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The stratification of military service and combat exposure, 1934–1994*

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Abstract

Previous research has suggested that men who were exposed to combat during wartime differed from those who were not. Yet little is known about how selection into combat has changed over time. This paper estimates sequential logistic models using data from the Panel Study of Income Dynamics to examine the stratification of military service and combat exposure in the US during the last six decades of the twentieth century. It tests potentially overlapping hypotheses drawn from two competing theories, class bias and dual selection. It also tests a hypothesis, drawn from the life course perspective, that the processes by which people came to see combat have changed historically. The findings show that human capital, institutional screening, and class bias all determined who saw combat. They also show that, net of historical change in the odds of service and combat, the impact of only one background characteristic, race, changed over time.

Keywords

Military; Social stratification; Race; Class; Human capital; Life course

Some men are killed in war and some men are wounded, and some men are stationed in the Antarctic and some are stationed in San Francisco. It's very hard in military or personal life to assure complete equality. Life is unfair.

- President John F. Kennedy,

March 21, 1962

For the last seven years, members of the United States armed forces have been sent into combat, first in Afghanistan and then in Iraq. Hundreds of thousands of troops are currently serving in these war zones (Department of Defense 2007). The Department of Veterans' Affairs (2009) estimates that there are More than 17.7 million wartime veterans living in the US today. For the first time in its history, the US has waged war without also drafting soldiers. Popular and congressional commentators have argued that during the draft era, the burdens of war were more equitably distributed than they are today (e.g., Rangel 2002).

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However, previous research has shown that the men who fought and died during at least some of the draft-era wars tended to come from families and neighborhoods with fewer socioeconomic resources (Allen, Herrmann, and Giles 1994; Mayer and Hoult 1955). This unequal exposure to risk could arise in one or a combination of two ways: 1) people who enter the military may differ from those who do not, or 2) people already in the military who are exposed to combat may differ from those who are not. Therefore, in order to assess the equity of combat exposure, it is important to know both who enters the military and who among those in the military sees combat.

The following paper evaluates whether the processes that led to these outcomes changed over the course of six decades, beginning shortly before World War II and ending shortly after the first Persian Gulf War. Little previous research has examined how the factors that lead men to enter the military and to be exposed to combat have changed historically. Life course scholars have suggested that people's lives are shaped, in part, by historical context (Elder and Johnson 2002). In different eras, people may experience outcomes, such as military service and combat exposure, as a result of different processes. At least one paper suggests, for example, that the average characteristics of the men who saw combat changed during the course of the Vietnam war (Gimbel and Booth 1996). More recently, researchers have tried to identify the average characteristics of the men and women who have been sent to fight in the wars in Iraq and Afghanistan (Congressional Budget Office 2007; Kane 2006).

Regardless of who serves, the costs of combat are high. Some of these consequences follow from the battlefield experience. Combat soldiers are more likely to die and to be injured than are rear echelon troops and than soldiers who are not deployed to war zones. When they return from war, they suffer from poorer mental and physical health than troops who did not experience combat (e.g., Schnurr and Spiro 1999). They are more likely, by some accounts, to become divorced (e.g., Elder, Shanahan, and Clipp 1994; Pavalko and Elder 1990; Ruger, Wilson, and Waddoups 2002). They may also be more likely than non-combat veterans to be unemployed and to have lower earnings (Savoca and Rosenheck 2000). These findings suggest that combat is associated with negative outcomes. The following paper examines the extent to which the burdens of war have been unequally distributed historically. It also examines which characteristics have been most closely associated with the stratification of military service and combat exposure in the US military during the last sixty years of the twentieth century. It examines the class, race, and educational characteristics of the men who served in and fought for the US armed forces.

Paths to combat

Previous researchers have examined how people came to experience a variety of military outcomes, including service, combat, and death (Angrist 1991; Badillo and Curry 1976; Gimbel and Booth 1996). People come to experience each of these outcomes by following different paths (Figure 1). After they turn 18, people can choose to enter the military, enroll in college, get a job, or do none of these things. They may also be incarcerated. Between 1940 and 1973, US citizens confronted the prospect of being compelled to serve in the military under the draft. Since 1973, they have had the option to choose to serve in the armed forces voluntarily (Flynn 1993). Regardless of whether they were drafted or volunteered, after they enlisted, they were then assigned to a military occupational specialty (MOS). Some MOS's are classified as involving combat, such as infantry and artillery. Service-women are not technically eligible to serve in combat MOS's (Harrell, Castaneda, Schirmer, Hallmark, Kavanagh, Gershwin, and Steinberg 2007). Non-combat occupational specialties range from law enforcement and administration to electronics repair and medical assistance. Regardless of occupation or gender, service-members can be sent to war zones,

where they may or may not see combat. Methodologically and conceptually, each of the paths in the figure can be considered a transition. For each transition, only certain people are at risk. Everyone who is eligible to serve, for example, is at risk of entering the military. However, only those in the military are at risk of experiencing combat.

Theoretical perspectives on the stratification of combat

Class bias

The primary theory regarding the stratification of combat, which is related to status reproduction theory (Bourdieu 1984), argues that people experience combat because of their class background. According to this account, men are less likely to fight in wars if they grew up in wealthier and higher status families than if they grew up in poorer and working class families (Hagan 2002). Such differences in combat exposure could result from one or a combination of two processes. First, men may be less likely to enter the armed forces if their parents have more socioeconomic resources. For example, they may avoid military service by enrolling in college. They would then be less likely to see combat than men whose parents had fewer socioeconomic resources. If this process governs selection into combat, service-members should have lower average parental socioeconomic status than civilians. The service-members who see combat would then have similar status to the service-members who do not. Second, men may be equally likely to enter the military at all levels of socioeconomic status. Once in the armed forces, however, service-members may be more likely to be exposed to combat if their parents have lower status. For example, they may be less able to navigate the military bureaucracy than more privileged service-members and therefore more likely to serve in more dangerous positions. If this process governs selection into combat, combat veterans should have lower parental socioeconomic status than other veterans and non-veterans. Based on these two alternatives, the analyses test the following prediction:

Class bias hypothesis: People with higher parental socioeconomic status are less likely to see combat than people with lower parental socioeconomic status.

Previous research testing the class bias hypothesis has focused primarily on selection into combat exposure and wartime mortality. The findings suggest that, at least during the Vietnam and Korean wars, the men who experienced combat tended to come from families and neighborhoods with fewer socioeconomic resources than those who did not (Allen et al. 1994; Badillo and Curry 1976; Barnett, Stanley, and Shore 1992; Martin 1986; Mayer and Hoult 1955; Wilson 1995; Zeitlin, Lutterman, and Russell 1973). This disproportionate exposure to risk may stem from differences between service-members and civilians. Indeed, men from families with lower socioeconomic status were more likely than those from families with higher socioeconomic status to enlist in the armed forces during the volunteer era (Bachman, Segal, Freedman-Doan, and O'Malley 2000; Kleykamp 2006; Segal, Burns, Falk, Silver, and Sharda 1998; Teachman, Call, and Segal 1993a; Teachman, Call, and Segal 1993b; but see Kane 2006). During the Vietnam era, men were more likely to enter the military if they grew up in families with lower socioeconomic status than if they grew up in families with higher status (Martin 1986; Wilson 1995). These findings are all consistent with the class bias hypothesis.

In practice, some research regarding class bias has also tested the possibility of race bias. The findings of this research suggest that race has different effects on the odds of making different military transitions. During the Vietnam era, nonwhite service-members were as likely to serve in combat positions as were white service-members. Yet they were more likely to experience combat (Gimbel and Booth 1996). During the early years of the volunteer era, blacks were disproportionately likely to serve in the military (Mare and Winship 1984). During the early years of the recent war in Iraq, however, they were not

disproportionately likely to be killed (Gifford 2005). These findings suggest that race and, by extension, other pre-service characteristics may have different effects on different military transitions.

Dual selection

While the class bias account focuses on how family and other ascriptive characteristics determine who serves in the military and who is exposed to combat, the dual selection account focuses on how these outcomes are determined by people's personal characteristics and achievements. At any one point in time, the people who serve in the military are determined by a process of dual selection. In broad outline, the ideal type of this process is similar across a variety of institutions, not just the armed forces, but also colleges and work places. In the first step, people decide, based on their options, whether or not to try to enter each of these institutions. Through their decisions, they collectively determine the potential supplies of workers, students, and soldiers. In the second step, the institutions decide which of these prospective entrants to accept. They make these decisions based on a variety of considerations, including their needs for personnel. This combination of personal and institutional decisions determines who serves in the military, who enrolls in college, and who enters the labor market.

As with the class bias account, the dual selection account suggests, in part, that people should be protected from combat if they have more resources. However, this account focuses not on family, but on personal resources. It is similar to traditional supply-side explanations (Becker 1964). According to this account, people with more resources, such as cognitive ability and academic achievements, are less likely to fight in wars than people with fewer such resources. As with class bias, this association could arise either from selection into service or selection into combat. First, people with more cognitive and academic resources should have more options than those with fewer such resources in the civilian labor market. They may be more likely to choose to continue their schooling and therefore be less likely to enter the armed forces. Second, if they enter the military, they may have access to a greater range of technical occupational specialties and thus be less likely to be sent into combat. Regardless of the mechanism, human capital theory suggests the following prediction:

Human capital hypothesis: People with more academic potential are less likely to see combat than people with less academic potential.

Some previous research is consistent with this hypothesis. During at least some of the draft era, service-members had lower IQ scores and lower high school rank than civilians (MacLean 2005). During the volunteer era, they have tended to have poorer grades in high school than civilians and to be more likely not to plan to go to college (Bachman et al. 2000; Kleykamp 2006; Segal et al. 1998; Teachman et al. 1993b). In addition, Vietnam veterans with higher IQ scores were less likely than those with lower scores to be exposed to combat (Gimbel and Booth 1996). These findings suggest that people with greater cognitive ability have traditionally been shielded both from service and from combat.

While human capital should lead men with greater ability to be protected from combat because of personal choices, the dual selection account also implies that men with lower ability should be excluded from service and therefore from combat because of institutional choices. Similar to the labor market, the military screens potential incumbents for entry. Military recruiters are instructed to reject potential recruits with lower physical fitness, cognitive aptitude, and educational attainment. Over time, they may adjust the eligibility standards based on the average characteristics of the people who apply to enlist and the needs of the military (National Research Council 2006). In this respect, the military differs from other classic total institutions, such as the asylum and the prison, neither of which

exclude incumbents (Goffman 1962). It has excluded potential recruits on the basis of both ascribed and achieved characteristics, including race, sex, sexuality, attainment, and ability. For most of the twentieth century, for example, they have rejected people at the bottom of the aptitude and educational distributions (Angrist 1998; Laurence and Ramsberger 1991). This screening implies that people at the lowest end of the ability and educational distributions in the population should be excluded from the military. Therefore, they should also be excluded from combat. The implications of the institutional screening account suggest the following prediction:

Institutional screening hypothesis: People with less academic potential are less likely to enter the military and therefore less likely to experience combat than people with more academic potential.

Despite the fact that the military explicitly excludes people who fall below the cutoff on the admissions tests, few researchers have examined the extent to which people at the bottom of the ability distribution are less likely than those with greater ability to serve in the military. No research has explored the extent to which they are thereby excluded from combat. People who have college aspirations and greater abilities are less likely to enter the military than to go to college, but more likely to enter the military than to apply for entry-level jobs or to remain unemployed (Kleykamp 2006; Mare and Winship 1984). Men with low scores on the military's test of cognitive ability, the Armed Forces Qualifying Test (AFQT), have tended to be under-represented in the volunteer military (Congressional Budget Office 2007; Warner and Asch 2001). These findings imply that people with lower ability may not enter the armed forces, and thus, should be at less risk of being sent into combat.

Life Course

While the preceding accounts focus on one point in time, life course researchers argue that people and their social contexts change over time. They have suggested that people experience different life course trajectories as a consequence of several factors including relationships, agency, and history (Elder and Johnson 2002). Similarly, some researchers have evaluated the importance of relationships in determining whether men were exposed to combat as a result of class bias (Zeitlin et al. 1973). Other researchers and theorists have elaborated the role of agency in determining people's experiences consistent with the human capital hypothesis (Teachman et al. 1993b). According to the life course perspective, however, people may also experience different outcomes as a result of history or the cohort into which they were born. Blacks, for example, served in segregated units and were excluded from combat during World War II. In 1948, the armed forces were ordered to become racially integrated (Foner 1974; Moskos and Butler 1996). People may experience class bias, race bias, or dual selection effects that are moderated by historical context. Based on this reasoning, I test the following general prediction:

Historical change hypothesis: The characteristics that influence combat exposure vary in different historical eras.

Some previous research suggests that there have been historical changes in the characteristics associated with different military outcomes. Previous researchers have examined how the social relationships shaping the events of the transition to adulthood have changed historically, including the odds that men would serve in the military (Hogan 1981). Yet only one paper has examined how historical context moderates the factors that lead people to be exposed to combat. It focused on historical changes during the decade that US troops served in the Vietnam war. It showed that the soldiers who saw combat at the beginning of that war differed from those who saw combat at the end of the war in terms of their cognitive test scores (Gimbel and Booth 1996).

Data and Methods

The analyses that follow are based on data from the Panel Study of Income Dynamics (PSID), a longitudinal survey of families and individuals, which has been conducted since 1968 (Hill 1992). The PSID is a unique resource for assessing how the factors affecting selection into combat may have changed over time. It is the only nationally representative survey including respondents born in a wide range of years, which incorporates measures of both military service and combat exposure, on the one hand, and of pre-service class, race, and education, on the other. In addition, distinct from much of the data used in previous research, it includes information about the characteristics of individuals rather than of neighborhoods. Much previous research examining class bias in combat exposure and wartime mortality has been forced to use ecological methods to extrapolate the class and race characteristics of the people who were exposed to combat. It has inferred the individual characteristics of the people who were killed in the Vietnam war (Allen et al. 1994; Barnett et al. 1992) or who have fought in the Iraq war from the characteristics of their neighborhoods (Kane 2006). By contrast, the PSID contains information reported by a representative sample regarding their parents' characteristics.

The original PSID sample consists of a nationally representative sample of 3,000 families and an over-sample of 2,000 low-income families. This original sample has been supplemented by what the PSID refers to as "split-offs," children of the original sample members, as well as spouses who divorce and form new families. Between 1990 and 1995, the sample also included a supplementary sample of Latinos. The female respondents did not respond to the question about combat. Therefore the analyses focus on the male respondents. They draw on information from multiple waves of the survey, but particularly the 1994 wave, during which the male heads of household were asked detailed questions about their military service. During 1994, 7,649 male heads of household responded to the survey. The analyses are based on 7,162, or approximately 93 percent, of these respondents. Between 1968 and 1994, across the first 27 waves of the PSID, the sample response rate was approximately 45 percent, which is comparable to other long-standing longitudinal surveys including the National Longitudinal Survey of Youth (Weinberg and Shipp 2000). For the descriptive analyses, the statistics are calculated both with and without the 1994 core weights that account for both the sample design and differential response. The regression analyses are based on unweighted data.

Outcomes

The outcomes of interest are based on two questions asked in the 1994 wave of the survey, which have not been analyzed in published research. The first outcome is based on a question that asked, "Were you ever on active duty in the military service?" If the respondents answered yes, they are coded 1; if they answered no, they are coded 0. The second outcome of interest concerns combat exposure. This measure is based on the answer to the following question, "Did you ever fire a weapon against the enemy or come under enemy fire?" This question was only asked in the 1994 wave of the survey. Approximately 30 percent of men who had served in the military answered yes to this question.

Background variables

Race—To capture the relationship between race and combat exposure, the analyses use a measure derived from a question that was first asked of all household heads in 1985, and asked of new household heads in subsequent years. This variable codes men with a 1 if they responded that they were black, 0 if otherwise.

Class—Consistent with previous research regarding the class bias of combat exposure and wartime mortality, the analyses measure respondents' family background in three ways: parental finances, parental education, and intact family. They incorporate a measure of parental financial status based on the answer to the following question: "Were your parents poor when you were growing up, pretty well off, or what?" Following previous research (Meer, Miller, and Rosen 2003), the analyses code respondents according to three categories: parents poor, parents average, and parents well-off. The respondents also provided information about their mothers' and fathers' educational attainment. If they reported that their parents had fewer than twelve years of education, they are coded as having parents with less than a high school diploma. If they reported that their parents had at least twelve years of education but had not graduated from college, they are coded as having parents with a high school diploma. If they reported that their parents had at least a college degree, they are coded as having parents who were college graduates. The measure used is the highest of the parents' educational attainment. If the respondent provided neither the measure of mother's nor the measure of father's education (14 percent), this variable is coded as missing. The measure of intact family is derived from a question that asked if the respondents were living with both their "natural parents" until the age of 16.

Educational attainment—The measure of educational attainment is derived from a series of questions that were first asked in 1985, regarding how many years of schooling the respondents completed. Respondents reported whether or not they had completed high school. If they did, they reported whether or not they attended college. If they did go to college, they reported whether or not they got a college degree. The measure is coded into a variable with the following categories: less than high school; high school degree; and college degree.

Higher education is potentially endogenous to military service. People may not go on to college because they enter the military. Alternatively, they may use funds from the GI bill to get a college degree after their service (Mettler 2005). Therefore, the measure for veterans is based on their preservice education. This measure captures the number of years of education that veterans or service-members had attained before they entered the military. It incorporates information from a question included in the 1994 wave of the survey, which asked veterans: "If you attended college, did the beginning of your military service come before, in the middle of, or after your undergraduate college education?" The answer to this question is used to modify the preceding measure of education in order to generate a measure of pre-service educational attainment.

Cohort—The goal of the paper is to examine historical changes and trends. The paper therefore includes a measure of cohort and compares the fit of models that include interactions between the cohort variable and the other background variables. Respondents are assigned values for the cohort measure based on the year when they turned 18, according to the following categories: <1941 = Pre-World War II; 1941–1945 = World War II; 1946–1949 = Post-World War II; 1950–1953 = Korean War; 1954–1963 = Post-Korean War; 1964–1973 = Vietnam War; and >1973 = Post-Vietnam.

Models

The models used in the analyses are sequential logistic regression models, which were originally developed to study educational attainment (Lucas 2001; Mare 1980). They have alternately been called continuation ratio or "Mare" models (Buis 2008; Long and Freese 2006). They simultaneously model the nested transitions that constitute a trajectory. For example, when used to study educational attainment, they have modeled the transition from high school graduation to college attendance, and the transition from college attendance to

college completion. They produce coefficients based on information provided just by the sub-sample of respondents who were “at risk” of making each transition (Buis 2008). Thus, they explicitly juxtapose the effects of the independent variables on one transition with those effects on other transitions. Research based on these models has commonly found that social background plays a larger role in the earlier than in the later educational transitions (Lucas 2001).

The same logic of nested transitions applies to the process by which people come to experience combat. Thus, in the current case, the models are used to examine the transitions from civilian to soldier and the transition from soldier to combat soldier. Because of data limitations, they do not include all of the paths in figure 1, but focus on those into the military and into combat. In the language of the model, men who did not serve in the military were at risk of entering the military, but not of being exposed to combat. Servicemen were at risk both of entering the military and of serving in combat. The virtue of the model in the current case is that men can only see combat if they have enlisted in the military. Net of this assumption, however, the variables can affect the transition into the military and the one into combat independently. They are not constrained to affect each transition in the same way, but can affect each transition differently, in terms of the strength and direction of their effects. The general model is shown in equation 1:

$$p_{ki} = \frac{\exp(\alpha_k + \lambda'_k X_i)}{1 + \exp(\alpha_k + \lambda'_k X_i)} \Big|_{pass_{k-1}=1} \quad [1]$$

where X represents a matrix of explanatory variables, λ' represents a vector of estimated parameters linking the explanatory variables to the outcome, and α represents the constant for the outcome. $Pass_{k-1i}$ indicates whether or not a person has passed the previous transition. The following analyses include two transitions ($k = 1, 2$) where 1 represents the transition into military, and 2 represents the transition into combat. This model is estimated in Stata using the sequential logit option developed by Buis (2007).

Sample attrition

The people who left and those who stayed in the sample may have different characteristics. These differences could produce estimates of the effects of the background characteristics on the outcomes that are biased. For example, people may be more likely to leave the sample if they are poor than if they are rich. Rich people, in turn, may be less likely than poor people to enter the military and to see combat. If this is the case, the analyses could underestimate the association between poverty and military service or combat exposure. They would fail to accurately assess class bias because of sample attrition.

The current paper addresses the impact of differential attrition by adopting a strategy used in a recent paper examining growth curves in health that also used the PSID (Willson, Shuey, and Elder 2007). It models the process that led respondents to stay in the survey by means of the following procedure. The original 1968 respondents are assigned values of a variable that is coded either with a 1 if they remained in the sample or a 0 if they had dropped out of the sample by 1994. This variable is then regressed on measures derived from the 1968 survey wave that capture the following characteristics: race, age, high school graduation, and indices constructed by the PSID staff to measure risk-aversion, efficacy, and connectedness. The results of this regression show that respondents were more likely to remain in the sample if they were younger, white, and high school graduates. The respondents were also more likely remain in the sample if they were more risk-averse and connected to their surrounding communities. Using the results of this regression, each respondent is assigned a value that reflects whether his characteristics made it more or less

likely that he would remain in the sample, or a predicted probability. This predicted probability is then standardized to have a mean of 0 and a standard deviation of 1 and treated as a propensity score. The paper then contrasts models that do not include the propensity score to those that do include the propensity score not as a way of matching observations, but as a variable in the outcome equations, or as a control function (Heckman and Navarro-Lozano 2004). This procedure meets the typical requirement (the exclusion restriction) that one or more variables in the equation used to construct the propensity score be excluded from the equations predicting the outcomes of interest (Heckman and Navarro-Lozano 2004). It does not, however, include a true instrumental variable, or a variable that is argued to directly affect selection, in this case into or out of the sample, but not the outcome, in this case military service or combat exposure (Angrist, Imbens, and Rubin 1996).

Findings

Table 1 presents un-weighted descriptive statistics, which suggest that the men who experienced combat differed systematically from those who did not. The first column contains the statistics calculated using information provided by the entire sample of male household heads who responded to the 1994 survey. The second column contains the statistics based on information provided by those who served in the military, while the third column contains the same statistics based on information provided by those who were exposed to combat. When weighted data are used (available by request), the statistics differ within the columns, but lead to the same substantive comparisons between the columns. The men who were exposed to combat were, on average, 11 years older than the full sample, and 5 years older than the sample of all men who entered the military. They grew up in families in which the parents were more likely not to have graduated from high school and less likely to have graduated from college. They also were more likely to have grown up in poor families and less likely to have grown up in well-off families. They were also less likely to be black. In addition, they were less likely than the rest of the sample to have graduated from college. These men may have differed in their race, class, and educational characteristics because they came predominately from earlier cohorts. They were more likely than the rest of the sample to have become eligible to serve during the pre-World War II, World War II, and Vietnam eras.

Table 2 contains coefficients from the sequential logistic regression models of the transitions that lead to combat exposure, which reinforce the finding that men differed in the odds of service and combat based on their cohort. Models lead to similar conclusions regarding the relative effects of different cohorts when they are estimated only on a sub-sample of respondents who came of age during and after the Korean War (available by request). These models directly compare the effects of the preservice characteristics on the transition into the military with those effects on the transition into combat. The first, third, and fifth columns contain estimates of the effects of the characteristics on the log odds of serving in the military among all sample members. The second, fourth, and sixth columns contain estimates of these effects on the log odds of seeing combat among just the men who served in the military. The reference category for the cohort variable is the Vietnam era. The effect of this variable reveals different patterns depending on the transition being considered. It shows a nearly monotonic decline in the log odds that men would serve in the military. After World War II, men faced reduced odds that they would serve in the military. They were more likely to serve in the military if they came of age before than if they came of age during the post-Korean and Vietnam eras. They were only less likely to do so if they came of age in the post-Vietnam era. However, among the men who served in the military, only those who came of age during the pre-World War II and World War II eras were more likely to see combat than were the Vietnam veterans. Servicemen who came of age during all other eras were less likely to be exposed to combat.

Men came to serve in the military, and thus potentially to see combat, as a result primarily of dual screening. They served, and thus were at risk of combat as a result of their class background, but not in the way predicted by the class bias hypothesis. Net of cohort effects, they were less not more likely to enter the military if they grew up in poor families. The effect of parental poverty was mediated by the effect of parental education. Men were less likely to enlist if neither of their parents graduated from high school. They were also less likely to do so if the measure of parents' education was missing. The effect of parental education is partially mediated by respondents' education. Men were less likely to serve in the military if they dropped out of than if they graduated from high school. This finding is consistent with the institutional screening hypothesis. It may also stem from the fact that less educated men were more likely than more educated men to be incarcerated (Harlow 2003). Men were also less likely to enlist if they graduated from college, which is consistent with the human capital hypothesis. Taken together, these findings are less consistent with the class bias account of service and more consistent with the dual screening account.

Table 2 suggests that the background characteristics affected the odds of service and the odds of combat differently. According to the table, servicemen were exposed to combat as a result both of class bias and of human capital. Servicemen were less likely to see combat if they had at least one parent who graduated from college than if neither parent graduated from college. This finding is consistent with the class bias hypothesis. The effect of parental education was partially, though not fully, mediated by servicemen's own education. Among servicemen, college graduates were less likely than high school graduates to see combat. They most likely had skills that allowed them to enter technical, non-combat occupations, and therefore to avoid combat. As mentioned above, high school dropouts were less likely than high school graduates to enter the military. Once in the military, however, they faced the same odds of combat exposure as did high school graduates. These findings suggest that institutional screening affected the first, but not the second military transition. Class bias did not affect the first, but did affect the second transition. Human capital, however, affected both transitions.

When the models are estimated based on a sample of men who became eligible to serve more recently (available by request), they lead to different conclusions in only one case: the association between the outcomes and race. Among the full sample, blacks were equally as likely as whites to enter the military, but less likely to see combat. Net of education, however, black servicemen were less likely to see combat than were white servicemen. When the sample is restricted just to the men who came of age during and after the Korean war, blacks were more likely than whites to enter the military, but equally likely to see combat. This race effect was mediated by educational attainment. These findings suggest that blacks were excluded from combat in the past, while more recently they have been more likely to be exposed to combat because they are more likely to serve in the armed forces. They are broadly consistent with the historical change hypothesis.

Effects of sample attrition

Table 3 suggests that sample attrition affects the strength, but not the estimated direction of some of the estimates of the factors that led men to military service. It contains estimates that compare the effects of the independent variables on the outcomes with and without propensity scores. Column 1 contains estimates of the effects of men's characteristics on the log odds of serving in the military. The model is the same as that included in column 5 of table 2, except that it is based on information provided not by all the respondents in 1994, but only by those 1994 respondents who were in the original 1968 sample. Column 2 contains the same characteristics, but also includes an estimate of the effect of the propensity score. If men had propensity scores that were one standard deviation above the mean, they had odds of serving in the military that were nearly 2.5 times higher than men with the mean

propensity scores. If the model does not include the propensity score, it appears to underestimate the effect on military service of belonging to the earliest cohorts. Men were much more likely to serve in the military if they were eligible to serve in the pre-World War II and World War II eras when the model includes the propensity score than when it does not. If they do not account for sample attrition, however, models appear to overestimate the effect of race. In column 1, black men had log odds of serving in the military that were .97 lower than the log odds among white men. In column 2, however, they had log odds that were only .61 lower. The model also appears to overestimate the effect of dropping out of high school. All other estimates are within a standard error of each other, which means that they are not likely to statistically differ from each other.

Table 3 suggests that sample attrition does not affect estimates of the characteristics that led servicemen to experience combat. Column 3 contains estimates of the effects of men's characteristics on the log odds that a serviceman would be exposed to combat without taking account of the propensity scores. Column 4 contains those same estimates when the propensity score is included. Servicemen were no more or less likely to see combat if they had higher propensity scores. They saw combat based on the same pattern of effects regardless of whether the propensity score is included. When the propensity score is added to the model, as in column 4, the parameter estimates differ slightly from the estimates in column 3. They are, however, well within a standard error of each other. These findings suggest that estimates of the characteristics associated with the odds that servicemen would see combat were not affected by sample attrition.

Historical change

Taken together, the preceding analyses suggest that men may have come to serve and fight by means of different processes during different historical periods, particularly with respect to race. In table 3, black men appear significantly less likely to have entered the military among the men who remained in the survey from the original 1968 sample, than they do in table 2, among the men in the full 1994 sample. They also appear more likely to do so among the men who came of age during and after the Korean war (not shown), than among that full sample. These findings suggest that the negative effect of race on military service among the earlier cohorts may counter-balance the positive effect of race on service among the later cohorts.

Alternative models were therefore estimated to test for historical change among the full sample and producing fit statistics (available by request) that suggest that the only characteristic to change historically in the effect it had on the odds that men would see combat was race. These models evaluate historical change by comparing models that do not to those that do include interactions between the other independent variables and the cohort variable. Most of the models had larger BIC and AIC statistics and thus fit worse if they included interactions than if they did not include interactions. According to the AIC statistic, a model had a smaller fit statistic, and thus fit better, however, if it included an interaction between cohort and race. This finding indicates that race may have affected service and combat differently in different eras.

Table 4 contains coefficients from sequential logistic regressions that show how the effects of race on service and combat changed historically. While the table cannot test for how attrition affects the estimates as in table 3 because it includes men who entered the sample after 1968, it makes use of the substantive insight provided by the preceding analyses that the effects of race may differ across samples defined by historical time. Columns 1 and 2 contain coefficients derived from the model represented in columns 5 and 6 of table 2, but include only the main effects that reflect how cohort and race affected the log odds of combat and service. This model includes the other background variables that were in the

regression presented in table 2, but the coefficients are not reported in the current table. Columns 3 and 4 include the interaction between race and cohort. They show that cohort affected the odds that white men would serve and fight similarly regardless of whether the interaction is included. In the model with the interaction, however, black servicemen were less likely than whites to see combat. Black men were also less likely than whites to serve in the armed forces if they came of age during the Korean War and the post-Korean War eras. They have been more likely to serve if they became eligible during the post-Vietnam era. Among those in the military, they were less likely to see combat if they came of age during World War II. Black servicemen, however, were more likely than white servicemen to see combat during the Korean and post-Korean eras.

As these findings suggest, men faced different predicted probabilities if they were black or white, and if they belonged to different cohorts, that they would serve in the military. They faced the highest predicted probability (figure 2) that they would enlist if they came of age during World War II. White men faced increasingly smaller probabilities that they would enlist if they came of age in later eras. Black men, however, saw a probability of serving that was higher if they came of age during the Vietnam era than if they came of age during the Korean and post-Korean eras. They also had a higher probability of serving in the military than did white men if they came of age after the Vietnam war.

As described above, race affected not just the odds of enlisting, but also the odds of combat exposure, sometimes in different directions. These different effects mean that the predicted probability that men would be exposed to combat cannot just be inferred from the predicted probability that they would serve in the military. Black men, for example, faced a similar predicted probability to that faced by white men that they would enter the military during World War II. They faced a much smaller probability, however, that they would be exposed to combat. They had a much smaller predicted probability of enlisting than did whites during the Korean war and the post-Korean era. They were, however, equally as likely in those eras to be exposed to combat as white men.

Conclusion

The findings suggest that men were exposed to combat because of both class bias and dual selection. They show that, in the last sixty years of the twentieth century, class partly determined who saw combat. Servicemen were protected from combat if they grew up in families with more educational resources. They were less likely to see combat if at least one of their parents graduated from college than if their parents graduated just from high school. This finding is consistent with the view that men from more privileged families were protected from the burdens of war. The findings also suggest that combat exposure was shaped by dual selection. They are consistent with both the institutional screening and human capital hypotheses. Human capital played a role in determining who entered the military and who saw combat. College graduates were less likely than high school graduates to enter the military. Once in the military, they were less likely to see combat. Institutional screening determined who entered the military. High school dropouts were less likely than high school graduates to enter the military. However, once in the armed forces, they were no less likely to see combat.

The findings also contribute to research regarding whether black men have historically been more or less likely than white men to serve in the military and to be exposed to combat. Some researchers have shown that blacks faced different odds of military service than did whites during different eras (Angrist 1991; Lutz 2008; Mare and Winship 1984). The current analyses expand on this research by showing that there have also been historical changes in the factors leading men of different races to experience a particular military outcome,

combat exposure. Black men experienced changes in the odds that they would see combat that did not simply mirror the changes in the odds that they would serve in the armed forces. According to the current analyses, they were at risk of combat to different degrees depending on when they became eligible to serve as defined by seven different cohorts over the last six decades of the twentieth century. Future research could test whether the odds of combat exposure also changed over shorter time periods. It could alternately examine whether black and white men saw similar historical changes in the cumulative transitions that led to other military outcomes, such as rank or mortality.

The analyses revealed two unexpected findings regarding the relationship between class and combat. First, men whose parents did not graduate from high school were less likely than those whose parents graduated from high school to enter the military. Therefore, they were also less likely than men whose parents had more education to experience combat. This finding is consistent with other research that shows that military service is a middle option for teenagers, less desirable than enrolling in college, but more desirable than immediately entering the civilian labor market (Kleykamp 2006). It suggests that military service and combat exposure were not solely the realm of the poor and less privileged, but also of the middle class. It is also consistent with some research regarding the relationship between class and service in the more recent era (Congressional Budget Office 2007; Kane 2006).

Second, there were no direct or indirect effects of family wealth on military outcomes. This lack of effect may be accounted for by one or more of three possible explanations. First, it may stem from the measure of family privilege, which may not accurately capture class position. Second, it may stem from the sample design. The PSID was first fielded in 1968, the height of the Vietnam war, which means that it includes fewer respondents who began serving during that year or who began serving in immediately prior years and were still serving at the time of the survey. Third, financial resources truly may not affect the odds of combat exposure as much as educational resources do.

These findings may be limited because of sample attrition. As mentioned above, PSID respondents were only included in the analyses if they remained in the sample until 1994. Those who remained differed from those who left in terms of their age, race, education, risk-aversion, and connectedness. If these characteristics are associated with either military service or combat exposure, the analyses may underestimate or overestimate the impact of characteristics that made it more likely that men would experience these outcomes. Indeed, the models appear to under-state the importance of cohort and over-state the importance of race and possibly education when selection is not taken into account in the estimates of the effects of these characteristics on military service. They do not, however, appear to produce biased estimates of the effects of these characteristics on combat exposure.

The analyses contribute, more broadly, to research regarding the impact of social background on life course trajectories that involve cumulative transitions. Such research has previously focused on the transitions that constitute educational attainment, demonstrating that the effects of family background decline across transitions (Lucas 2001). In contrast, family background affected both the first military transition, entering the armed forces, and the second transition, seeing combat, but in different directions. With regard to the first transition, men were less likely to serve in the military if they came from families with lower status. With regard to the second, servicemen were less likely to see combat if they came from families with higher status. These findings suggest that, in contrast to educational transitions, military transitions are not equally desirable. They also provide further evidence that, even among those in the armed forces, all men were not at equal risk of fighting during wartime.

Future research should look at how nested military transitions have led to combat among people who have come of age more recently, those who have become eligible to serve during the wars in Iraq and Afghanistan. Recent work on related topics has produced intriguing findings. Several papers look at the characteristics of those who entered the military. They find that people are less likely to enter the military if they come from the bottom or the top of the socioeconomic distribution (Congressional Budget Office 2007; Kane 2006). Another paper examines wartime mortality and focuses on the racial characteristics of those who died in the early years of the Iraq war. It shows that, though blacks were disproportionately likely to serve in the armed forces, they were not disproportionately likely to die in Iraq (Gifford 2005). Future research could look at whether the factors that influence the transitions that lead to combat have changed, and how these factors have determined who has borne the burdens of the current wars in Iraq and Afghanistan.

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Figure 1.
Paths leading to military service, combat exposure, and other outcomes

Figure 2.

Predicted probability of service and combat by cohort and race

Data source: Panel Study of Income Dynamics, 1968–1994.

Note: Model is that in columns 3 and 4 of Table 4. Predicted probabilities calculated for men who graduated from high school and grew up in intact families in which the parents' highest education was high school graduate and family finances were average.

Table 1

Means and proportions in selected samples

Variable	Sample		
	All	Military service	Combat exposure
Birthyear	1950.29 (15.02)	1943.48 (14.78)	1938.87 (14.89)
Highest parents' education			
<HS	0.35	0.38	0.40
High school graduate	0.31	0.34	0.33
College graduate	0.20	0.18	0.14
Both parents' educ missing	0.14	0.10	0.13
Family's finances			
Poor	0.40	0.42	0.47
Average	0.38	0.39	0.35
Well-off	0.22	0.19	0.17
Black	0.23	0.22	0.18
Intact family growing up	0.78	0.78	0.78
Respondents' education			
<HS	0.29	0.21	0.24
High school graduate	0.52	0.65	0.65
College graduate	0.19	0.15	0.12
Cohort			
Pre-World War II (>1941)	0.06	0.09	0.17
World War II (1941–5)	0.04	0.09	0.16
Post-World War II (1946–9)	0.04	0.07	0.07
Korean war (1950–3)	0.04	0.07	0.04
Post-Korean war (1954–63)	0.12	0.15	0.11
Vietnam war (1964–73)	0.23	0.28	0.34
Post-Vietnam war (>1973)	0.47	0.24	0.12
Observations	6,957	1,930	582

Data source: Panel Study of Income Dynamics, 1968–1994.*Note:* Standard deviations in parentheses.

Table 2

Coefficients from sequential logistic regressions predicting military service and combat exposure

	1: Military service	2: Combat exposure	3: Military service	4: Combat exposure	5: Military service	6: Combat exposure
Era became eligible (ref: Vietnam)						
Pre-World War I (>1941)	0.369 *** [0.111]	0.759 *** [0.176]	0.508 *** [0.113]	0.754 *** [0.180]	0.756 *** [0.119]	0.806 *** [0.184]
World War II (1941–5)	1.282 *** [0.134]	0.642 *** [0.175]	1.398 *** [0.136]	0.629 *** [0.178]	1.647 *** [0.143]	0.640 *** [0.182]
Post-World War II (1946–9)	0.893 *** [0.133]	–0.442 * [0.207]	0.988 *** [0.135]	–0.474 * [0.210]	1.154 *** [0.141]	–0.477 ** [0.211]
Korea (1950–3)	0.721 *** [0.133]	–0.931 *** [0.239]	0.814 *** [0.134]	–0.957 *** [0.242]	1.015 *** [0.140]	–0.946 *** [0.243]
Post-Korea (1954–63)	0.086 [0.089]	–0.746 *** [0.168]	0.151 [0.091]	–0.783 *** [0.170]	0.240 ** [0.094]	–0.803 *** [0.171]
Post-Vietnam (>1973)	–1.081 *** [0.072]	–1.241 *** [0.157]	–1.097 *** [0.073]	–1.257 *** [0.160]	–1.161 *** [0.075]	–1.325 *** [0.162]
Parents' finances (ref: Average)						
Poor	–0.211 *** [0.064]	0.147 [0.116]	–0.113 [0.068]	0.156 [0.122]	0.020 [0.071]	0.148 [0.124]
Well-off	–0.073 [0.077]	0.125 [0.150]	–0.098 [0.078]	0.172 [0.152]	–0.059 [0.080]	0.198 [0.153]
Parents' education (ref: HS grad)						
<HS grad			–0.457 *** [0.074]	–0.172 [0.132]	–0.337 *** [0.076]	–0.194 [0.134]
College grad			–0.150 [0.083]	–0.365 * [0.162]	–0.052 [0.086]	–0.293 * [0.164]
Missing			–0.714 *** [0.094]	0.121 [0.175]	–0.516 *** [0.097]	0.118 [0.177]
Black			0.093	–0.265	0.048	–0.290 **

	1: Military service	2: Combat exposure	3: Military service	4: Combat exposure	5: Military service	6: Combat exposure
Intact family			[0.071] -0.088 [0.070]	[0.139] -0.179 [0.131]	[0.072] -0.100 [0.072]	[0.139] -0.159 [0.131]
Respondent's education (ref: HS grad)						
<HS grad					-1.141*** [0.078]	-0.143 [0.140]
College grad					-0.838*** [0.083]	-0.558*** [0.165]
Constant	-0.608*** [0.063]	-0.639*** [0.110]	-0.327*** [0.095]	-0.331 [0.171]	-0.058 [0.099]	-0.230 [0.174]

Data source: Panel Study of Income Dynamics, 1968–1994.

Note : N = 7,162. Standard errors in brackets.

p<0.001,
**
p<0.01,
*
p<0.05

Table 3

Sample selection sequential logistic regressions predicting service and combat

	Military service		Combat exposure	
	1: Without prop score	2: With prop score	3: Without prop score	4: With prop score
Era became eligible (ref: Vietnam)				
Pre-World WarII (>1941)	0.983 ^{***} [0.285]	1.848 ^{***} [0.343]	0.753 [0.476]	0.622 [0.531]
World War II (1941–5)	2.015 ^{***} [0.309]	2.508 ^{***} [0.333]	0.498 [0.476]	0.417 [0.497]
Post-World War II (1946–9)	1.434 ^{***} [0.300]	1.719 ^{***} [0.311]	−0.607 [0.493]	−0.654 [0.500]
Korea (1950–3)	1.335 ^{***} [0.301]	1.504 ^{***} [0.308]	−1.276 ^{**} [0.530]	−1.306 ^{**} [0.533]
Post-Korea (1954–63)	0.388 [0.270]	0.356 [0.274]	−1.161 ^{**} [0.493]	−1.152 ^{**} [0.493]
Post-Vietnam (>1973)		0.880 ^{***} [0.183]		−0.163 [0.297]
Parents' finances (ref: Average)				
Poor	0.178 [0.146]	0.214 [0.148]	−0.008 [0.215]	−0.012 [0.215]
Well-off	0.210 [0.199]	0.256 [0.201]	−0.084 [0.304]	−0.084 [0.305]
Parents' education (ref: HS grad)				
<HS grad	−0.318 ^{**} [0.161]	−0.262 [0.162]	0.055 [0.234]	0.050 [0.234]
College grad	−0.015 [0.216]	−0.027 [0.218]	−0.237 [0.324]	−0.235 [0.324]
Missing	−0.457 [*] [0.250]	−0.329 [0.253]	0.715 [*] [0.378]	0.690 [*] [0.382]
Black	−0.966 ^{***} [0.172]	−0.619 ^{***} [0.186]	−0.285 [0.295]	−0.356 [0.323]
Intact family	−0.150 [0.160]	−0.220 [0.163]	0.114 [0.248]	0.125 [0.249]
Respondent's education (ref: HS grad)				
<HS grad	−0.906 ^{***} [0.151]	−0.574 ^{***} [0.166]	−0.157 [0.229]	−0.216 [0.253]
College grad	−0.697 ^{***} [0.177]	−0.651 ^{***} [0.179]	−0.818 ^{***} [0.300]	−0.825 ^{***} [0.301]
Constant	−0.151 [0.313]	−1.148 ^{***} [0.380]	−0.394 [0.534]	−0.216 [0.624]

Data source : Panel Study of Income Dynamics, 1968–1994.

Note : N = 1,244. Standard errors in brackets.

p<0.001,

**
p<0.01,

*
p<0.05

Table 4

Coefficients from sequential logistic regressions predicting historical change in military service and combat exposure

	1: Military	2: Combat	3: Military	4: Combat
Era became eligible (ref: Vietnam)				
Pre-World WarII (>1941)	0.756 ^{***} [0.119]	0.806 ^{***} [0.184]	0.765 ^{***} [0.132]	0.765 ^{***} [0.203]
World War II (1941–5)	1.647 ^{***} [0.143]	0.640 ^{***} [0.182]	1.685 ^{***} [0.159]	0.780 ^{***} [0.199]
Post-World War II (1946–9)	1.154 ^{***} [0.141]	−0.477 ^{**} [0.211]	1.184 ^{***} [0.153]	−0.493 ^{**} [0.227]
Korea (1950–3)	1.015 ^{***} [0.140]	−0.946 ^{***} [0.243]	1.273 ^{***} [0.157]	−1.089 ^{***} [0.264]
Post-Korea (1954–63)	0.240 ^{**} [0.094]	−0.803 ^{***} [0.171]	0.386 ^{***} [0.103]	−0.921 ^{***} [0.187]
Post-Vietnam (>1973)	−1.161 ^{***} [0.075]	−1.325 ^{***} [0.162]	−1.263 ^{***} [0.088]	−1.384 ^{***} [0.192]
Black	0.048 [0.072]	−0.290 ^{**} [0.139]	0.106 [0.129]	−0.363 [*] [0.220]
Interaction of black with cohort (ref: Vietnam)				
Pre-World WarII			−0.110 [0.284]	0.135 [0.457]
World War II			−0.265 [0.344]	−1.181 ^{**} [0.541]
Post-World War II			−0.247 [0.379]	−0.000 [0.641]
Korea			−1.446 ^{***} [0.386]	1.204 [*] [0.694]
Post-Korea			−0.945 ^{***} [0.256]	0.905 [*] [0.466]
Post-Vietnam			0.335 ^{**} [0.165]	0.196 [0.349]
Constant	−0.058 [0.099]	−0.230 [0.174]	−0.092 [0.103]	−0.224 [0.180]

Data source : Panel Study of Income Dynamics, 1968–1994.

Note : N = 7,162. Standard errors in brackets.

p<0.001,

**
p<0.01,

*
p<0.05

Regressions control for other family characteristics and educational attainment, as above.