

Bodily Signs of Academic Success: An Empirical Examination of Tattoos and Grooming

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This study examined the relationship between bodily comportment (tattoos and grooming) and the likelihood of going to college among a national sample of 11,010 adolescents gathered as part of the National Longitudinal Study of Adolescent Health. Results show that adolescents with tattoos and those judged as poorly groomed by Add Health interviewers were significantly less likely to go to college after graduating from high school. These effects were similar in magnitude to those of other well-known demographic correlates of educational attainment, including family SES and family structure. Results also show that involvement in deviant activities accounted for much of the lower likelihood of going to college among adolescents with tattoos. Similar results were observed across gender, SES, and race groups, with the exception of Asians, for whom the lower likelihood of going to college among those with tattoos was especially pronounced. Overall, this study supports the conclusion that bodily signs constitute an important and relatively untapped source of information for predicting college matriculation among adolescents. Keywords: tattoos; body; adolescence; deviance; grooming; education.

More than any other stage in the life course, adolescence is characterized by a tendency to experiment with bodily appearance. In recent decades, two particularly salient forms of experimentation have emerged: the acquisition of permanent tattoos and the adoption in public of a poorly or carelessly groomed style of dress. Are these mere stylistic preferences? Or, do they reflect deeper engagement with nonconventional lifestyles that bear on an adolescent's ability to transition successfully into adult roles and statuses? To address this question, we examine whether permanent tattoos and poor grooming among middle and high school students are associated with college matriculation during early adulthood. To the extent that tattoos and poor grooming reflect personal style only, we would expect little to no association with college matriculation. But, to the extent that they are indicative of deeper commitments

This research uses data from Add Health, a program project designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris, and funded by a grant P01-HD31921 from the Eunice Kennedy Shriver National Institute of Child Health and Human Development, with cooperative funding from 17 other agencies. Special acknowledgment is due Ronald R. Rindfuss and Barbara Entwisle for assistance in the original design. Persons interested in obtaining data files from Add Health should contact Add Health, Carolina Population Center, 123 W. Franklin Street, Chapel Hill, NC 27516-2524 (addhealth@unc.edu). No direct support was received from grant P01-HD31921 for this analysis. The authors thank Glenn Firebaugh, Wayne Osgood, Jeff Ulmer, Jeremy Staff, and Matthew VanEseltine for providing helpful comments on earlier drafts of this article, and Margaret J. Ledwell for her assistance with the review state laws. Direct correspondence to: Eric Silver, Department of Sociology, 211 Oswald Tower, University Park, PA 16802. E-mail: esilver@psu.edu.

Social Problems, Vol. 58, Issue 4, pp. 538–564, ISSN 0037-7791, electronic ISSN 1533-8533. © 2011 by Society for the Study of Social Problems, Inc. All rights reserved. Please direct all requests for permission to photocopy or reproduce article content through the University of California Press's Rights and Permissions website at www.ucpressjournals.com/reprintinfo/asp. DOI: 10.1525/sp.2011.58.4.538.

to nonconventional behaviors associated with poor educational attainment (such as, poor school performance, excessive drinking, drug use, or gang membership), we would expect significant associations with college matriculation.

Background

In recent years, the body has emerged as a distinct area of study within sociology. The literature in this area covers a wide range of bodily phenomena in the realms of gender, sexuality, emotions, race, sport, health, and aging, and spans a wide range of historical periods (for reviews, see Featherstone 1999; Shilling 1993; Turner 1992; Williams and Bendelow 1998). Our interest here is in the branches of this literature that examine the body as a form of symbolic cultural capital that individuals cultivate in the course of their identity-making efforts (Bottrell 2007). Early scholarship in this area emphasized the body as a socially conditioned object shaped through differential socialization, reflecting in large part the bearer's gender, race, and social class origins (Bourdieu 1986; Connell 1987; Elias 1978; Foucault 1980; Hochschild 1983; Turner 1984; Willis 1977). In recent years, however, sociologists have come to view the body as a *project* whereby individuals act to shape their own bodily appearances—within cultural and physical constraints—in order to produce a “look” that reflects their self-conceptions and goals (Atkinson 2003; Giddens 1991; Gimlin 2002; Shilling 1993).

A key contention of the bodily signs approach is that people are aware of the “vocabularies of body idiom” (Goffman 1963) or “semiotic codes” (Swidler 1986) attached to their bodily appearances (semiotic codes are systems of meanings that define what an individual's actions signify to others). Based on this knowledge, individuals make strategic decisions regarding how to appear in public, decisions that depend in part on the “self” they wish to project, and also on what they wish to achieve in the social world. In one of the more influential books on this topic, Chris Shilling (1993) writes: “In the affluent West, there is a tendency for the body to be seen as an entity which is in the process of becoming; a project which should be worked at and accomplished as part of an individual's self-identity” (p. 5). This theme—the body as project—has been echoed by other scholars (e.g., Atkinson 2003; Giddens 1991; Gimlin 2002; Turner 1992), and numerous qualitative studies have been conducted examining the decision-making processes that underlie individuals' body management efforts.¹

The current study examines the relationship between bodily signs (tattoos and grooming) and college matriculation among a large, nationally representative sample of adolescents in middle and high school.² We are interested in whether or not bodily signs displayed by adolescents in middle and high school are indicative, in part, of their identity making efforts and corresponding life trajectories. Adolescence is a particularly relevant period in which to examine the links among identity making, bodily expression, and life course outcomes. Adolescence is typically an “unsettled” period of life during which individuals “are still trying out (and trying on) the possible selves they might become” (Swidler 2001:90). Ann Swidler goes on to explain that “people consume and create more cultural ‘stuff’—they elaborate more self-conscious symbolic meanings—when their lives are unsettled” (p. 131). Thus, adolescence is

1. Qualitative studies have focused on topics such as the acquisition of tattoos (e.g., Atkinson 2003), hairstyle choices (e.g., Gimlin 2002), the hyper-muscular body (e.g., Bordo 1999), the emaciated body (e.g., Lupton 1996), the transgendered body (e.g., Butler 1993), and the cybernetic body (e.g., Balsamo 1995), among others.

2. We focus on education because over the past two decades, education has emerged as the single most important factor predicting socioeconomic attainment in the United States. And, since 1980, social scientists and policymakers have spent a good deal of time analyzing and disentangling the factors that predict a person's likelihood of attending and completing college. Research indicates that performance in elementary, middle, and high school (e.g., grades and test scores) is the strongest predictor of how much education one ultimately completes, followed by parents' socioeconomic status and wealth (Conley 2001; Rosenbaum 2001).

a time in which the link between cultural symbols (as reflected, for example, in clothing styles, hairstyles, and musical tastes) and the self is particularly salient.

We view the school as a focal cultural context for adolescents containing a range of semiotic codes for bodily expression. As discussed by James Coleman (1961), John Hagan (1991), and Paul Willis (1977), schools may be viewed as consisting of two broadly distinguishable cultural domains, one involving peers, the other involving academics, each providing a set of semiotic codes regarding bodily expressions (Swidler 2001; Willis 1977). Within the peer domain adolescents typically strive for membership and status in desired groups, clubs, and cliques (Schneider and Stevenson 1999). Adolescents express their social aims in part through bodily signs that indicate their identities, as well as their interest in being associated with particular groups or cultural trends. Academic aims pertain largely to the desire to perform well in school and obtain approval from teachers. Adolescents express their academic aims in part through bodily signs that indicate their alignment with the norms, values, and expectations inherent in the school environment.

A classic example of this distinction is provided in Willis's (1977) study of English working class youth in which he observed that dress and appearance were used by working class "lads" to signal their opposition to the middle class values and goals promulgated by the school. In contrast, the more conforming "ear'ole" students appeared in school wearing clothing similar in style and design to that of teachers. Thus, the decision to adopt bodily signs that bring one into conformity with the expectations of one cultural domain (e.g., "lad" or tough guy) may simultaneously bring one into conflict with the expectations of another (e.g., "ear'ole" or serious student). In Willis's analysis, therefore, bodily signs were strongly linked to the identity-making process and were expressed within the competing domains of peer and academic pursuits.

Identity Making, Lifestyle Choices, and Conventionality

Discussing youth in particular, Dorothy Bottrell (2007:599) suggests that it is through social and cultural roles and practices in education, work, consumption, and leisure that the symbolic resources to which youth have access limit or expand available ways of being, becoming, and relating with others. Consistent with this view, recent studies of youth subcultures indicate that schools persist in functioning as cultural contexts in which adolescents enact identities through bodily comportment. In his recent book, *Goths, Gamers, & Grrrls: Deviant Youth and Youth Subcultures* (2010), Ross Haenfler provides detailed studies of a variety of youth subcultures including skinheads, punks, hardcore rockers, hip hoppers, Goths, and gamers. Haenfler describes how youth draw on culturally available symbols to put together bodily appearances that symbolize (to themselves and others) their oppositional relationship to what they view as mainstream identities and conventional cultural standards. Goths, for example, who are best known for their dark, grim style and body piercings, "revel in their difference, constructing themselves as 'freaks' who consciously reject the mainstream" (Haenfler 2010:84). For other youth groups, such as the professionally bound, the symbolization of cultural resistance via bodily comportment is less prevalent (Bottrell 2007). In the research presented here we examine whether symbolic markers that middle and high school youth exhibit through their appearances (e.g., tattoos and grooming) are predictive of their likelihood of participating in what has become a normative, conventional rite of passage for American youth: going to college.

Prior studies examining the relationship between bodily appearance during adolescence and college matriculation have focused largely on involuntary aspects of appearance, such as obesity and physical disability. While these studies generally find that stigmatized physical characteristics are related to adverse educational outcomes (Crosnoe 2007; Crosnoe and Muller 2004; Gortmaker et al. 1993), from a theoretical perspective, these studies are limited in that they fail to interpret these characteristics in the context of a broader set of bodily

appearance markers, and thus provide little insight into the mechanisms that produce the observed associations.³ Of key concern is whether the association between bodily signs and poor educational outcomes is due to discrimination by teachers (Clifford and Walster 1973; Kenealy, Frude, and Shaw 1988; for a review, see Ritts, Patterson, and Tubbs 1992) or lifestyle patterns and choices that tend to undermine educational performance. By comparing bodily signs (tattoos and grooming) to involuntary bodily attributes (BMI, height, physical maturity, and physical disability) the current study seeks to address this gap in the literature.

Before proceeding, it is important to note that our research question is not whether bodily signs *cause* college matriculation (or any other outcome for that matter). Rather, we are interested in the degree to which bodily signs *reflect* identity statements and corresponding lifestyle patterns that have implications for subsequent matriculation into college.

Grooming and Tattoos as Bodily Signs

Does presenting a well-groomed appearance in middle or high school demonstrate respect for the values and norms of the school, including its emphasis on the importance of attending college? While we know of no empirical studies directly linking grooming to conventional aspirations such as college matriculation, some basic observations suggest that such a link is indeed plausible.⁴ First, there is a general tendency in American (and perhaps all) culture to express deference toward a person, ceremony, or institution by appearing appropriately groomed. Training in this regard begins young, through participation in church, formal family gatherings such as weddings and funerals, and religious celebrations. Historically, the link between grooming and conventional cultural values can be seen in the “hippie” clothing and hairstyles adopted by the progressive youth culture of the 1960s, the bodily signs of which came to symbolize an anti-conventional political stance. More recently, youth subcultures, such as skinheads, punk rock, hip hop, and Goth have used distinctive styles of dress and personal appearance (as well as music and other cultural products, including tattoos) to communicate an anti-conventional stance (Haenfler 2010).

With respect to tattoos, researchers estimate that between 8 and 13 percent of U.S. adolescents age 12 to 18 have tattoos (Armstrong and Pace-Murphy 1997; Carroll et al. 2002; Roberts and Ryan 2002) and a survey of a nationally representative sample of adults found that between 10 and 24 percent of the general U.S. population have or once had a tattoo (Laumann and Derick 2006; Whelan 2001). Because of their growing ubiquity among middle class women and men, numerous scholars have begun to suggest that tattoos can no longer be regarded as symbols of deviant or unconventional lifestyles (Atkinson 2003; DeMello 1995, 2000; Kang and Jones 2007; Pitts 2003; Rubin 1988; Sanders 1989; Sweetman 1999; for a recent review, see Adams 2009). However, a considerable body of research on adolescents finds tattoo possession to be associated with risky, anti-social, or deviant behaviors. For example, tattoos have been found to be associated with substance use (including tobacco, alcohol, and marijuana) and harder drug use (including cocaine, Ecstasy, inhalants, and intravenous drugs; Carroll et al. 2002; Nathanson, Paulhus, and Williams 2006; Roberts and Ryan 2002). Having a tattoo also has been found to be associated with fighting and bullying, school truancy, failing grades, and

3. In addition, while prior studies by sociologists and economists have shown that *physical attractiveness* is positively correlated with income and job status among adults in the labor force (e.g., Hamermesh and Biddle 1994; Umberson and Hughes 1987), these studies fail to distinguish between voluntary and involuntary aspects of physical appearance. Thus, while research suggests that having above-average looks is associated with better economic outcomes, we know very little about the mechanism that produces this association.

4. Prior research has found a significant positive association between teachers' judgments of grooming and grades among seventh and eighth graders in the Dallas school system (Farkas 1996). Once again, mechanisms connecting these variables were not of central concern to the Dallas study and therefore were not examined.

gang membership (Nathanson et al. 2006; Roberts and Ryan 2002). Compared to peers without tattoos, adolescent girls with tattoos are at higher risk for suicide (Carroll et al. 2002). Finally, a recent study of adolescents (using the same data set as the current study) found that the same factors that tend to predict delinquent behavior (e.g., weak social bonds to family and prior delinquent behavior) also predicted acquisition of a first tattoo during adolescence (Silver, VanEseltine, and Silver 2009).⁵

Despite these associations, it may be that acquiring tattoos in adolescence is simply part of an “adolescence-limited” pattern of delinquency (Moffitt 1993), and that such behavior therefore tells us little about the depth of an adolescent’s engagement with deviance. Add to this that many middle class adults now have tattoos and it becomes plausible to argue that tattoos are no longer viewed by the majority of adolescents as markers of deviance. On the other hand, because of their permanence, tattoos may indicate a more intense engagement with deviance than that indicated by other deviant behaviors typically engaged in by adolescents, such as under-age drinking or marijuana use.⁶ In addition, because of their permanence, tattoos may function as “exit barriers” (Goffman 1961) that prevent adolescents from shedding deviant or unwanted social roles and identities in an adolescence-limited fashion. Unlike other visual signs of an oppositional stance, such as baggy jeans or even body piercings, the permanence of tattoos means that, regardless of the individual’s initial intent, they may connect an adolescent more firmly to an unconventional public or personal identity than do the more common adolescence-limited forms of delinquency. Due to these offsetting factors, the question of whether tattoos on adolescents are associated with deviance remains an empirical one.

In terms of the broader cultural context, attitudinal studies suggest that tattoos remain linked with deviance in the public mind. For example, studies have found that, regardless of the gender or age of the bearer, members of the general public tend to attribute negative qualities to people with tattoos. This pattern has been found for undergraduate students (Seiter and Hatch 2005), high school students (Degelman and Price 2002), and elementary school students as young as age six (Durkin and Houghton 2000).⁷ Moreover, a recent nationally representative telephone survey of 500 adults aged 18 to 50 found that the strongest predictor of being tattooed

5. Because the study by Silver, VanEseltine, and Silver (2009; hereafter referred to as SVS) is also based on data from Add Health, we highlight here the main differences between the two studies. The SVS study addresses the questions *who gets a first tattoo?* and what *prior* characteristics and behaviors predict tattoo acquisition among youth? The SVS study does not include grooming and does not interpret tattoos as “bodily signs” related to *future* outcomes. That study uses data from only the first two waves of Add Health, when the respondents were still in middle and high school. In contrast, the current study focuses on the link between tattoos *and grooming* in middle and high school and *college matriculation in early adulthood*. As described in detail below, our approach differs from that of SVS in that we measure college matriculation using data from Wave III of Add Health, so that we can examine college matriculation when respondents are in their mid-20s. In addition, we examine lifestyle factors that might account for associations between bodily signs and college matriculation, whereas SVS did not. In sum, whereas the SVS study examined temporally prior background characteristics that were hypothesized to predict tattoo acquisition in adolescence, we address a future outcome—college matriculation—and the extent to which it is associated with adolescent tattoo acquisition (and grooming) measured six years earlier.

6. Along these lines, it is important to note that, like cigarette smoking and alcohol consumption, obtaining a professional tattoo is regulated by state law. The Westlaw database indicates that in 41 states, the minimum age required to obtain a tattoo from a professional tattoo artist varies from 18 and 21. In 16 of these states a parent or guardian must be present to give consent; in 10 states written permission from a parent is required; and in a few states parents must provide proof of guardianship. It follows that adolescents who cannot obtain tattoos from a professional studio may resort to amateur tattooing, which carries greater health risk than professionally applied tattoos, including scarring, tissue damage, infection, and the spread of disease (Houghton et al. 1996). Thus, legal restrictions and the potential use of amateur tattooing methods to overcome them may bring tattoos among youth into even greater alignment with deviant cultural meanings (such as rebellion). Citations for state statutes are available from the first author.

7. When asked to rate photos and line drawings of individuals with a visible tattoo in comparison to the same photos and drawings of individuals without a visible tattoo, young people and children consistently rate the image with the visible tattoo as lower on personality characteristics such as athleticism, attractiveness, motivation, honesty, intelligence, sociability, character, competence, and likelihood of prosocial behavior (Degelman and Price 2002; Durkin and Houghton 2000; Seiter and Hatch 2005).

among members of the general public was having spent three or more days in jail prior to the survey, an association that was particularly pronounced for respondents who had tattoos in highly visible places, such as on the face, neck, or hands (Adams 2009). The study also found a lower level of educational attainment among adults who had tattoos.⁸ Together, these findings led the author to conclude that “the overall scope of the tattoo renaissance is rather limited to a narrow group of serious collectors (Irwin 2003; Vail 2000) and that tattooing has not been overwhelmingly embraced by those who are older, with high levels of education or higher incomes” (Adams 2009:285). Together, these studies suggest that tattoos may continue to carry stigma and to symbolize “outsider” status (Becker 1963) among many segments of the general public, even as they have become more popular among segments of the middle class, including those who are involved in subcultures of “tattoo collectors” (Vail 2000).

Finally, the mix of views on the question of whether or not tattoos are associated with deviance may simply reflect the fact that as a social movement, the “tattoo renaissance” has yet to fully play itself out. This would be consistent with historical changes in popular attitudes toward other social phenomena such as premarital sex, cohabitation, and divorce (Thornton and Young-DeMarco 2001), which have tended to develop gradually and in the context of considerable debate. Thus, tattooing may best be viewed as a social phenomenon whose cultural meaning is in flux, with both positive and negative views discernable depending on which population subgroups are examined (Adams 2009). As a result, it remains an empirical question as to whether or not tattoos *on adolescents* were associated with deviance during the mid- to late 1990s when the current data were gathered and when the “tattoo renaissance” had yet to reach its peak.

The current study builds on prior research by examining not only whether tattoos (and grooming) among adolescents in the 1990s were associated with deviant lifestyles, but also whether these associations had longer-term consequences for adolescents’ entrance into college in the early 2000s. We do so by incorporating into our models several measures of lifestyle that have been shown in previous research to affect an adolescent’s likelihood of college matriculation, and that we believe might account for the associations between bodily signs (tattoos and grooming) and college matriculation. The lifestyle measures include *academic orientation* (e.g., school performance and school attachment) (Farkas 2003; Rosenbaum 2001) and *deviant orientation* (e.g., involvement in unconventional activities, including delinquent behavior, gang membership, delinquent peers, cigarette-smoking, alcohol use, and engaging in unprotected sex) (Felson and Staff 2006; Hagan 1991). By incorporating these measures, we are able to compare adolescents with and without tattoos and those who exhibit different degrees of grooming in terms of their academic orientations and involvements in deviance, and measure whether these lifestyle patterns account for differences between them in their likelihoods of attending college. As far as we know, ours is the first study to examine this set of questions.

Alternative Explanations

An important alternative to the suggestion that tattoos and poor grooming reflect lifestyle patterns that have implications for college matriculation is that appearance factors may induce differential treatment (e.g., discrimination) from teachers and college admissions boards that,

8. While this result is consistent with the notion that individuals with tattoos experience lower levels of educational attainment, the study by Adams (2009) was based on a cross-sectional telephone survey that did not gather information on the timing of the tattoo in relation to the individual’s educational career. Thus, the study could not speak to the question of whether tattoos have a longitudinal association with educational attainment later in life. In contrast, the current study examines the association between tattoo acquisition in adolescence and educational attainment six years later using longitudinal data (described below).

in turn, influence the likelihood of going to college. Indeed, studies in the attractiveness literature suggest that teachers (whether consciously or not) sometimes reward and punish students with encouragement and grades based on physical appearances (Clifford and Walster 1973; Kenealy et al. 1988; Rosenthal and Jacobson 1968). Over time, differential treatment from teachers might result in differences in academic performance, college aspirations, and school attachment, thereby influencing the likelihood of college matriculation. A second source of discrimination may be that colleges select students for admission based in part on their physical appearances.

Because the possibility of selection bias constitutes an important threat to the internal validity of our study, we take several steps to minimize it. First, if teacher discrimination is the driving force behind the association between bodily signs and college matriculation, then the coefficients for bodily signs should be reduced to nonsignificance when grades are controlled statistically. Furthermore, if teachers differentially instill in adolescents a belief in their capacity to succeed in college based on differences in their physical appearances, then the coefficients for bodily signs should be reduced to nonsignificance when college aspirations and expectations are controlled statistically. It also is possible that biases based on physical appearance enter into letters of recommendation that teachers write for students as they apply to colleges. While we cannot address this possibility directly, we believe that by controlling for grades and for students' aspirations, both of which may be shaped by teachers, we are eliminating much of what may be considered teacher bias based on students' physical appearance. Finally, it is important to note that most colleges do not require face-to-face interviews as part of their admissions process; therefore they are unable to reject students based on physical appearance.⁹

While direct discrimination by teachers and colleges is not likely to threaten the validity of our analyses, the possibility remains that prior bodily conditioning *based on gender, race, and social class* may induce a relationship between bodily signs (grooming and tattoos) and college matriculation (Webster and Driskell 1983). For example, to the extent that lower class adolescents are more likely to acquire tattoos (Silver et al. 2009) and less likely to matriculate into college (Farkas 2003), then instead of reflecting lifestyle patterns with implications for college matriculation, a relationship between tattoos and college matriculation may simply reflect their shared origins in social class. To address this concern, the current study adopts a two-pronged approach. First, we control for gender, race, and social class in all of our models. Doing so enables us to answer the question: Are tattoos and grooming related to college matriculation independent of the effects of gender, race, and social class? In the second part of the analysis we go a step further by dividing the sample by gender, race, and social class. Here we address the question: Are tattoos and grooming similarly associated with college matriculation among subgroups of the sample for who the characteristics of gender, race, and social class are shared? If bodily signs are related to college matriculation *within* subgroups of the sample defined by gender, race, and social class, then we may be more confident in concluding that their effects are not spuriously related to social positioning.

Data and Methods

Sample

We drew our sample from the National Longitudinal Study of Adolescent Health (Add Health) (Harris 2009). Add Health is a nationally representative sample of adolescents in grades 7 through 12 gathered during the 1994-1995 school year. Wave I of Add Health

9. While elite colleges do often require interviews, most students do not apply to such schools, and we would expect that those who do and are rejected usually attend college elsewhere.

included both an in-school questionnaire, completed by all students in attendance at the 132 selected schools on the day of data collection, and an in-home questionnaire completed by a randomly selected subsample of adolescents. Parents of the youth selected for the Wave I in-home questionnaire also were interviewed.

Participants were sampled using a two-stage stratified design. In stage one, 132 schools were selected randomly from a national sampling frame stratified by region, urbanicity, school size, school type (private, public, parochial), and racial composition. Approximately 90,000 students completed the in-school interview, from which a nationally representative probability sample of close to 20,000 adolescents completed an in-home (Wave I) interview. Of these, over 14,000 respondents completed a follow-up (Wave II) interview in their homes in 1996. In 2001, approximately 15,000 respondents completed a follow-up (Wave III) in-home interview. The current study uses data from these three waves.

The analyses are based on respondents with valid data on the outcome variable (college matriculation), those who completed all three in-home interviews, and those who were still in high school at the time of the Wave II interview. The latter criterion was used in order to ensure that the bodily signs measures (tattoos and grooming) reflect adolescents' appearance practices prior to their entry (or not) into college. The final sample size was 11,010 (5,204 boys and 5,806 girls), representing 98 percent of cases with all three interviews completed. We used the ICE (Royston 2005) and MIM (Carlin, Galati, and Royston 2008) multiple imputation procedures available for Stata version 9.2 to preserve cases and to reduce potential bias from missing covariate values.¹⁰ The multiple imputation procedure for handling missing data involves the construction of several imputed data sets (in our case, 5), each of which uses existing values from the original data set (plus random error) to impute missing values. Data analysis is then done on each imputed data set, and the results of these analyses are pooled, taking into account between-data set variation, to obtain the final analyses reported in the tables below (Royston 2005). We included all independent and dependent variables in the imputation procedure, but only respondents with valid data on the outcome variable were included in the analyses. The resulting sample size of 11,010 is considerably larger than the 8,102 that would have remained after listwise deletion. Our variable means and standard deviations were not substantially different between the observed and imputed data sets. Furthermore, the results we obtained using multiple imputation were substantively similar to the results we obtained using both listwise deletion and mean substitution with dummy variables indicating missingness (results available upon request).

Measures

College Matriculation. The primary outcome of interest in this study is college matriculation. The Wave III in-home interview asked respondents to indicate the highest grade or year of school they had completed as of the interview date, whether they had a high school diploma, and whether they were currently attending a high school, two-year college, four-year college, or graduate school. Respondents who had completed at least one year of either a two- or four-year college, or who currently were attending college or graduate school were coded as 1 = college matriculated; all other respondents were coded as 0. We measured college *matriculation* rather than college *completion* because, by Wave III, not enough time had passed for many of the younger members of the sample to have completed college.¹¹

10. Variables affected most by missing data were parent reports of expectations regarding their child's educational attainment (missing 11 percent), school grades (missing 10 percent), and school attachment (missing 9 percent).

11. One problem with using college matriculation as the criterion measure is that many youths who matriculate into college eventually drop out. To the extent that college dropout is related to our independent variables of interest, tattoos and grooming, the omission of dropouts from the sample may lead us to underestimate these associations. To address this concern, we reestimated all of our models using *years of education* as the dependent measure. Using this alternative measure, a student who entered college and remained for three years would score higher than a student who

Bodily Signs: Tattoos and Grooming. Bodily signs are aspects of physical appearance that are displayed voluntarily by individuals in order to support their aims in the social world. The bodily signs available for examination in the current study are tattoos and grooming. As part of the in-home interview, respondents were asked whether they had permanent tattoos. Because only a small percentage of respondents (4.3 percent) had tattoos by Wave I, we used affirmative responses from the Wave I and Wave II interviews to construct a dichotomous indicator variable coded 1 for respondents with permanent tattoos and 0 for those without (bringing the percentage with tattoos to 7.5 percent). Because our sample is restricted to adolescents who were in middle or high school at the time of the Wave II interview, the tattoo measure identifies only those adolescents who acquired tattoos *prior to* entry (or not) into college (as of Wave III).¹² Grooming was measured based on interviewer ratings. At the end of the Wave I in-home interview, interviewers were instructed to rate how “well groomed” the respondent was on a scale from 1 = very poorly groomed to 4 = well or very well groomed.¹³

Nonvoluntary Aspects of Physical Appearance (Bodily Attributes). Some physical characteristics are displayed more or less involuntarily by individuals regardless of their lifestyle patterns. Measuring such characteristics, therefore, provides a useful point of comparison when examining the links between bodily signs (tattoos and grooming) and college matriculation. The data contain four such measures: body mass, physical maturity, height, and physical disability. Because the voluntary component of these characteristics is likely to be less than that associated with tattoos and grooming, we expect involuntary bodily attributes to have little to no association with adolescent lifestyle choices. Thus, to the extent that involuntary bodily attributes predict college matriculation, such effects should show little to no change when deviant and academic orientation measures are introduced into the analysis.

Physical maturity was measured based on interviewer ratings made at the end of the Wave I in-home interview, when interviewers were instructed to record “how physically mature the respondent was compared to other adolescents of his/her age” on a scale from 1 = very immature to 5 = very mature. Height was measured at Wave I based on respondent self-report. Body mass was measured at Wave I using the body mass index (BMI), computed as the ratio of self-reported weight to height squared. Physical disability was measured based on respondents’ answers to the question, “Do you have difficulty using your hands, arms, legs, or feet because of a permanent condition?” Respondents who answered yes were coded as 1 = has a disability, all others were coded as 0.

entered college and remained only one year. This alternative measure yielded results substantively similar to what we found using college matriculation as the dependent measure, suggesting that our results were not biased by the choice of dependent measure (analyses are available upon request).

12. Because tattoos were not measured in the Add Health data past Wave II, we are not able to capture tattoo acquisition between Waves II and III. Since some respondents completed additional years of high school between Waves II and III, we may have missed some of their tattoo acquisition. However, even if there were a Wave III measure of tattoos, it would be impossible to date their acquisition without much more detailed survey questions. That is, even if Wave III information was available, given the timing of the Wave III data collection, our focus on tattoos at Waves I and II would remain the best way to preserve the temporal ordering of the tattoo and college matriculation measures. It is for this reason that we focus our analysis on the college matriculation of adolescents who acquired tattoos at Waves I or II versus those who did not.

13. According to Groves (2004), most face-to-face interviewers employed by large data collection organizations, such as NORC—the company that gathered Waves I and II of the Add Health data—are middle class women in part-time positions. Based on this demographic profile, we believe it is reasonable to interpret the grooming ratings contained in the Add Health data as reflecting conventional middle class standards of grooming. At the same time, it is important to recognize that the grooming measure used here consists of a single observation made by a single individual at a single point in time in the respondent’s home, a setting where individuals may feel less constrained by conventional norms with respect to their appearance. This could introduce measurement error into our analyses, making it more difficult to detect associations between the grooming measure and other variables.

Lifestyle Domains. We examine two lifestyle domains—academic orientation and deviant orientation—that we hypothesize will account for the associations between bodily signs (tattoos and grooming) and college matriculation. The lifestyle measures were taken at Wave II while the adolescents were still in middle and high school. Academic orientation was measured by two separate variables: grades and school attachment. Grades were measured as the mean of four self-report items: “At the most recent grading period/last grading period in the spring, what was your grade in (1) English or language arts, (2) mathematics, (3) history or social science, (4) science?” The reliability coefficient (alpha) for this scale was .74. School attachment was measured as the mean of three items ranging from 1 = strongly agree to 5 = strongly disagree: (1) “You feel close to people at your school,” (2) “You feel like you are part of your school,” (3) “You are happy to be at your school.” The reliability coefficient (alpha) for this scale was .78.

Deviant orientation was measured by five variables: delinquency involvement, cigarette smoking, unprotected sex, best friends’ alcohol and marijuana use, and gang membership. Delinquency involvement was measured using eight items tapping the past-year frequency with which respondents had engaged in the following activities: damaged property, seriously injured someone, stolen something worth over \$50, burglarized a house or building, used or threatened to use a weapon to get something, sold drugs, stolen something worth under \$50, and taken part in a group fight. Response options were 0 = never, 1 = 1 or 2 times, 2 = 3 or 4 times, 3 = 5 or more times. The reliability coefficient (alpha) for this scale was .75.¹⁴

Cigarette smoking and unprotected sex were measured by the following questions: (1) “Since the last interview, have you smoked cigarettes regularly, that is, at least one cigarette every day for 30 days (yes/no)?” and (2) “Thinking of all the times you have had sexual intercourse during the past 12 months, about what proportion of the time have you or a partner of yours used birth control, that is, some form of pregnancy protection?” (recoded to 1 = used birth control less than half the time, 0 = used birth control half the time or more, or never had sex). We measured best friends’ alcohol and marijuana use because we are interested in the respondents’ degree of involvement in a youth subculture that favors drugs and alcohol. We combined two measures: (1) “Of your three best friends, how many drink alcohol at least once a week?” and (2) “Of your three best friends, how many use marijuana at least once a month?” The reliability coefficient (alpha) for this scale was .69. Gang membership was measured by the yes/no question: “Have you been initiated into a named gang?”

Control Variables. The control variables included in this study were selected for two purposes. First, we wished to eliminate from the analysis contemporaneous and background factors that are likely to influence bodily appearance, lifestyle patterns, and college matriculation. To the extent that such factors can be controlled, we will be in a better position to argue that the bodily signs measures reflect lifestyle patterns that, in turn, have implications for college matriculation. Second, we wished to determine whether bodily signs (tattoos and grooming) are associated with college matriculation over and above other known correlates of college matriculation. To the extent that this is the case, our results may offer an interesting set of indicators for sociologists to examine in more detail in their ongoing studies of educational outcomes. The control variables measured here are family characteristics (SES and family structure), race, cognitive ability, “noncognitive traits” (e.g., self-esteem, depressed mood, and physical health), age, parents’ expectations for their child’s college attendance, and parental monitoring of their child’s behavior.

Family SES, family structure, race, and parental expectations have all been shown to predict educational attainment (Farkas 2003). In addition, these measures may be associated with an adolescent’s propensity to acquire tattoos and to appear well-groomed (by conventional

14. Delinquency scores were computed using item response theory (IRT) scaling, which is useful for scoring skewed items such as these (Osgood, McMorris, and Potenza 2002). IRT scaling uses individuals’ response patterns to rank order individuals on a latent continuum of the underlying construct of interest.

standards) during the middle and high school years. Family SES was measured as the mean of the z-scores of the respondents' reports of their parents' levels of education (ranging from 1 = never went to school to 9 = training beyond a four-year college degree), and the parents' reports of their own occupation (ranging 1 = not employed to 11 = employed in a professional/managerial occupation). Family structure was measured as one of the following four types: (1) two-parent family, (2) step family, (3) single-parent family, and (4) other family type. Race was measured via self-report as a set of dummy variables for black, Hispanic, Asian, and other, with white as the reference category. Parents' expectations for their child's college attendance were measured via parents' responses to the question: "How disappointed would you be if {NAME} did not graduate from college?" Responses ranged from 1 = very disappointed to 3 = not disappointed. The item was reverse coded so that higher scores indicate higher parental expectations.

Cognitive ability also has been shown to be a strong predictor of educational attainment (Farkas 2003). Cognitive ability was measured using the respondents' scores on the abridged version of the Peabody Picture Vocabulary Test (PPVT-A), standardized by age. The PPVT-A is a measure of receptive (hearing) vocabulary or verbal cognitive ability. It includes a subset of 87 items from the Peabody Picture Vocabulary Test-Revised (Dunn and Dunn 1981), and takes about 5 minutes to administer. All interviewers received training in administering the PPVT-A, and were required to pass a pronunciation certification test for all words in the test.

In addition to cognitive ability, performance-related characteristics not measured directly by test scores (e.g., "nongenerative traits") have been shown to influence success in school. Three nongenerative traits are measured here: self-esteem, depressed mood, and physical health. These characteristics also may influence an adolescent's likelihood of acquiring tattoos or appearing well-groomed in public. Self-esteem was measured as the mean of the following six self-report items, scored from 1 = strongly agree to 5 = strongly disagree: (1) "You have a lot of good qualities," (2) "You have a lot to be proud of," (3) "You like yourself just the way you are," (4) "You feel like you are doing everything just about right," (5) "You feel socially accepted," (6) "You feel loved and wanted." The reliability coefficient (alpha) for this scale was .85. The scale was reverse coded so that higher scores indicate more self-esteem.

Depressed mood was measured as the mean of the following seven self-report items, scored from 0 = never or rarely to 3 = most of the time: How often was each of the following things true during the past week: (1) "You felt you could not shake off the blues, even with the help of your family and friends," (2) "You had trouble keeping your mind on what you were doing," (3) "You felt depressed," (4) "You felt that you were too tired to do things," (5) "You felt hopeful about the future (reverse coded)," (6) "You felt sad," (7) "You felt life was not worth living." The reliability coefficient (alpha) for this scale was .78. Physical health was measured by the item, "In general, how is your health?" scored from 1 = excellent to 4 = fair: The item was reverse coded so that higher scores indicated better health. The mean scores for boys and girls were 3.0 and 2.8, respectively.

We also control for age and parental monitoring of the adolescent's behavior. Because we are using a mixed-age sample, it is important that we net out the effects of age from our analyses. Age was measured in years (at Wave III). An adolescent's likelihood of acquiring tattoos, appearing well-groomed in public, and going to college may depend in part on the amount of supervision and monitoring that he or she receives from parents. Parental monitoring was measured via the sum of the following six yes/no items: "Do your parents let you make your own decisions about . . ." (1) "the people you hang around with," (2) "what you wear," (3) "how much television you watch," (4) "which television programs you watch," (5) "what time you go to bed on weeknights," (6) "what you eat?" The reliability coefficient (alpha) for this scale was .61, which, while on the low side, is acceptable given that the scale consists of dichotomous items only. The scale was reverse coded so that higher scores indicate more parental monitoring.

Finally, a substantial threat to the validity of our theoretical model is that we will be unable to distinguish whether (1) the lifestyle patterns adolescents adopt in middle and high

school (e.g., smoking cigarettes, having unprotected sex, drinking and smoking marijuana with friends, engaging in delinquency, and joining gangs) influence their likelihood of going to college; or whether (2) adolescents' perceived likelihood of going to college influences the lifestyle patterns they adopt while in middle and high school. The degree of this threat hinges on our ability to measure "college-boundness," that is, adolescents' perceptions—*while still in middle and high school*—of their likelihood of going on to college, including their perceptions of their opportunities for doing so. Absent such a measure we cannot eliminate the possibility of reverse causality between the outcome measure—college matriculation—and the lifestyle indicators we examine.

We measure college boundness as the mean of two variables—college aspirations and college expectations—each measured using a single self-report item. College aspirations were measured with the question: "How much do you want to go to college?" College expectations were measured with the question: "How likely is it that you will go to college?" Responses ranged from 1 to 5, where 1 was low and 5 was high. The correlation between the items was .71. Controlling for college-boundness puts us in a better position to argue that the lifestyle patterns we examine influence college matriculation net of adolescents' subjective assessments of their own likelihood of (and opportunities for) going to college. Descriptive statistics (means, standard deviations, and ranges) for all variables included in this study are provided in Table 1.

Results

We begin by examining whether the bodily signs (tattoos and grooming) exhibited by adolescents during middle and high school are associated with college matriculation. Figures 1 and 2 show these associations. As shown in Figure 1, at the bivariate level, 61 percent of adolescents with no tattoos had matriculated into college by the Wave III interview, whereas only 34 percent of those with any tattoos had done so. Similarly, Figure 2 shows that 72 percent of adolescents rated by the Add Health interviewers as very well groomed had matriculated into college by Wave III, compared to only 30 percent rated as very poorly or poorly groomed. These associations are not trivial. Indeed, tattoos and grooming are as strongly related to college matriculation as are other well-known demographic correlates of educational attainment. For example, 66 percent of adolescents from two-parent families had matriculated into college by Wave III, compared to only 30 percent of those from single-parent families; and whereas 85 percent of adolescents in the highest quintile of family SES had matriculated into college by Wave III, only 34 percent of those in the lowest quintile had done so. Thus, we find that tattoos and grooming exhibited during the middle and high school years appear to be as strongly associated with college matriculation in early adulthood as other well-known predictors. To our knowledge, this is the first study to report a longitudinal association between these bodily appearance measures and college matriculation.

The associations shown in Figures 1 and 2 may indicate a link between bodily appearance and college matriculation, or they may be due to prior associations with "third variables," such as cognitive ability, noncognitive traits, perceptions of college-boundness, and other individual and family characteristics that are known to influence educational attainment. For example, adolescents with tattoos and adolescents who appear poorly groomed in public may be more likely to come from low-SES families, receive lower levels of parental monitoring, be more depressed, have lower self-esteem, or have low expectations for attending college—all of which might decrease their likelihood of attending college. To address this concern, we estimated a logistic regression equation predicting college matriculation while controlling for these and other factors known to be related to later educational attainment.¹⁵

15. To facilitate the comparison of coefficients, all interval and ordinal level variables were converted to z-scores prior to analysis.

Table 1 • Descriptive Statistics

	<i>Mean</i>	<i>(SD)</i>	<i>Range</i>
Dependent variable (wave III)			
College matriculation	58.7%		0-1
Bodily signs (wave I)			
Permanent tattoo ^a	7.5%		0-1
Well-groomed appearance	2.6	(.8)	1-4
Involuntary bodily attributes (wave I)			
Body mass (BMI)	22.5	(4.5)	11.5-56.4
Physical maturity	3.4	(.8)	1-5
Height (inches)	66.0	(4.1)	48-81
Physical disability	2.0%		0-1
Lifestyle indicators (wave II)			
Academic orientation			
Grades	2.8	(.7)	1-4
School attachment	2.2	(.7)	1.0-3.7
Deviant orientation			
Delinquency (IRT scaled)	-1.9	(.5)	-2.1-2.1
Cigarette smoker	20.0%	(.4)	0-1
Infrequent birth control use	9.0%	(.3)	0-1
Friends' drinking/pot smoking	.9	(1.0)	0-3
Gang membership	4.0%		0-1
Control variables (wave I)			
Family SES	.0	(.9)	-2.2-1.5
Two-parent family	56.2%		0-1
Step family	10.4%		0-1
Single-parent family	28.4%		0-1
Other family type	2.8%		0-1
Male	47.3%		
Age	21.6	(1.6)	18-27
White	53.1%		0-1
Black	21.3%		0-1
Hispanic	15.8%		0-1
Asian	7.0%		0-1
Other race	2.8%		0-1
Vocabulary score	100.4	(14.3)	13-139
Self-esteem	1.9	(.6)	1-5
Depressed mood	.5	(.5)	0-3
Health (self-report)	2.9	(.9)	1-4
Parental expectations	2.3	(.7)	1-3
Parental monitoring	1.3	(1.4)	0-6
College boundness	4.3	(1.0)	1-5

N = 11,010

^a Measured at Waves I and II to increase the rate of response.

The results are shown in Table 2, where we see that the associations of tattoos and grooming with college matriculation remained strong and significant after controlling for these factors, and that their associations are independent of one another. Thus, bodily signs measured during middle and high school contribute significantly to our ability to predict college matriculation. Table 2 also shows that nonvoluntary aspects of physical appearance (e.g., BMI, physical maturity, height, and physical disability) were associated with college matriculation. Specifically, taller adolescents and those with more physically mature appearances during middle and high school were more likely to go to college, while adolescents with higher

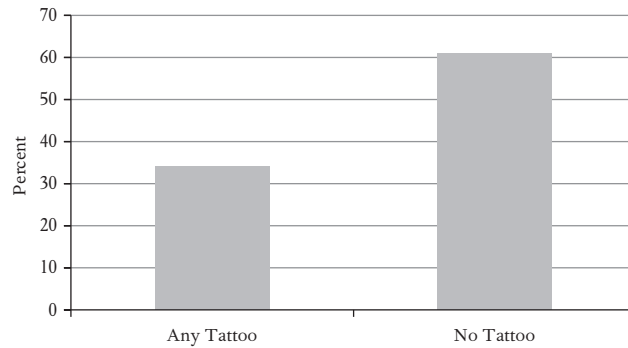


Figure 1 • Percent College Matriculation in Early Adulthood for Adolescents With and Without Tattoos during Middle/High School¹

Source: National Longitudinal Study of Adolescent Health (Harris 2009)

¹ College matriculation rates include respondents who completed at least one year of either a two- or four-year college, or who were attending college or graduate school at the time of the Wave III interview. Tattoos were measured via respondent self-report.

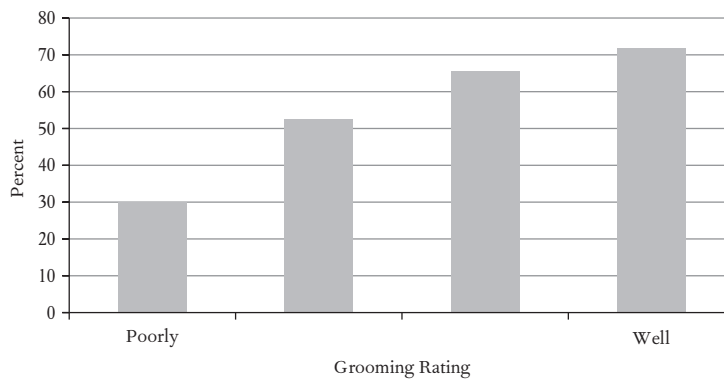


Figure 2 • Percent College Matriculation in Early Adulthood by Grooming Ratings Taken During Middle/High School¹

Source: National Longitudinal Study of Adolescent Health (Harris 2009)

¹ College matriculation rates include respondents who completed at least one year of either a two- or four-year college, or who were attending college or graduate school at the time of the Wave III interview. The grooming rating was made by Add Health interviewers following the Wave I in-home interview.

BMI scores and physical disabilities were less likely to do so. Several other variables were also found to be related to college matriculation, including family SES, race, family structure, gender, vocabulary score, depressed mood, self-reported health, parental expectations regarding college, and adolescents' own college aspirations/expectations.¹⁶

16. The positive associations between minority status and college matriculation were due to our having controlled for factors that were strongly associated with minorities' overall lower likelihood of attending college, including most notably family SES, family structure, and vocabulary score. Without these three variables in the equation, being black and Hispanic were both inversely associated with college matriculation ($p < .05$). Asian status remained positively and

Table 2 • Logistic Regression Coefficients Predicting College Matriculation^a

	<i>B</i>	<i>Odds Ratio</i>
Bodily signs		
Permanent tattoo	-.568***	.567
Well-groomed appearance ^b	.173***	1.188
Involuntary bodily attributes		
Body mass index (BMI) ^b	-.064*	.938
Physical maturity ^b	.049*	1.051
Height ^b	.086**	1.090
Physical disability	-.300*	.740
Control variables		
Family SES ^b	.564***	1.758
Step family	-.670***	.512
Single-parent family	-.625***	.535
Other family type	-.797***	.451
Male	-.464***	.628
Age ^b	-.002	.998
Black	.304**	1.355
Hispanic	.464**	1.591
Asian	.749**	2.116
Other race	-.215	.807
Vocabulary score ^b	.486***	1.626
Self-esteem ^b	.034	1.035
Depressed mood ^b	-.084***	.919
Health (self-report) ^b	.171***	1.187
Parental expectations ^b	.187***	1.206
Parental monitoring ^b	-.046	.955
College boundness ^b	.600***	1.822

N = 11,010

^a Stata version 9.1 (Chantala 2003) was used to adjust standard errors to take into account Add Health's stratified sample design, and to impute all missing data using multiple imputation.

^b Variable converted to z-score prior to analysis.

* *p* < .05 ** *p* < .01 *** *p* < .001 (one-tailed tests)

Thus far, our analysis provides support for the hypothesis that bodily signs exhibited during middle and high school are associated with college matriculation. Next we attempt to understand why this may be the case. Specifically, we examine two sets of lifestyle indicators that might account for the link between bodily signs and college matriculation: academic orientation and deviant orientation. We hypothesize that adolescents who acquire tattoos will be less academically oriented and more inclined toward deviance than adolescents without tattoos, and that these lifestyle choices will tend to decrease their likelihoods of going to college. In addition, we hypothesize that well-groomed adolescents will be more committed to school and less inclined toward deviance, and that these lifestyle choices will tend to increase their likelihoods of going to college. As explained above, however, we do not expect the lifestyle indicators to explain the link between the nonvoluntary bodily attributes (BMI, physical maturity, height, and physical disability) and college matriculation.

Table 3 shows logistic regression results predicting college matriculation for the bodily signs (tattoos and grooming) and nonvoluntary bodily attributes (BMI, physical maturity,

significantly associated with college matriculation when family SES, family structure, and vocabulary score were removed from the equation (analyses available upon request).

Table 3 • Logistic Regression Coefficients Predicting College Matriculation^a

	Model 1		Model 2		Model 3		Model 4	
	<i>b</i>	Odds Ratio	<i>b</i>	Odds Ratio	<i>b</i>	Odds Ratio	<i>b</i>	Odds Ratio
Bodily signs								
Permanent tattoo	-.568***	.567	-.475***	.622	-.344***	.709	-.327***	.721
Well-groomed appearance ^b	.173***	1.188	.143***	1.153	.155***	1.167	.134***	1.143
Involuntary bodily attributes								
Body mass (BMI) ^b	-.064*	.938	-.047	.953	-.074*	.928	-.056	.946
Physical maturity ^b	.049*	1.051	.041	1.042	.071**	1.073	.058*	1.060
Height ^b	.086**	1.090	.103**	1.109	.105**	1.111	.115***	1.122
Physical disability	-.300*	.740	-.352*	.703	-.253	.777	-.313*	.731
Lifestyle indicators								
Academic orientation	—	—	—	—	—	—	—	—
Grades ^b	—	—	.589***	1.802	—	—	.540***	1.716
School attachment ^b	—	—	.058*	1.060	—	—	.030	1.031
Deviant orientation								
Delinquency (IRT scaled)	—	—	—	—	-.063*	.939	-.033	.967
Cigarette smoking	—	—	—	—	-.718***	.488	-.553***	.575
Infrequent birth control	—	—	—	—	-.515***	.597	-.457***	.633
Friends' drinking/marijuana ^b	—	—	—	—	-.041	.960	-.003	.997
Gang membership	—	—	—	—	-.327*	.721	-.292*	.747

N = 11,010

^a All models were estimated controlling for family SES, family structure, gender, age, race, vocabulary score, self-esteem, depressed mood, self-reported health, parental college expectations, parental monitoring, and college boundness. Stata version 9.1 (Chantala 2003) was used to adjust standard errors to take into account Add Health's stratified sample design, and to impute all missing data using multiple imputation.

^b Variable converted to z-score prior to analysis.

* $p < .05$ ** $p < .01$ *** $p < .001$ (one-tailed tests)

height, and disability), with and without the educational and deviant lifestyle indicators. The table is organized so that we may observe what happens to the bodily appearance coefficients when the lifestyle indicators are added. For ease of comparison, Model 1 of Table 3 shows the bodily appearance coefficients previously displayed in Table 2. In Model 2 we include the academic orientation indicators; in Model 3 we include the deviant orientation indicators; in Model 4 we include both sets of lifestyle indicators simultaneously. Substantial reductions in the bodily appearance coefficients would indicate that they are linked to lifestyle patterns that have implications for college matriculation.¹⁷

As shown in Model 2 of Table 3, the academic orientation indicators (grades and school attachment) are significantly associated with college matriculation. Adolescents who received higher grades and who felt attached to school were more likely to go to college, net of controls (not shown). In addition, the results show reductions in the coefficients for tattoos (16 percent) and grooming (17 percent) between Models 1 and 2, indicating that the lower likelihood of college matriculation among adolescents with tattoos and those who appear poorly groomed reflects in part their lack of commitment to a lifestyle that includes academics. The table also shows that the coefficients for tattoos and grooming remained highly significant after controlling for grades and school attachment. With respect to grades, this suggests that the observed associations between the bodily signs and college matriculation are not accounted for by teacher discrimination. If teacher discrimination was the driving factor, we would have expected the associations of tattoos and grooming with college matriculation to be reduced to nonsignificance after controlling for school grades.

In Model 3 of Table 3 we enter the deviant orientation indicators (delinquency, cigarette smoking, infrequent birth control use, friends' drinking and pot smoking, and gang membership). As shown, delinquency, cigarette smoking, infrequent birth control use, and gang membership all were significantly and inversely associated with college matriculation. Moreover, the coefficient for tattoos was reduced by 39 percent and the grooming coefficient was reduced by 10 percent when the deviant orientation indicators were added. These results indicate that the lower likelihood of college matriculation among adolescents with tattoos reflects in part their greater involvement in lifestyles that include deviant behavior, and that the higher likelihood of college matriculation among adolescents who are well-groomed has relatively little to do with their involvement (or lack thereof) in deviant behavior.¹⁸

In Model 4 of Table 3 we entered all of the lifestyle indicators into the equation together. The results show that grades, cigarette smoking, infrequent birth control use, and gang membership were significantly associated with a lower likelihood of college matriculation; while school attachment, delinquency, and friends' drinking and marijuana use had no independent association.¹⁹ In addition, we found sizeable reductions in the coefficients for tattoos (42 percent) and grooming (23 percent). It is important to note, however, that although reduced, the coefficients for tattoos and grooming remained significant after all of the lifestyle indicators were added to the model. We tested for interactions between the bodily signs measures and the lifestyle indicators and found none. Overall, the results indicate that most of the reduction in the association between tattoos and college matriculation was due to the deviant lifestyles of adolescents with tattoos, and that most of the reduction in the association between grooming

17. The results shown in Table 3 were calculated controlling for family SES, family structure, gender, age, race, vocabulary score, self-esteem, depressed mood, self-reported health, parental college expectations, parental monitoring, and perception of college boundness (coefficients not shown).

18. The weaker results for grooming may be due to measurement error in the grooming measure owing to the fact that the measure was taken by a single individual at a single point in time in the respondent's home, a setting where individuals may feel less constrained by conventional norms with respect to their appearance. Thus, the link between grooming and lifestyle orientation likely is underestimated in these analyses.

19. In supplemental analyses (not shown) we determined that the association between delinquency and friends' drinking/marijuana use and college matriculation was accounted for by grades (results available upon request).

Table 4 • Percent Reduction in Coefficients for Tattoos and Grooming as a Result of Adding the Lifestyle Indicators as Covariates (coefficients are shown in Table 3)^a

<i>Lifestyle Indicators</i>	<i>Tattoos (Percent)</i>	<i>Grooming (Percent)</i>
Model 2 – Academic orientation	16	17
Model 3 – Deviant orientation	39	10
Model 4 – All lifestyle indicators	42	23

^a Percent reduction was calculated based on data shown in Table 3 using the formula $[(\beta_2 - \beta_n)/\beta_2]$, where β_2 is the tattoo/grooming coefficient from Model 2, and β_n is the tattoo/grooming coefficient from Models 3 through 5.

* $p < .05$ ** $p < .01$ *** $p < .001$ (one-tailed tests)

and college matriculation was due to the academic orientations of well-groomed adolescents. These results are summarized in Table 4.

In contrast to the bodily signs coefficients (tattoos and grooming), the coefficients for the involuntary bodily attributes (BMI, physical maturity, height, physical disability) showed a mixed pattern of change when the academic and deviant lifestyle indicators were added to the model. First, as shown in Table 3, the association between BMI and college matriculation was reduced (and rendered nonsignificant) when the academic orientation indicators were added to the model. This suggests that the reason adolescents with high BMI were less likely to go to college was that they were less academically oriented (or that they were discriminated against by teachers who gave them low grades). The BMI coefficient was not substantially affected when the deviant orientation indicators were added to the model. Second, the association between physical maturity and college matriculation remained more or less unchanged when the educational orientation indicators were added to the model, but increased in magnitude when the deviant orientation indicators were added to the model. These results suggest a suppressor effect in which the positive association between physical maturity and college matriculation was made more evident once we took into account that physically mature adolescents were more likely to engage in deviance. Similarly, the association between height and college matriculation increased when the academic orientation indicators *and* deviant orientation indicators were added to the model suggesting a suppressor effect in which the positive association between height and college matriculation was made more evident once we took into account that taller adolescents tended to be less academically oriented and more likely to engage in deviance. Finally, the association between physical disability and college matriculation was reduced (and rendered nonsignificant) when the deviant orientation indicators were added to the model, but increased when the academic orientation indicators were added.

Together, these results provide little evidence that involuntary bodily attributes are linked in a consistent fashion to college matriculation through lifestyle choices. It appears that aspects of physical appearance over which adolescents have voluntary control (tattoos and grooming) are more associated with lifestyle patterns that have implications for subsequent college matriculation than are involuntary bodily attributes.

Subgroup Analyses

Next, we turn our attention to a more focused examination of the roles that status characteristics (e.g., gender, race, and social class) play in the associations between the bodily signs (tattoos and grooming) and college matriculation. Our main concern is that differential treatment and/or socialization based on gender, race, and social class may influence both the ways that adolescents choose to appear and their likelihoods of going to college. While we controlled for these and other status characteristics in our previous analyses, statistical controls do not eliminate the possibility

that associations between the bodily signs and college matriculation may differ between status groups. The question thus remains: Among similarly situated adolescents with respect to demographic characteristics, do tattoos and grooming predict college matriculation? If so, then we may conclude that voluntary aspects of physical appearance are linked to educational attainment independent of the prior social conditioning and differential treatment that adolescents experience based on the status characteristics of gender, race, and social class.

To address this question, we divided the sample by gender, race, and social class and replicated our core analyses. The results are shown in Table 5 where the rows display the tattoo and grooming coefficients (predicting college matriculation) for the various demographic subgroups. The table shows that the association between tattoos and college matriculation was consistent across gender and SES, but not across race, where a significant interaction emerged. More specifically, the results show that for Asians there is a significantly stronger negative association between tattoos and college matriculation than for other race groups. This pattern is reflected in the raw data where we find that that 78 percent of Asian American students without tattoos matriculated into college by the Wave II interview, compared to only 30 percent of those with tattoos (the figures were 63 percent and 37 percent for whites, 57 percent and 38 percent for blacks, and 53 percent and 30 percent for Hispanics). The table also shows that the association between grooming and college matriculation was smaller for Asians compared to other race groups; however, this difference was not statistically significant.

To understand these results it is useful to recall that for decades Asian American students have outpaced other demographic subgroups in educational attainment (Hirschman and Wong 1986; Zeng and Xie 2004). In the Add Health data, for example, 73 percent of Asian Americans had matriculated into college by the Wave III interview, compared to 50 percent of Hispanics, 56 percent of blacks, and 61 percent of whites. In addition, Asian adolescents as a group received the highest grooming ratings by the Add Health interviewers. Against this backdrop, we speculate that for Asian adolescents—more so than for other demographic subgroups—acquiring a tattoo serves as a particularly powerful (bodily) sign of deviation from cultural group norms (Wong et al. 1998). In other words, for Asian adolescents, acquiring a tattoo appears to be a particularly telling (bodily) sign of departure from conventionality.

Table 5 • Logistic Regression Coefficients for the Effects of Tattoos and Grooming on College Matriculation for Selected Subgroups of the Sample^a

Sample Subgroup	Tattoo		Grooming ^b	
	<i>b</i>	Odds Ratio	<i>b</i>	Odds Ratio
Males (<i>n</i> = 5,204)	-.549***	.578	.194***	1.214
Females (<i>n</i> = 5,806)	-.570***	.565	.154***	1.167
Low SES (<i>n</i> = 5,528)	-.578***	.561	.191***	1.212
High SES (<i>n</i> = 5,482)	-.552***	.576	.160***	1.174
Whites (<i>n</i> = 5,847)	-.511**	.600	.188***	1.207
Blacks (<i>n</i> = 2,348)	-.340	.712	.161**	1.175
Hispanics (<i>n</i> = 1,744)	-.427*	.652	.148**	1.160
Asians (<i>n</i> = 768)	-1.480*** ^c	.228	.049	1.051
Total sample (<i>n</i> = 11,010)	-.568***	.567	.173***	1.188

^a Each row in the table represents a separate logistic regression model. All models were estimated controlling for family SES, family structure, gender, age, race, vocabulary score, self-esteem, depressed mood, self-reported health, parental college expectations, parental monitoring, and college boundness. Stata version 9.1 (Chantala 2003) was used to adjust standard errors to take into account Add Health's stratified sample design, and to impute all missing data using multiple imputation.

^b Variable converted to z-score prior to analysis.

^c Coefficient is significantly different than other race coefficients using the formula $b_1 - b_2 / (\sqrt{se_{b_1}^2 + se_{b_2}^2})$, where b_1 and b_2 are the unstandardized logistic regression coefficients being compared and se_{b_1} and se_{b_2} are their standard errors (Long 1997).

* $p < .05$ ** $p < .01$ *** $p < .001$ (one-tailed tests)

Discussion

At the general level, the study introduced an approach to predicting outcomes in goal-structured settings that focuses on the voluntary ways in which people appear in those settings. Drawing on literature from the sociology of the body and the sociology of culture, we defined “bodily signs” as those aspects of physical appearance that individuals display voluntarily in order to support their aims in the social world. We argued that people choose their physical appearances based on their awareness of the semiotic codes (Swidler 2001) and vocabularies of body idiom (Goffman 1963) that govern bodily appearance in specific social settings and, based on this awareness, they make strategic choices regarding how to appear in public. We further recognized that these strategic choices may be made against the backdrop of prior socialization and differential treatment based on gender, race, and social class, and that these factors may limit the range of bodily signs expressed, and therefore the degree to which bodily signs reflect lifestyle choices that bear on college matriculation.

The bodily signs approach opens up three largely unexplored avenues for sociological research. First, the approach constitutes what Swidler (1986:284) referred to as a “new analytic perspective” for analyzing “how culture is used by actors.” The bodily signs that an adolescent uses to embellish his or her public performance are not selected from thin air, nor do they appear to be mere reflections of personal style or taste. Rather, adolescents appear to select bodily signs from a finite set of culturally available repertoires (collections of symbols) that are known to have meaning within the social fields in which they participate (Atkinson 2003; Bourdieu 1984; Gimlin 2002; Shilling 1993; Swidler 2001; Willis 1977). Individual decisions to use or not use bodily signs, therefore, are in part strategic in that they reflect the advantages an individual seeks to achieve and the disadvantages an individual seeks to avoid with respect to his or her identity claims and aims in the social world (see in particular, Atkinson 2003; Gimlin 2002). In short, how people choose to appear in public may constitute a prominent and pervasive way in which individuals *use* culture in goal-structured settings.

Second, the bodily signs approach provides a previously unexplored avenue for measuring human agency with respect to life course outcomes. The ways in which people manage their physical appearances in social settings reveals in a concrete way the efforts they are willing to invest in managing their identities and achieving their goals and objectives in the social world. Although human agency constitutes an important aspect of the theoretical frameworks that underlie much life course research (for reviews, see Gecas 2003; Shanahan 2000), it is notoriously difficult to measure empirically (Emirbayer and Mische 1998; Hitlin and Elder 2007). Voluntary manifestations of physical appearance, therefore, offer a potentially rich source of empirical data for further integrating the concept of human agency (in the form of intentional investments in physical appearance) into life course analyses.

Third, and perhaps most important, the bodily signs approach incorporates insights from the sociology of the body—a largely qualitative and theoretical area of sociological inquiry—into a quantitative analysis of life course outcomes. Studies of the link between physical attractiveness and social status notwithstanding (Mulford et al. 1998; Umberson and Hughes 1987; Webster and Driskell 1983), quantitative sociologists have paid relatively little attention to the body as it is experienced and utilized by individuals in goal-structured social settings. According to Shilling (1993), “recognizing that the body has become a project for many modern persons entails accepting that its appearance, size, shape, and even its contents are potentially open to reconstruction in line with the designs of its owner” (p. 5). Treating the body as a project involves a practical recognition of the body as both a personal resource and a social symbol capable of imparting messages about a person’s conception of his or her identity and his or her aims in the social world (Atkinson 2003; Giddens 1991; Gimlin 2002; Phelan and Hunt 1998; Shilling 1993). We believe the current study takes an important step toward incorporating the body, conceptualized as both a personal resource and as a socially conditioned object, into a large-scale, longitudinal, empirical analysis. Our results indicate that the approach is worthy of continued effort.

We explored the bodily signs approach here by examining the relationship between bodily signs (measured as tattoos and grooming) and college matriculation among a large, nationally representative sample of adolescents in middle and high school. We argued that the bodily signs displayed by adolescents in middle and high school may reflect lifestyle patterns that have implications for their educational attainment. The lifestyle patterns we measured were indicative of an adolescent's academic and deviant orientations. We argued that if adolescents with tattoos were less likely to attend college in early adulthood, it might suggest that tattoos signified a deeper commitment to nonconventional lifestyles (e.g., deviance) and a lesser commitment to conventional lifestyles (e.g., academics), at least during the mid- to late 1990s and early 2000s, when the data for this study were gathered. In addition, we examined whether being well-groomed in adolescence was associated with a higher likelihood of college matriculation. We argued that if this was the case, it might be because good grooming signifies a greater commitment to conventional values, including academic achievement, and a lesser commitment to nonconventional involvements, such as deviance.

We found that adolescents with tattoos were significantly less likely to attend college in early adulthood, and that adolescents who were well-groomed were significantly more likely to attend college. These results held after controlling for a wide range of factors that have been shown to predict college matriculation, including demographic characteristics, cognitive and noncognitive traits, college aspirations and expectations, parents' expectations for their child's college attendance, and parental monitoring of the child's behavior. Our results indicate that the bodily signs adolescents display in middle and high school are predictive of their college matriculation in early adulthood, over and above well-established predictors of educational attainment. In addition, we found that the lifestyle indicators (e.g., academic and deviant orientation) explained meaningful amounts of the relationship between the bodily signs and college matriculation. Specifically, we found that deviant orientation accounted for 39 percent of the association between tattoos and college matriculation, and that academic orientation accounted for 17 percent of the association between grooming and college matriculation.

Our ability to account for a substantial portion of the association between tattoos and college matriculation indicates that tattoos may reflect an adolescent's inclination to be involved in deviance, which has implications for his or her likelihood of attending college. This finding suggests that adolescents may use tattoos to signal an oppositional relationship toward mainstream identities and conventional cultural values and goals (Haenfler 2010). This would be consistent with Mary Kosut's (2006b) observation that much of the commodification of tattooing that has occurred in recent years has been oriented toward youth culture, repositioning the practice as a "sign of rebellion, youth, trendiness, or some amalgam of coolness" (p. 1039). It follows that as tattooing becomes increasingly popular among the young, and as those young people age into adult roles and statuses, we may see an increasingly positive attitude toward tattooing take hold across larger swaths of the general public in the coming years. While it appears that we are not quite at that point (Adams 2009), we may be fast approaching a time when tattoos per se are no longer associated with deviance in the public mind, but that rather the *type and location* of the tattoo receives greater focus as a source of information regarding an individual's orientation toward conventionality. For the time being, however, it appears that tattoos *on adolescents* continue to carry stigma and to symbolize outsider status, even as they have become more popular among certain segments of the adult middle class (Kosut 2006b).

While much of the association between tattoos and college matriculation was accounted for by academic and deviant orientations, this association remained significant after these lifestyle measures were controlled. By our theoretical logic, this could be because tattoos help youths express their deeper commitments and orientations in ways that are not well captured by standard survey measures. Alternatively, it could be due to error in our measures of orientations deviant and academic. Finally, tattoos could capture in part other social and psychological processes that affect matriculation but that are conceptually distinct from academic and

deviant orientations and from our other covariates. Determining what else tattoos may be associated with that has implications for college matriculation seems an important direction for future research. We also note that the tattoo-matriculation association is not conditioned by grades or by our other measures of orientations. This suggests that the construct or process that tattoos represent does not enhance the harmful effects of deviance or of detachment from academic pursuits. Future research on tattoos' significance thus should focus on constructs and processes that would have similar effects for higher- and lower-performing students and that tend to, but do not always, coincide with standard markers of lifestyle patterns.

Our *inability* to account for a more substantial portion of the association between grooming and college matriculation using academic and deviant lifestyle indicators suggests that the link between grooming and college matriculation may reflect other characteristics and processes. For one thing, grooming may be more a matter of personal style or fashion preference than tattoos, thus adding considerable "noise" to its measurement as a bodily sign. In addition, it may be that grooming reflects underlying stable personality traits such as conscientiousness, general conformity, or a desire to please conventional others (none of which were available for measurement), which may play important roles in the likelihood of attending college, independent of an adolescent's lifestyle involvements. Finally, as we noted above, the grooming measure used in this study was made by a single individual at a single point in time in the respondent's home, a setting where individuals are likely to feel less constrained by conventional norms, which likely introduced measurement error and made it more difficult to detect associations with other variables.

Moreover, our results revealed interesting race differences in the relationship between tattoos and college matriculation. Specifically, we found that among Asian adolescents the negative association between tattoos and college matriculation was significantly stronger than it was for the other race groups. We speculated that this may be due to cultural differences between race groups. A considerable body of research has documented the high educational attainment of Asian Americans relative to other groups (Zeng and Xie 2004).²⁰ The dominant explanation for this pattern is "the cultural thesis" (Hirschman and Wong 1986), according to which successful minorities place a premium on ambition, persistence, and deferred gratification, and exhibit a strong desire for intergenerational social mobility. Asian Americans not only have higher mean levels of educational achievement, they also engage in substantially lower levels of crime and deviance (including misbehavior at school) compared to other race groups (Jang 2002). Thus, it may be that for cultural groups that place a high premium on educational attainment and conformity to school norms and values (e.g., Asian Americans), tattoos serve as a powerful (bodily) sign of deviation from those group standards.

This study distinguished between bodily signs (aspects of physical appearance that are under a person's voluntary control) and involuntary bodily attributes (aspects of physical appearance that are less under such control). We found that bodily signs were more strongly and consistently associated with college matriculation than were involuntary bodily attributes, suggesting that aspects of appearance over which individuals have control may be preferred as indicators of lifestyle patterns that have implications for life course outcomes.

Several of our research decisions and results beg further consideration. First, categorizing a particular physical characteristic as a bodily sign versus a bodily attribute is not always straightforward. BMI and the uncertain causality of being overweight is a good example. Studies find that environmental and genetic factors including parents' BMI, access to healthy foods and exercise opportunities, parents' knowledge, attitudes, and beliefs regarding nutrition

20. Research also has documented considerable variation among specific Asian groups. According to Zeng and Xie (2004), "[W]hile some established Asian groups (e.g., Japanese, Chinese, Asian Indians, and Filipinos) enjoy a relatively high socioeconomic status in comparison with the non-Hispanic white population, recent immigrants of Vietnamese, Laotian, Cambodian, and Hmong origins have faced difficult circumstances, such as low levels of educational attainment, low labor force participation, and excessively high poverty rates" (p. 1077).

and exercise, and schoolmates' behavior have significant effects on the likelihood of being overweight during adolescence (Dietz and Gortmaker 2001; Martin 2008). For these reasons, one may decide, as we have done, to categorize BMI as a bodily attribute, along with height and physical maturity. Alternatively, one could categorize BMI as a *bodily sign* because it is, to a certain degree, under the individual's voluntary control through food intake, energy expenditures, and time spent in sedentary behavior (Dietz and Gortmaker 2001; Reilly and McDowell 2003). Along these lines, and given the strong value placed on thinness in American culture (Gimlin 2002), it may be that adolescents who maintain a low BMI are more inclined to conform to conventional standards in general, a characteristic that also may contribute to their higher rates of college matriculation. Similarly, adolescents who maintain a high BMI may be more inclined to deviate from conventional standards, which may contribute to their lower rates of college matriculation.

The results of Table 3, however, showed mixed support for this interpretation: including academic orientation rendered the association between BMI and college matriculation non-significant (see Models 1 and 2), suggesting that body mass and academic orientation are associated empirically (see also, Crosnoe 2007; Crosnoe and Muller 2004; Gortmaker et al. 1993). However, including deviant orientation had little effect on the association between BMI and college matriculation (in fact, the coefficient increased some), suggesting that the link between BMI and college matriculation may have little to do with a general propensity to deviate from norms. Given the recent focus on obesity in the sociological literature (e.g., Crosnoe and Muller 2004; Crosnoe, Frank, and Straussmann 2008; Ferraro and Kelley-Moore 2003; Frisco, Houle, and Martin 2010; Mueller et al. 2010), obtaining a greater understanding of the role played by individual and group perceptions of cultural norms and the consequences of their violation would seem an interesting direction for future research.

Second, the finding that height—and to a lesser extent physical maturity—is positively associated with college matriculation in all of our models is intriguing. It is consistent with a recent study of 950,000 Swedish men that found the odds of attaining higher education (7 to 27 years later) was significantly higher for those who were taller at age 18 (Magnusson, Rasmussen, and Gyllensten 2006). It also is consistent with a recent study by Nicola Persico, Andrew Postlewaite, and Dan Silverman (2004) who found that controlling for teen height essentially eliminated the effect of adult height on wages for white men (using data from the British National Child Development Survey [$n = 1,772$] and the American National Longitudinal Survey of Youth [$n = 2,063$]). Together with our own results, these findings indicate that height during the teen years is a potentially important correlate of later socioeconomic success. A better understanding of the mechanisms that underlie this association would seem a useful direction for future research.

Before concluding, a few caveats are in order. First, we focused on tattoos and grooming in this first quantitative test of the bodily signs approach because tattoos and grooming constitute clear examples of voluntary manipulations of physical appearance, and because measures of tattoos and grooming were available in the Add Health data. Given this focus, however, the study is limited by the fact that we could not ascertain the size or the location of the tattoo on the adolescent's body. Nor could we ascertain what image the tattoo depicted, whether it was on a readily visible body part, or the number of tattoos the adolescent had. As indicated earlier, recent research suggests that a concealable tattoo may signify quite a different orientation toward conventionality than may one on the neck, face, or hands (Adams 2009). In addition, a recent study of 1,753 undergraduate sociology students found that those with four or more tattoos were significantly more likely to have been arrested by police than those with fewer or no tattoos (Koch et al. 2010). We suspect, therefore, that the association between tattoos and deviance observed in the current study would be especially pronounced for those whose tattoos were on highly visible body parts, or those with several or more tattoos. Similarly, we could not ascertain what aspects of physical appearance were most salient in determining the grooming ratings made by the Add Health interviewers. Future studies of the link between bodily signs

and life course outcomes, such as college matriculation, should seek to gather more detailed information on the nature of the bodily signs investigated so that we can better understand the nuanced ways in which people's appearances reflect their lifestyle patterns and life course trajectories.

Second, the data used for this study were gathered in 1994 (Wave I), 1996 (Wave II), and 2001 (Wave III), and thus reflect the American cultural context of that period. This is important because, as we mentioned earlier, the prevalence of tattoos among Americans has increased dramatically during the past few decades, including the period of data collection for this study, leading some to suggest that tattoos have lost much of their cultural value as symbols of deviance, rebellion, or disaffection (for reviews, see Atkinson 2003; DeMello 2000; Kang and Jones 2007). Thus, while the current study finds evidence that tattoos were associated with deviance among adolescents during the mid to late 1990s and early 2000s, it remains an empirical question as to whether the same results would be obtained if similar data were gathered today. This, we believe, is an important area for future research.

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