of African Americans into the military.

While selectivity of African Americans into the military appears to be positive, Table 1 suggests this is less the case for whites. White enlistees in the NLSY resemble white civilians in terms of high school education and AFQT scores, but they exhibit otherwise less privileged background characteristics. They are significantly less likely to have attended college or a private high school, come from a larger family on average (and one that was headed by a single parent), and report statistically lower levels of mother's education than civilian whites.

Table 1 shows that those in the military are about half a year older on average than civilians, a function of the fact that one must be 18 to enlist and that the sample was selected approximately six months previous to the first 1979 interview. The difference in the proportion of the subsample that lived in nonurban areas at age 14 is statistically significant between blacks and whites in general and also between white civilians and white enlisted personnel.

I also include in my analysis several measures controlling for differences in attitudes toward family formation behavior: two scale measures, the religion (if any) in which the respondent was raised and his or her frequency of religious attendance. The two scale variables, Rotter scores and Conservative Values scores, measure respondents' attitudinal characteristics as of 1979. The Rotter score is a gauge of personal "internal or external control," intended to reflect the extent to which people feel in control of their own destiny as opposed to having their fate decided by environment or chance. The Rotter score ranges from 4 to 16, with lower scores indicating a higher degree of internal control. These scores differ significantly by race, but not by military or civilian status, with African Americans scoring slightly lower internal control scores. Perceptions of internal versus external control are correlated with authoritarianism (Ray 1979), which may capture personality traits of individuals attracted to the military.

The conservative family values scale, a sample agree-disagree statement of which is "Women's place is in the home, not the office or shop," ranges from 7 to 28 by degree of conservatism. The only significant difference for this variable is between the white enlisted sample and the white civilian sample, where whites in the service are more conservative than those in civilian life. The scale suggests that white, but

not black, military types have more conservative values toward family and gender roles, as might be expected (at least among males).

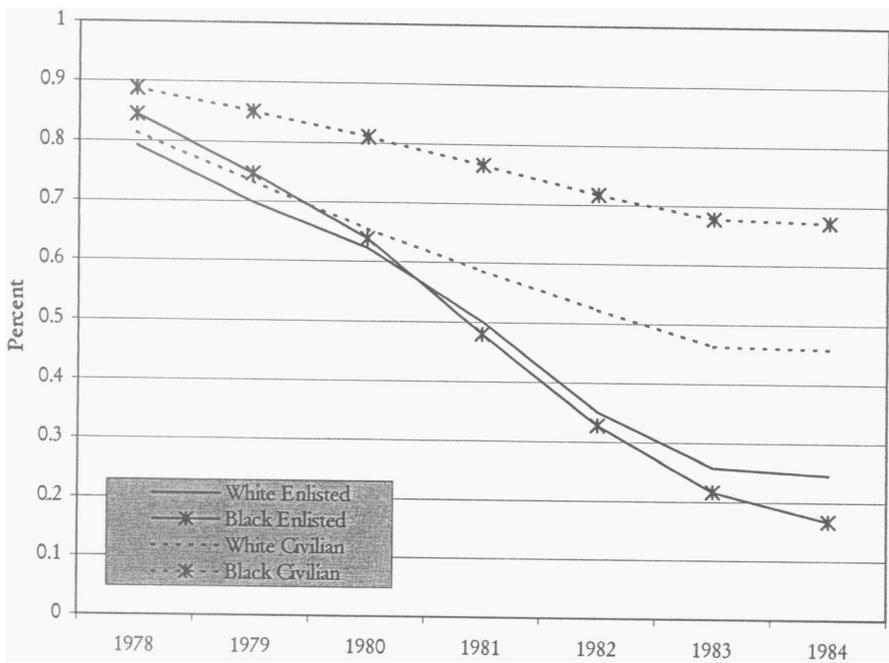
Remaining time-changing variables, such as employment status, enrollment status, presence of children, and marital history all directly affect the likelihood of marriage. By definition, military sample members are employed full-time and as such, are not enrolled in school full-time (although many enlisted personnel are in school on a part-time basis as a function of the military's extensive education benefits). White civilians in the NLSY are statistically more likely than black civilians to be employed and equally likely to be enrolled in school. While there is little variation in previous marriage histories (at most 1% of white civilians were divorced before first interview) there is a statistical difference between the black military sample and the other samples. Compared to the other three groups, black soldiers are least likely to have been previously married. Childbearing histories depart significantly for African American civilians from the other subsamples in that they are most likely to have children.

The characteristics measured by the NLSY are wide ranging and thorough; however, military enlistees are obviously not assigned at random to the military. Self-selection on the basis of any number of unobservables correlated with future marriage behavior is a possibility. Presumably, more traditional individuals are attracted to the military. The conservative family values scale and measures of religiosity are included as controls for this possibility, as is the Rotter score for gauging predisposition toward conformist behavior. However, these variables do not account entirely for personal traditionalism, nor for any psychological characteristics, such as achievement orientation, that might dispose individuals toward early marriage.

In sum, Table 1 tells a story of skewed population compositions in the US armed forces. In the context of nuptiality, these sample differences might be expected to predict higher than average aggregate levels of African American marriage. Figure 1 depicts the prevalence of never married (single) individuals in the NLSY sample over time. Civilian groups are differentiated from the military groups with dotted lines; diamonds distinguish African American trend lines from those of whites. As of 1978 when the NLSY79 samples were selected, marital status distributions already differed among the samples. Approximately 80% of military whites had not yet married, compared to 84% of military blacks, 82% of civilian whites and 88% of civilian blacks. It is unclear whether change in marital status occurred before or after initial enlistment for the military members, but it is clear that, post-sample selection, enlisted personnel began to marry at a more rapid rate regardless of race.

The comparative absence of a racial difference among the military curves compared to the civilian curves is noteworthy. The percent remaining unmarried for military members of both races decreased at similar rates during the time period, so that by the final panel year<sup>8</sup> almost 50% of those who were originally single had married. In contrast, the growing gap between civilian blacks and whites marrying

FIGURE 1: NLSY79 Percent Never Married Over Time by Sample Status



during the time period bears out national data trends. By the end of the survey period, white civilians had “outmarried” black civilians by 21%. The descriptive data on nuptiality in Figure 1 indicate not only that race difference is absent among the military samples but that, overall, marriage is more prevalent inside than outside the institution of the military. The African American trend might be surprising were it not for the comparatively high socioeconomic traits and differences in family structure shown in Table 1 characterizing those who join the military. The multivariate analyses that follow test whether the nuptial trends shown in Figure 1 are merely a function of sample composition differences or result from something more specific to military life itself.

### Event History Regression Results

Tables 2 and 3 show results from two models using logistic regression event history analysis over the period 1979 to 1983. The model in Table 2 predicts the event of marriage for unmarried members of the *civilian* NLSY sample (23,136 person years) while that shown in Table 3 predicts the event of marriage for unmarried members of the *military* NLSY sample (3,192 person years). The only structural difference between the two models, aside from sample composition, is that the civilian model

**TABLE 2: Event History Maximum Likelihood Logistic Regression — Predicting Marriage Civilian Sample Only**

	Odds Ratio		b	S.E.
Independent Variables				
<i>Race</i> (omitted: white)	.380	***	-.967	.077
Sex (omitted: male)	1.528	***	.424	.052
1957 cohort (omitted: 1961 Cohort)	1.814	***	.595	.126
1958 cohort (“)	1.388	***	.328	.080
1959 cohort (“)	1.263	***	.233	.074
1960 cohort (“)	1.065		.063	.072
Previously married (before 1979)	1.403	+	.339	.197
Age duration	11.310	***	2.426	.226
Age <sup>2</sup> duration	.944	***	-.058	.005
AFQT score	.999		-.001	.001
Conservative values score	1.022	**	.022	.008
Rotter score	.980		-.020	.013
Attended private high school	.878		-.130	.105
Rural residence, age 14	1.218	***	.197	.059
Number of siblings	1.016		.015	.011
Single parent, age 14	.988		-.012	.067
Religious attendance frequency	1.079	***	.076	.015
Raised catholic (omitted: Protestant)	.874	*	-.135	.062
Raised no religion (“)	.974		-.027	.129
Raised other religion (“)	.904		-.101	.079
Mother’s education	.981	+	-.019	.011
High school graduate (or GED)	1.004		.004	.078
Attended college	.992		-.008	.065
Currently enrolled in school	.429	***	-.846	.095
Currently employed	1.185	**	.170	.063
Intercept	—	***	-27.319	2.419
Log Likelihood = -6065.9				
N = 23,136 person years				
† p < .10   * p < .05   ** p < .01   *** p < .001				

has additional variables for time-varying full-time employment and full-time school enrollment; these variables are meaningless in the military model because, as a matter of military service, members are employed full-time, preempting full-time school enrollment. Employment and enrollment status are strongly linked to marriage behavior. Inclusion of these controls in the civilian model makes for a more reasonable cross comparison with the military group.

The coefficient for race (predicting for African Americans) is the primary coefficient of interest, and is italicized at the top of each table. The race coefficient in the civilian table (Table 2) is strongly and negatively associated with marriage,

**TABLE 3: Event History Maximum Likelihood Logistic Regression — Predicting Marriage**

	Military Sample Only		
	Odds Ratio	b	S.E.
Independent variables			
Race (omitted: white)	.898	-.107	.149
Sex (omitted: male)	2.393***	.873	.109
1957 Cohort (omitted: 1961 cohort)	.652	-.428	.266
1958 Cohort (omitted: 1961 cohort)	.801	-.222	.221
1959 Cohort (omitted: 1961 cohort)	.702†	-.354	.209
1960 Cohort (omitted: 1961 cohort)	.922	-.081	.198
Previously married (before 1979)	3.055**	1.117	.367
Age duration	5.465***	1.698	.519
Age <sup>2</sup> duration	.963**	-.038	.012
AFQT score	1.005*	.005	.003
Conservative values score	1.002	.002	.022
Rotter score	.996	-.004	.026
Attended private high school	1.250	.223	.231
Rural residence, age 14	.835	-.181	.124
Number of siblings	1.025	.025	.021
Single parent, age 14	1.214	.194	.131
Religious attendance frequency	1.038	.038	.035
Raised catholic (omitted: Protestant)	.755*	-.281	.123
Raised no religion (omitted: Protestant)	.567†	-.567	.301
Raised other religion (omitted: Protestant)	1.111	.105	.179
Mother's education	.918***	-.085	.025
High school graduate (or GED)	1.257	.229	.272
Attended college	1.070	.068	.133
Intercept	—***	-21.107	5.494
Log likelihood = -1332.4			
(N = 3,192 person years)			
† p < .10   * p < .05   ** p < .01   *** p < .001			

which is consistent with race differences shown in other research, where blacks have lower marriage rates overall and are more likely than whites to postpone marriage.<sup>9</sup> In contrast, the race coefficient in the military table (Table 3) has no bearing on marriage. A statistical test comparing the race coefficients across the two models indicates a strong and significant difference, at  $p < .0001$ . Thus, Tables 2 and 3 demonstrate that the descriptive data trends illustrated in Figure 1 are not merely artifacts of socioeconomic compositional differences in the military sample.

Notwithstanding various controls for socioeconomic status — educational attainment of both respondent and parent, AFQT scores, employment status, and childhood family structure — , as well as attitudinal measures, race continues to be one of the strongest predictors of remaining single in the civilian world, but means little in the military world.

One limitation in comparing Table 2 and Table 3 is their vastly different sample sizes. The civilian sample is seven times the size of the military sample, an asymmetry that elicits caution in drawing conclusions based on findings that are statistically significant in the civilian population but not in the military population. Therefore, a caveat is in order when comparing race coefficients across Tables 2 and 3 and concluding that respondent's race has no effect on marriage in the military environment. Even though results from the smaller military sample (Table 3) are generally robust, with a large number of strong effects, the race coefficient, although not close to significance, points in a slightly negative direction. As such, there is a slim possibility that the coefficient might have attained significance had the military sample been larger. However, this is unlikely.<sup>10</sup> In any case, not only is the race effect on marriage not statistically significant in military life compared to civilian life, but the *magnitude* of the effect is severely attenuated, reduced from negative odds of 62% to only 10%.

Apart from the alternating predictive power of race, most characteristics that drive marriage in the civilian sector have similar effects in the military. Asymmetric sample sizes aside, other covariates in the military sample exhibit very strong effects, and each model has a similar number of significant variables. Age (measured by duration in the sample) is a very strong predictor of marriage as one might expect; however, it has twice the magnitude for civilians as for enlistees. The relationship between the risk of marriage and time spent single is non-linear, with the likelihood of marriage rising with age but at a declining rate. In both samples, females are more apt to marry. This is likely a function of the observation period taking place early in the respondent's life with women marrying on average at younger ages. The risk of marriage for women in the military is twice that for civilian women, which may reflect the favorable local marriage market conditions for female enlistees.<sup>11</sup>

More conservative attitudes predict marriage for civilians, although the magnitude of the effect is small. Higher religious attendance rates are positively correlated with marriage for civilians but not for the enlisted during the observation period, as is being raised Protestant (rather than Catholic) for both groups. Being previously married predicts entry into another union for both military and civilians. Because the respondents are aged 18 to 22 upon beginning the observation period, their previous marriages occurred at very young ages, suggesting an anomalous group with unusual proclivities toward marriage. The stronger effect among the military members who had been previously married suggests that the military environment may heighten this proclivity.

Differences between the military and civilian samples in determinants of marriage (aside from race) are modest. High scores on the AFQT predict marriage, but the magnitude of their effect is small. For civilians, this test is not correlated with marriage. Mother's education level is negatively correlated with marriage for enlisted men and women, and slightly so for civilians. Oddly, having a high school degree is not a predictor for either sample, perhaps because there is so little heterogeneity in the distribution of this variable. Having some college education has no effect across either group. While this might seem inconsistent with universal predictors of marriage, the young age span of the NLSY respondents does not capture marital trajectories beyond exact age 23 for the youngest in the sample and exact age 27 for the oldest. Thus, the unexpected results for college education most likely reflect delay in marriage among the college educated.

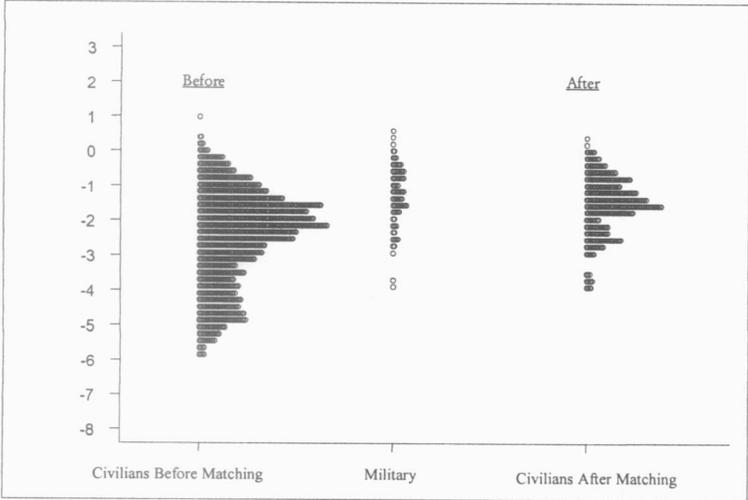
For civilians, having grown up in a rural setting is positively correlated with transitioning into marriage. Employment status and school enrollment, variables that were included only in the civilian sample, predict marriage in the expected directions. Employment is positively correlated with marriage, while enrollment in school is negatively correlated with marriage. Service in the military represents full-time employment, and therefore the employment effect on marriage can be assumed to apply universally in the case of the military.

### **Multivariate Propensity Score Matching Results**

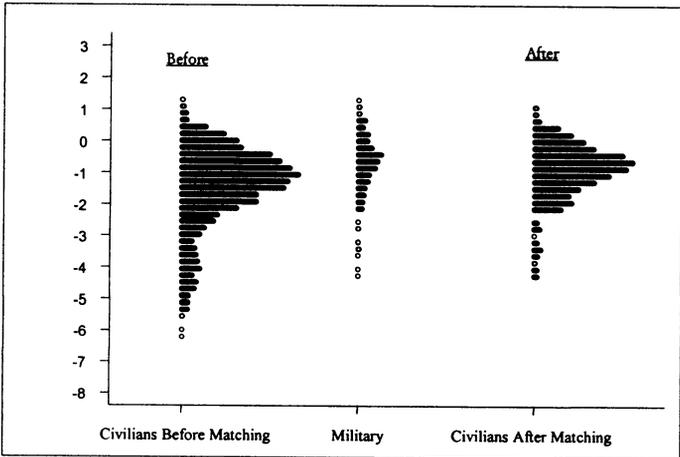
The event history analyses indicate strong differences in the effect of race on marriage depending on whether one looks at the military or the civilian sample. In this section, I examine blacks and whites separately, matching military blacks to civilian blacks and military whites to civilian whites on the basis of shared propensity scores (which reflect military sample characteristics). While two different sized sample groups in the previous models led to some ambiguity in drawing comparisons, the larger size of the civilian sample relative to the military is advantageous here. In propensity score matching, a large control group and comparatively small treatment group provide ample opportunity for the creation of close matches. And, as mentioned previously, matching is a gainly method for overcoming bias when there are imbalances among covariates, as is the case with the NLSY military and civilian samples.

All the variables listed in Table 1, except for sex, enrollment, and employment status are factored into the propensity scores. Enrollment and employment status are necessarily excluded because there is no variation for the military members. Sex is excluded from the propensity score calculations because it is specified in the exact matching criteria, along with race, sample status, and single marital status. Because some characteristics change throughout the observation period, I create annual matches based on new propensity scores and exact matching criteria. Figures 2 and 3 show distributions of propensity scores at the midpoint of the NLSY

**FIGURE 2: Propensity Score Distribution Before and After Matching  
Black Matched Samples**



**FIGURE 3: Propensity Score Distribution Before and After Matching  
White Matched Samples**



observation period, and serve to illustrate how different the prematched civilian samples are and how similar the post-matched civilian samples are to the military samples. Figure 2, which features the military and civilian African American groups, shows a dotplot of the civilian scores *before* matching and a dotplot of the civilian scores *after* matching. The military propensity scores are located between the before and after civilian scores for comparison. Figure 3 depicts the propensity score distributions in the same order, but for the white military and civilian groupings. A comparison of the pre- and post-matching civilian score distributions with the military score distributions illustrates how propensity score matching effectively discards cases that ill resemble the treatment (military) group, thereby controlling potential bias.

Before the matching process, the civilian groups have a more rightward distribution than the enlisted sample; but following the matching process, the shape of the distributions between the civilian and enlisted groups are almost exact. (Nevertheless, there is a greater likelihood of multiple matches for those military members that have a more negative skew.)

Distributional differences in the prematched samples notwithstanding, the civilian samples sufficiently overlap the military samples so as to ensure plentiful matches, except at the far leftward side where controls are more scarce. Excess civilian controls, concentrated primarily in the rightward skew of the distributions, are simply dropped; their dissimilarity from the military treatment groups contributes no information, making them irrelevant to the analysis. After specifying matches according to a combination of similar propensity scores and exact characteristics, the final step predicts the annual likelihood of marriage for the matched groups via logistic regression, shown in Table 4.

Table 4 presents annual odds ratios predicting the likelihood of marriage for each of the matched groups. Model 1 describes the black matched groups and model 2 describes the white matched groups. Black enlisted members show a consistent and very strong likelihood of marrying compared to their civilian control comparisons over the time period. Each year, black service members are three to four times more likely than black civilians to enter into a marital union. The effect is also positive for whites in the military group; however, the magnitude of the effect is weaker and the final year of comparison yields no significant difference between the two groups. Table 4 also depicts the average matched cases and sample sizes for each year of analysis.<sup>12</sup>

Overall, the matching analyses clearly show that even when enlisted individuals are matched to identical civilians, they depart on the likelihood of marriage. Black enlisted personnel are significantly more likely than black civilians to marry over the course of the panel. The same is true for matched whites. That the coefficients are so large for the African American matches compared to the white matches reflects the comparatively low probability of marriage for civilian blacks compared to civilian whites (confirming this, statistical tests comparing the coefficients across the two models indicate significant differences). The trends in Table 4 thus indicate

**TABLE 4: Marriage Likelihood by Race — Propensity Score Matching**

	Model 1 Blacks Military vs. Civilians	Model 2 Whites Military vs. Civilian
Matching marriage odds		
Odds of marriage 1979	3.89***	1.89***
Average matched cases	2.2	3.4
Unmatched treatments (percent)	5.7	5
Total observations	763	2839
S.E.	1.052	.211
Odds of marriage 1980	4.67***	1.27*
Average matched cases	3.1	3.9
Unmatched treatments (percent)	3.1	1.5
Total observations	631	2238
S.E.	1.387	.156
Odds of marriage 1981	4.56***	1.90***
Average matched cases	3.5	4.7
Unmatched treatments (percent)	1.3	1
Total observations	433	1632
S.E.	1.536	.271
Odds of marriage 1982	2.84**	2.27***
Average matched cases	4.1	5.1
Unmatched treatments (percent)	0	.06
Total observations	318	1094
S.E.	.935	.387
Odds of marriage 1983	3.36*	.926
Average matched cases	5	5.9
Unmatched treatments (percent)	0	0
Total observations	231	617
S.E.	1.67	.217

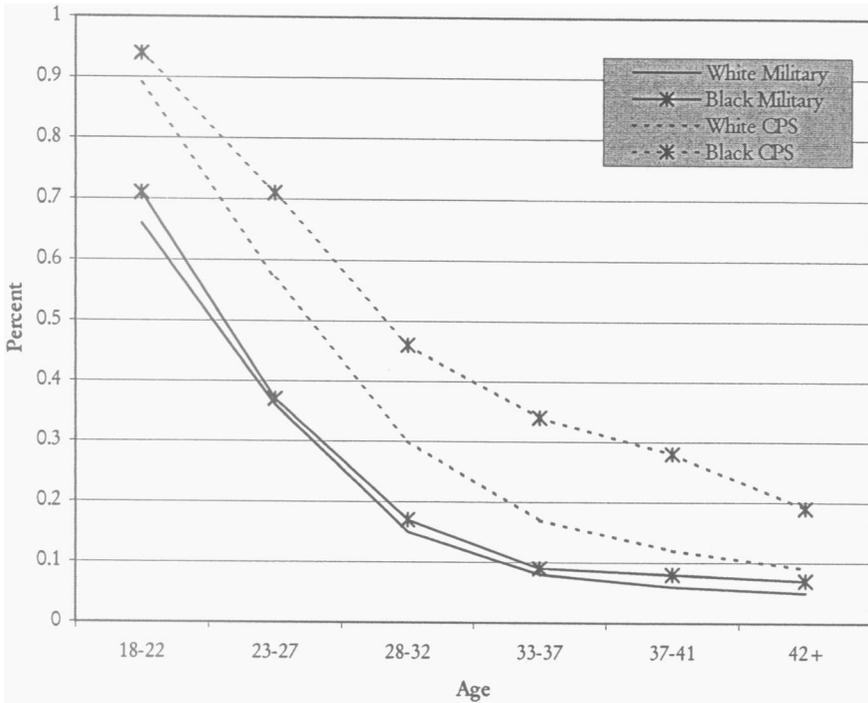
Notes: Odds ratios predict likelihood of marrying according to fixed propensity scores and year-by-year changing characteristics.

† p < .10    \* p < .05    \*\* p < .01    \*\*\* p < .001

that blacks and whites who serve in the military are, on the whole, significantly more likely to marry than their similar civilians counterparts, and little different from one another in the likelihood of marriage.

Because the NLSY includes marriage patterns only as far as the 1980s, it is reasonable to question its relevance today. In Figure 4, I graph descriptive data on marriage trends of military personnel and civilians as of 1999. These data come from the Survey of Active Duty Personnel (SADP) and the Current Population

**FIGURE 4: Percent Never Married by Age SADP and CPS September 1999**



Survey (CPS). Neither dataset contains sequencing information on marriage events, and are therefore crude cross-sectional snapshots of current day patterns. Nonetheless, the patterns indicate that the 1979-84 NLSY trends are similar to current patterns. In 1999, the CPS civilian data show a race gap in people never married by age, whereas the SADP military data show no such race gap. Like the NLSY, the SADP data also show higher proportions married within the military across race. Furthermore, Figure 4 suggests that the marriage trends I found in the NLSY apply to later adulthood as well.

## Discussion and Conclusion

How do these findings contribute to the literature on marriage differentials among blacks and whites in US society? By extending the focus from the societal context, they indicate that commonly found racial differences in marriage trends do not exist in a total institution like the military, providing a counterfactual perspective on the black-white marriage question. Event history models predicting the likelihood of marriage show that black civilians are less likely than white civilians

to marry, whereas black and white military enlistees exhibit similar — and very high — propensities to marry. The matching models reinforce these findings, showing substantial difference between civilians and military in the propensity to marry, even when they match almost identically on all other (measurable) characteristics.

The data that emerge on military marriage tell two stories. First, race ceases to play a role when it comes to marriage in the military. Second, marriage rates in the military are unusually high for everyone. Given theories that explain racial difference in society-wide marriage patterns, it would not be unreasonable to expect that even if marriage rates were higher in the military, there would still be a racial gap as in the civilian world. This not being the case, I theorize that specific characteristics of the military render racial differences in marriage rates irrelevant.

The military provides stable employment and offers opportunities for educational and career mobility, particularly for those with fewer opportunities in civilian society. Good, stable employment is a known predictor of marriage, and this economic leveling effect alone is one reason why marriage rates for blacks and whites are similar. Yet good, stable employment has not been enough to narrow the racial gap in marriage propensities in society. That the gap appears to have been bridged in the military environment indicates that something more than economic parity drives the effect. Racial differences in cultural norms have been commonly cited as an explanation; however, this explanation does not seem to apply in this analysis, as racial differences disappear in an alternative environment like the military. That being said, the military may have its own set of institutional norms, which effectively override any preexisting black-white differences. Yet it is also likely that the bridged gap in marital behavior largely reflects the decreased presence of racial discrimination in the military. The overriding importance of military rank compared to more typical stratifiers like race or class, the lack of residential racial segregation and more equal access to social and economic resources may create an overall social milieu in the military that is conducive to family formation.

Aside from aspects of the military that decrease the importance of race in predicting marriage, why might marriage be more common *overall* in the military than in the civilian sector? It deserves emphasizing that the NLSY data indicate only that marriage rates in the military are higher than those among civilians at *early ages*. Since the NLSY analysis does not extend beyond exact age 27 in the last panel year, it is possible that civilians catch up at later ages (although the SADP data graphed in Figure 4 suggests that they do not). Service in the military, rather than having a depressing effect on marriage as college attendance does, may exert a positive effect on the likelihood of marriage by creating a stable environment with a known career trajectory almost immediately following high school graduation.

In conclusion, the race-equalizing aspect of the military, in tandem with (or driven by) superior economic opportunity, appear to render race irrelevant to the prediction of marriage. Building on this effect, structural incentives specific to the

military may produce military marriage rates in both the black and white population that are higher than those of civilians. It could also be argued that it is impossible to separate a race-equalizing effect from the overall marriage incentives effect of the military; structural elements may entirely drive the phenomenon, such that racial cultural differences are not necessarily disproved, but simply overridden by immediate marital incentives in the military. The NLSY data do not provide the means to test this. Still, to deny completely the effect of racial discrimination on family formation patterns (outside the military) is atheoretical.

A similar comparative study focusing on divorce rates may provide some insight into this issue. If marriage in the military is driven primarily by short-term incentives — to leave the barracks, attain better housing, *etc.*— then marriages in the military should experience higher long-term dissolution rates. On the other hand, if the military provides a stable foundation for marriage by offering immediate and long term career stability, and, in the case of black soldiers, an environment that eliminates racial discrimination, then it may follow that military marriages have lower overall divorce rates. This raises an interesting way to illuminate the causality behind the military marriage trends found in this article. In order to further examine the issue, I am currently conducting additional analyses comparing divorce among the races in the military and in the civilian world.

## Notes

1. African Americans exhibit a higher propensity than whites to both join and re-enlist. African Americans are most overrepresented for their population size in the Army branch, at 30%. (Black women are more overrepresented than black men; 46% of enlisted Army women are African American.) Blacks are also 50% more likely than whites to re-enlist with the Army (Moskos & Butler 1996).
2. These are enlisted personnel only; officers were not interviewed in the NLSY dataset.
3. However, I do provide a graph of updated descriptive data from the cross-sectional 1999 Survey of Active Duty Personnel alongside CPS data at the end of the analysis to confirm that my findings extend to present-day trends.
4. See Frankel, Williams, and Spencer's 1983 NLSY79 Technical Sampling Report for more details on the sample design adjustment measures. Except for those who permanently drop out of the NLSY sample, missing data is minimal (the NLSY retention rate as of 1984, the final year of this analysis was 95%). The longitudinal nature of the NLSY data collection assure that marital status, the dependent variable, can be determined even for missed interview years. But some covariates were not collected annually and missing data could not be determined. Fortunately, the frequency of missing data on these variables is quite low. Religious frequency, private school attendance, number of siblings, and residence at age 14 were all missing at a miniscule rate of .01%. AFQT scores and mother's level of education were the only two covariates with a higher proportion of missing information at 7% and 5%, respectively. To avoid having to drop the cases, I imputed the missing data based on the prediction of the surrounding present independent

variables. The missing variables are not correlated with marital status, my dependent variable; however, both AFQT and mother's education level are significantly correlated with military sample status (military personnel are more likely to be missing on AFQT and less likely to be missing on mother education level). Mother's educational level is also significantly correlated with race for the civilian samples, where black respondents are less likely to know their mother's education level. This may reflect the greater degree of nonmaternal extended family residence for blacks than whites. While imputation on these two variables potentially introduces biases, when I ran the models without these two variables, the results were relatively unchanged.

5. I use the constructed weights, strata, and proportional sampling units provided by the NLSY in estimating the descriptive data that follows (Table 1 and Figure 1). As for the multivariate analyses (Tables 2-5), I ran both weighted and unweighted analyses to check for misspecification and found no significant differences (Winship & Radbill 1994). I therefore do not employ weights for the multivariate analyses, having determined that the dependent variable (marital status) is not a function of the NLSY's sampling stratification and thus the standard errors are not adversely impacted. All variables used in the sample selection process are included as independent variables in my analyses.

6. Matching on propensity scores obviates the problem of exponentially limited *exact* matches as the number of independent variables increase. The propensity scores are most easily conceptualized as fitted probabilities (estimated from fitted logits), which predict the likelihood of being in the military or not being in the military.

7. This was an iterative process. After dropping controls with unmatched propensity scores, I reran propensity scores based on those civilian and military members left in the pool before rematching. This ensured the closest possible propensity score match.

8. The final interviews (for the military sample) occurred halfway through 1984. Without retrospective data from 1985, marriage histories for 1984 are incomplete and I must therefore limit nuptial analyses to the penultimate year of survey.

9. The military sub-sample was discontinued when the respondents were in their mid to late twenties. As such, marriage delay and marriage avoidance are indistinguishable here.

10. To simulate what the race outcome might have been with a larger comparison sample of whites, I reran the analysis limiting the sample to civilian whites and black military members (results not shown) and found that black military members were *more likely* to marry than civilian whites, with a coefficient of .270 (odds of 31%), at a significance level at .02. The fact that the military are more likely, rather than equally or less likely, to marry than civilian whites suggests that the lack of significance for the race coefficient in the military model indicates lack of effect and not small sample size.

11. However, there was no significant interaction effect for the race and sex variables in either model.

12. The number of civilian cases matched to each military treatment case averaged approximately 4.6 for the black matches and 5.4 for the white matches. Sample sizes for the treatment military groups decline each year due to dwindling proportions remaining unmarried, as well as attrition from the military. In the first year of observation, when the military population was largest, approximately 5% of each military sample was unable

to locate matches from the civilian pool due to the propensity score caliper specification and the exact matching stipulations. The advantage of strict matching requirements is that resulting matches are close to identical along the range of covariates; the sacrifice is that not all treatments find matches. The matching analysis for the first panel year is representative of only 95% of the military sample; however, the number of matches improves each year as the military sample declines in size, increasing from 97% to 99% and, in the final year, 100%.

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