

The College and Noncollege Experience: A Review of the Factors That Influence Drinking Behavior in Young Adulthood*

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ABSTRACT. Objective: To place college drinking within its larger developmental context, we reviewed studies that compare drinking behavior among college students with that of their age-matched non-student peers. Among the recurrent themes identified across these studies, we particularly noted discrepancies in the conceptualization and operationalization of both college status and noncollege status. These discrepancies, and other methodological variations, were then examined because they influence conclusions about drinking outcomes. **Method:** Eighteen studies directly comparing college students with nonstudents were reviewed. **Results:** College students drank more than noncollege peers and, in general, drank more frequently than did noncollege peers, although these differences were likely the result of factors other than col-

lege attendance itself. Younger people drank more than older peers in both groups. College students also tended to be more at risk for alcohol-related problems, including alcohol abuse and alcohol dependence, again likely the result of factors other than college attendance per se. **Conclusions:** This review highlights the lack of consensus in the conceptualization and operationalization of college and noncollege status across studies, as well as the importance of variables such as living situation, age, full-time and part-time status, and type of college, which may be more directly related to variations in alcohol consumption than is college status itself. Future investigations of college drinking should place this phenomenon within the larger context of developmental processes associated with this time of life. (*J. Stud. Alcohol Drugs*, 71, 742-750, 2010)

INCREASINGLY AVAILABLE DATA on the lifetime patterns of alcohol consumption in the United States have made apparent that drinking increases rapidly during the teen years to reach lifetime peaks during young adulthood (ages 18-24) and that the prevalence of heavy drinking and frank alcohol dependence—as defined by the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV; American Psychiatric Association, 1994)—peaks in this same age range (Dawson et al., 2004; Naimi et al., 2003). A substantial number of individuals in this late-teen/early-20s age group are enrolled in college; the 2003 U.S. census estimates the number to be nearly 17 million young adults between the ages of 18 and 24 (38.9% of all young adults; Shin, 2005). These college students often drink at high levels and experience many associated adverse consequences. As a result, it has become more common to directly compare drinking levels in college students with their non-college counterparts to assess whether college attendance itself might be escalating drinking.

If one examines the college population in isolation, there are certainly reasons to be attentive to college-specific influences. Hingson et al. (2009) extrapolated from a number of

data sources that, among 18- to 24-year-olds, college drinking contributes to roughly 1,825 student deaths, 599,000 injuries, and 97,000 instances of sexual assault or date rape each year, and the numbers have been increasing annually. The patterns of heavy drinking typically associated with these adverse consequences are strongly related to college-specific factors, such as the presence of a fraternity/sorority system, athletics, dorm living, and spring-break trips (Lee et al., 2006; Presley et al., 2002). Most alarming, perhaps, is that roughly 38% of college students meet criteria for either alcohol abuse (31.6%) or alcohol dependence (6.3%) according to the DSM-IV (Knight et al., 2002).

Recent data reveal, however, that noncollege peers also display high rates of risky behaviors. The 2001-2002 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) indicates that both college students and their noncollege peers consume alcohol at similarly heavy rates (Chen et al., 2004), that rates of alcohol abuse and dependence are roughly equivalent for college and noncollege individuals, and that the development of alcohol-use disorders among young adults is more related to their living situation (e.g., at home with parents, on campus, off campus) than to college status itself (Dawson et al., 2004). Spikes in heavy drinking among 18- to 24-year-olds are possibly a function of developmental processes occurring in this transitional period, sometimes called “emerging adulthood” (Arnett, 2005). During this period of role instability, college attendance is only one of the major life options; young adults

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also may move away from home (without attending college), begin full-time jobs, take time off to “find themselves,” or join the armed forces. To ascertain the specific influences of the college experience on alcohol consumption above and beyond the broader role of emerging adulthood, researchers must disentangle these various influences.

Identifying those influences that are particular to college attendance is complicated, however, by a definition of college attendance that is not universally shared by researchers. On close examination, it becomes clear that conceptualizations of college status are inconsistent, and, in some cases, the criteria used to classify an individual as a college student are ambiguous. Furthermore, some studies treat a substantial group of individuals who are in some sense “part time,” or who move frequently between college and noncollege status, as “atypical” and therefore exclude them from analyses. As a result, conclusions about how the college (vs. noncollege) experience affects drinking remain elusive.

The current review elaborates and documents recurrent themes that have emerged in studies comparing drinking behavior among college students and their age-matched nonstudent peers. In comparing studies, we paid particular attention to both overlapping and divergent conceptualizations of both college and noncollege status. In addition, we reviewed methodological differences that influence how individuals are categorized as a college student or a noncollege peer, or excluded from analyses. Finally, we reviewed the conclusion that college status affects drinking outcomes, such as frequency, quantity, and risk for future alcohol-use disorders.

Method

Identification of studies

We identified 18 studies that compared college drinkers with noncollege, age-matched peers, published in peer-reviewed, academic journals of psychology, psychiatry, and substance use (Table 1). Articles were located either by entering search terms such as college, noncollege, young adults, and drinking behavior in the PsycINFO and Medline databases, or they were identified by searching the reference lists of relevant articles. For inclusion, a study must have directly compared drinking behavior and/or drinking consequences between college students and noncollege, age-matched peers in the United States. To our knowledge, these studies exhausted the set that meet the inclusion criteria. No restriction was made on year of publication, because the earliest study identified was published in 1991 and the majority of articles were published after 2000. Articles were excluded if a definition or conceptualization of college status was not provided, if samples did not come from the U.S. population, or if comparisons between college students and age-matched peers in the general population were not made. One study

(Basten and Kavanagh, 1996) was excluded because it referred to “noncollege” individuals as college students living off campus versus “college” individuals who are residential, on-campus students.

Factors related to assigning college status

Each of the 18 studies in this review provided a “definition” or conceptualization of college status, the purpose of which primarily was to provide a set of criteria for assigning the sample into discrete groups that allow for comparisons in drinking behavior. On the surface, the conceptualization of college status appears relatively consistent across studies (Table 1), with most studies considering current enrollment in college a basic requirement. Variations in college status emerge, however, when specifications regarding age ranges, part-time enrollment, and type of college (2-year or 4-year college) are considered.

Age. Most studies restricted college status to a specific age range. Crowley (1991) identified college students as individuals having “some college education” between the ages of 19 and 22, the “years when young people are most likely to be enrolled in college” (p. 11). Harford and colleagues (2006) defined college status as a function of years of college completed between the ages of 19 to 25, when the sample has “the maximum exposure to college” (p. 805). Slutske (2005) limited the age range to 19-21 to “minimize the inclusion of any college graduates in the noncollege-attending subsample” (p. 322). Lanza and Collins (2006) considered those who were 19 or 20 to be within their category of “college age” but those enrolled in college at age 24 were instead considered “young adult.” Note that age ranges for college inclusion varied a bit across studies. Considering that drinking behavior changes with age (see Faden and Goldman, 2008), it is important to consider the various age ranges listed in these studies before considering results.

Full-time/part-time status. Another differentiation in the conceptualization of college status is full-time and part-time status. Several studies (Dawson et al., 2004, 2005; Lanza and Collins, 2006; Slutske, 2005) considered any amount of college enrollment (i.e., both part time and full time) sufficient for college status; others (Barnes et al., 1992; O’Malley and Johnston, 2002; White et al., 2005) indicated full-time attendance is necessary for college status; and others (Chen et al., 2004; Paschall, 2003) conceptualized two distinct college status groups: full-time students and part-time students. By distinguishing part- from full-time status, these studies acknowledged that full-time students may be more engaged in, and more exposed to, academic pursuits than their part-time peers. The identification of these differences allows for comparisons addressing *degree* of college exposure on drinking behavior.

Type of school. A third differentiation in college status worth noting across studies is 2-year colleges (i.e., commu-

TABLE 1. Studies comparing drinking behavior among college students and their noncollege peers

| Study | Study data set | College | Noncollege |
|------------------------------|-------------------------------------|--|---|
| Barnes et al. (1992) | RDD of NY college dorms, households | Full-time, 2- and 4-yr. college students | Not full-time college students |
| Bingham et al. (2005) | AMPS | 4-yr. college degree (including postgraduate degrees) | HS degree or less; postsecondary education (<4-yr. college) |
| Chen et al. (2004) | NESARC | Full- and part-time college students | Noncollege individuals |
| Crowley (1991) | NLSY | College students | HS dropouts; terminal HS grads; ≥ 1 yrs. college, no degree |
| Dawson et al. (2004) | NESARC | Full-time and part-time students (undergraduate and graduate) | Nonstudents, HS students, GED, "other" technical/trade students |
| Dawson et al. (2005) | NESARC | Full-time and part-time students (undergraduate and graduate) | Nonstudents, HS students, GED work, technical/trade students |
| Gfroerer et al. (1997) | NHSDA | Enrolled in college | Not enrolled in college |
| Harford et al. (2006) | NLSY | Yrs. of education | |
| Lanza and Collins (2006) | NLSY | Some college at age 19 or 20 | No college at age 19 or 20 |
| Muthén & Muthén (2000) | NLSY | Some college at age 22 | No college at age 22 |
| O'Malley and Johnston (2002) | NHSDA, MTF | Full/part time in 2- or 4-yr. college | Not attending college; HS students |
| Paschall (2003) | NHSDA | Full and part-time college | All other young adults |
| Schulenberg et al. (1996) | MTF | Continuous yrs. of education | |
| Slutske et al. (2004) | MOAFTS | Female twins in 2- or 4-yr. college | Female twins not in 2- or 4-yr. college; HS dropouts |
| Slutske (2005) | NHSDA | Full-time and part-time college | Currently not enrolled in school |
| Timberlake et al. (2007) | Add Health | Students: 18-24 yrs. old attending 2- or 4-yr. college; withdrawers: 18-24 yrs. old, ≥ 1 yr. college w/o graduating | No complete yr. of schooling beyond 12th grade |
| White et al. (2005) | HHDP | Full time in college at 21 and not in school at 30 and completed ≥ 2 yrs. | Not enrolled in school at age 21 or 30; only completed HS or less |
| White et al. (2006) | RHC Project | Enrolled in 2- or 4-yr. college | Working, unemployed, HS, or alternative school |

Notes: RDD = random-digit-dial technique for telephone survey; NY = New York; yr. = year; AMPS = Alcohol Misuse Prevention Study (Shope et al., 1996); HS = high school; NESARC = 2001-2002 National Epidemiologic Survey on Alcohol and Related Conditions; NLSY = National Longitudinal Surveys of Labor Market Experience of Youth; GED = general equivalency diploma; NHSDA = 1991-1993 National Household Surveys on Drug Abuse; MTF = Monitoring the Future; MOAFTS = Missouri Adolescent Female Twin Study; Add Health = National Longitudinal Study of Adolescent Health; w/o = without; HHDP = Rutgers Health and Human Development Project; RHC Project = Raising Healthy Children Project. A more detailed version of this table is available on request.

nity colleges) versus 4-year colleges. Seven studies explicitly included both 2-year and 4-year college students into one college-status group; two studies (Bingham et al., 2005; Gfroerer et al., 1997) regarded only those students attending 4-year colleges or universities as college students; and one study (Timberlake et al., 2007) split college status into two groups: 2-year college students and 4-year college students. Again, distinguishing 4- from 2-year college attendance allows for comparisons regarding *type* of college exposure on drinking behavior. The remaining studies do not make this differentiation and leave unclear what type of college was attended.

Assigning noncollege status

Compared with college status, the conceptualization of noncollege status was significantly less consistent. In some studies, any individual in the specified age range not meeting criteria for college status is assigned to a catch-all group of noncollege individuals, without any particular qualifica-

tions specified. Across studies, noncollege individuals were comprised of high school dropouts; terminal high school graduates; part-time college attendees; college withdrawers; individuals engaged in general equivalency diploma (GED) work; students with no college degree by age 22; or those attending an "other," alternative educational institution. After completing our review of these 18 studies, we were unable to specify any characteristics inherent to the noncollege individual or to make any meaningful statements about how these individuals spend their time.

Atypical individuals

In several studies, "atypical" young adults were excluded from analyses for not meeting criteria for either college or noncollege status. The purpose of excluding atypical young adults was to maintain clear dichotomous conceptualizations of college and noncollege status. Problematically, conceptualizations of atypical individuals and noncollege individuals overlap across studies. This causes confusion and neces-

sitates caution when comparing conclusions about drinking behavior in the young adult population across studies. Atypical (and excluded) groups comprised the following range of characteristics: individuals who were married, cohabitating, or parents at age 24; college attendees younger than 18 or older than 23; college dropouts; part-time students; early college graduates (before age of 21); late college graduates (after age of 30); and nondrinkers. In the most extreme cases, White and colleagues excluded 40% (in their 2005 article) and 24% (in their 2006 article) of the original sample for not meeting criteria for either college or noncollege status, which leaves a large portion of young adults unaccounted for. Timberlake et al. (2007), on the other hand, considered college dropouts as “college withdrawers” because these individuals might have been “taking a leave of absence” (p. 1021) at the one point sampled. It is evident that no consensus exists as to whether the atypical young adults were excluded entirely, included as a separate group, or placed into the noncollege group.

Other atypical individuals worth mentioning are young adults in longitudinal studies who failed to participate at every time point. Based on attrition analyses, Schulenberg et al. (1996) acknowledged that their excluded sample (those with incomplete data) reported higher rates of substance use and lower scores on protective factors than did the final sample. Bingham and colleagues (2005), who tracked fifth- and sixth-grade students into young adulthood and lost 30% of the original sample to attrition, found a similar pattern. They suggested, however, that the effect sizes in differences found between study noncompleters and completers were small enough to deem “not a serious threat to the validity of this research” (p. 2172). Nevertheless, it is worth noting that the exclusion of noncompleters from analyses may lead to underestimates in problem drinking or skewed conclusions about the impact of college and noncollege variables on drinking outcomes.

Study design

Study design is another point of variation across the studies reviewed. The range of study paradigms comprised prospective, longitudinal studies; twin studies; surveys; and sampling from national epidemiological databases (e.g., NESARC; Table 1). Both the data set from which the sample was derived and the study paradigm played large roles in shaping conceptualizations of college and noncollege status in each study.

The national epidemiological databases varied in the amount of information provided regarding current enrollment status and part- versus full-time enrollment status. For example, the college-status variable in the National Longitudinal Surveys of Labor Market Experience of Youth (NLSY) data set was years of education at the time participants completed the survey. The NESARC and the National

Household Surveys on Drug Abuse (NHSDA) improved on the NLSY by differentiating between full- and part-time enrollment status; respondents were asked whether they are currently “in school, full time” or “in school, part time.” An important limitation in these national data sets was the lack of information as to type of college, such as 2- or 4-year status. Another limitation with the one-time survey method used in these three data sets was the lack of information regarding college-status changes over time (i.e., dropping out of or re-enrolling in college).

Tracking status changes. Several data sets have the capability to track status changes over time. The Monitoring the Future data set (O’Malley and Johnston, 2002; Schulenberg et al., 1996), the Alcohol Misuse Prevention Survey (Bingham et al., 2005), the Raising Healthy Children project (White et al., 2006), the Rutgers Health and Human Development Project (White et al., 2005), and the National Longitudinal Study of Adolescent Health (Add Health; Timberlake et al., 2007) follow multiple cohorts of grade school students into young adulthood. The advantage of using these databases over the NLSY, NHSDA, and NESARC is that they offer the potential to track participants during the transition from late adolescence into young adulthood. However, as noted earlier, the definition of college status in these longitudinal data sets varies dramatically, causing difficulty in comparing college and noncollege individuals from one study to the next.

Genetic component. The study designs used in two studies in this review (Slutske et al., 2004; Timberlake et al., 2007) included a genetic component: Slutske and colleagues (2004) assessed drinking patterns in female twins from the Missouri Adolescent Female Twin Study from ages 19 to 21; Timberlake and colleagues (2007) followed sibling pairs and both monozygotic and dizygotic twins from ages 13 to 24. These data sets provide the first insight into genetic versus environmental influences contributing to both college attendance and drinking behavior in young adulthood. Both studies found hints that college environment factors, in addition to genetic factors, contribute to drinking behavior among sibling and twin pairs. We await future genetically informed studies of college and noncollege samples to clarify what specific aspects of the college and noncollege environments contribute to risky drinking in young adulthood.

Results

Study outcomes

Alcohol-related outcome variables across these studies were as diverse as were conceptualizations of college status. Depending on the data set, drinking outcomes may rest on any of the following indices: frequency and quantity (over a period of 30 days, the past year, and/or lifetime), early onset drinking, heavy episodic drinking, heavy drinking (six

or more drinks per occasion), family history of alcoholism, alcohol-use disorders, drunk driving, and alcohol-related problems. None of the data sets included all of these variables, and most included only one or two drinking outcomes (primarily a quantity and/or a frequency variable). Certain data sets were only partially attentive to drinking behavior among young adults; the NLSY, for instance, includes alcohol outcomes during specific years (1982-1985, 1988-1989, and 1994). Others, such as NESARC and NHSDA, are specifically designed to assess substance use and related risk variables and provide the most comprehensive list of alcohol outcomes.

Quantity. Because of the wide range of drinking outcomes, first-glance comparisons across studies are often confusing, leaving conclusions to appear inconsistent. However, when diverse outcome variables are loosely categorized into basic quantity or frequency metrics, more consistent findings could be extracted. For this purpose, drinking quantity, heavy alcohol use, number of times drinking five or more alcoholic beverages on one occasion, and average amount of alcohol consumed per drinking occasion were categorized as quantity; drinking frequency, frequency of drunkenness, number of times having consumed an alcoholic beverage, and total number of drinking days in the past 30 days were categorized as frequency. For those studies with an outcome variable confounding frequency and quantity (e.g., frequency of drunkenness, frequency of drinking five or more drinks on one occasion), it was considered a quantity variable when used to classify individuals as heavy drinkers (e.g., at least one episode of drunkenness in the last month) and as a frequency variable when the research emphasis was on differences in frequency (e.g., rarely vs. daily).

Nearly all studies that addressed drinking quantity found that college students consumed higher quantities of alcohol than noncollege peers or engaged in riskier consumption patterns (Chen et al., 2004; Dawson et al., 2005; Gfroerer et al., 1997; O'Malley and Johnston, 2002; Paschall, 2003; Schulenberg et al., 1996; Slutske, 2005; Slutske et al., 2004; Timberlake et al., 2007; White et al., 2006). It should be noted that Chen et al. (2004) and Lanza and Collins (2006) found no differences in overall quantity of alcohol consumption between college and noncollege individuals (Schulenberg et al. found this true only for college men). Of those studies that included a comparison between older and younger cohorts of college and noncollege individuals, older college participants (21-24 years) had higher rates of episodic heavy drinking and intoxication.

One caveat attached to this omnibus conclusion is that several studies found this higher level of consumption particularly associated with college students living away from home, indicating the importance of *living situation* in the interpretation of these quantity results (Gfroerer et al., 1997; Schulenberg et al., 1996; White et al., 2006). Another caveat is that three of these studies (O'Malley and Johnston, 2002;

Schulenberg et al., 1996; Timberlake et al., 2007) reported that college students are more likely to display greater *increases* in alcohol quantity during emerging adulthood (rather than absolute levels) and did not include an absolute quantity value as an outcome measure.

Of those studies with a direct comparison of college and noncollege samples on quantity measures, only Crowley (1991) and Muthén and Muthén (2000) found that noncollege peers were drinking at greater quantities than college students. On closer inspection, this seeming contradiction may be explained by slight, but significant, differences in Crowley's sample. Crowley's sample (ages 19-22) excluded 18-year-olds, the age at which a spike in drinking occurs, and included a greater proportion (53%) of individuals in the older age range of 21-22. In fact, when Crowley divided drinking quantity by age groups (19-20 and 21-22), she found that, among the younger cohort, college students were drinking at higher quantities than their noncollege peers. This finding is consistent with earlier reports that drinking increases at the onset of young adulthood and then decreases toward the end of young adulthood (to be discussed in more detail below). These findings highlight how *age* is crucial when one is trying to discern differences between college and noncollege drinking. It is more difficult to make direct comparisons between college and noncollege individuals in the Muthén and Muthén study because of oversampling of high school dropouts, Black participants, and Hispanic participants. Consequently, the average or "centering point" that was used as the basis for significance testing does not lend itself to easy understanding of sample differences. As in the Crowley study, however, the protective effect of college increased after college.

Frequency. Fewer studies reported differences in frequency of drinking. This omission occurs predominantly because frequency items were often combined with quantity in a compound metric (e.g., frequency of heavy alcohol use, prevalence of alcohol-use disorders; Barnes et al., 1992; Bingham et al., 2005; Dawson et al., 2004; Muthén and Muthén, 2000; White et al., 2005) or were not reported at all (Dawson et al., 2005; Harford et al., 2006; Paschall, 2003). Of the 10 studies that did report frequency differences, however, 6 found that college students drank alcohol more frequently than their noncollege peers (Chen et al., 2004; Crowley, 1991; Gfroerer et al., 1997; Schulenberg et al. 1996; Slutske et al., 2004; White et al., 2006). Among the dissenting studies, only the most extreme end of the frequency variable, daily drinking, was reported to be greater in noncollege individuals than in their college counterparts (O'Malley and Johnston, 2002; Slutske, 2005).

Risk. Eleven studies examined how college status affects risk for alcohol-related problems. Within this group, several examined specific unwanted outcomes such as drunk driving (Chen et al., 2004; Paschall, 2003) or more broadly investigated a variety of problem outcomes using checklists

(Barnes et al., 1992; Bingham et al., 2005; Chen et al., 2004; White et al., 2005). The overall consensus of these studies was that college students, especially those living in dorms, were more likely to have the greatest increases in alcohol-related problems and to engage in risky drinking behavior (e.g., drinking and driving).

Others in this set of studies focused on alcohol-use disorders: alcohol dependence and alcohol abuse (Dawson et al., 2004, 2005; Harford et al., 2006; Slutske, 2005; Slutske et al., 2004). Of these, four studies found that college students were more likely to carry a diagnosis of alcohol abuse, alcohol dependence, or both compared with noncollege individuals. In contrast, Slutske and colleagues (2004) reported no difference between college attendees and their nonattending peers in a sample limited to women. In a later, much larger national sample of both men and women, however, Slutske (2005) reported that college individuals were indeed more likely to meet criteria for alcohol abuse but not alcohol dependence than noncollege peers. Again, Harford and colleagues (2006) reported that, after adjusting for background predictors (e.g., family history, antisocial behavior), risk for alcohol dependence increased among those who either drop out of high school or never attend college.

Living situation. The seeming contradictions in the diagnosis of alcohol dependence and alcohol abuse in connection with college status may be explained by living situation, which moderates a number of the relationships noted above. Six studies (Barnes et al., 1992; Bingham et al., 2005; Dawson et al., 2004, 2005; Gfroerer et al., 1997; Paschall, 2003) explicitly examined the role of the environment in which the young adult lives (e.g., dorm, off campus, with parents). Dawson and colleagues (2004, 2005) for example, reported that college attendance in general was related to greater prevalence of alcohol dependence; however, the rates of alcohol abuse were highest among college men (not women) living *off campus*, and alcohol-dependence rates were highest among college students (men and women) living *on campus*. That is to say, alcohol-use disorders overall appeared to be related to college attendance, but type of alcohol-use disorder (alcohol abuse vs. alcohol dependence) varied as a result of college-student living situation. The importance of living arrangements is underscored by Barnes et al. (1992), who found that full-time college status per se did not predict heavy drinking and alcohol-related problems, but dormitory-living does. The living environment of a college student, both on and off campus, is conducive to drinking, possibly encouraged by the density of young adults living in such quarters. It is apparent as well that subtle diagnostic differences for alcohol abuse and alcohol dependence among college students and noncollege peers are more sensitive to living arrangement than is college status in general.

Part-time/full-time status. Two studies in this review demonstrate further interesting differences in young adult drinking when part-time and full-time college status is considered.

Chen et al. (2004) reported that full-time students displayed the greatest drinking amounts overall, and part-time college students displayed the lowest rates of drinking frequency, quantity, intoxication, and heavy drinking over the past year, with noncollege peers landing somewhere in-between. Paschall (2003) also found that full-time students reported the highest levels of drinking, but part-time students and noncollege peers displayed similarly lower levels of drinking. These few findings suggest that drinking does not necessarily relate linearly to college exposure, but further work is necessary.

Two-year and 4-year. Interestingly, community college students also appear to have a unique drinking trajectory across young adulthood. Timberlake and colleagues (2007) revealed that 2-year college attendees and college dropouts were fairly similar in rates of heavy episodic drinking and average quantity of drinking, falling somewhere between noncollege (i.e., never enrolled in college) individuals and 4-year college students throughout adolescence and into young adulthood. The distinction between types of college is important, because living situation (although not assessed in this study) and other key variables discussed may differ between 2-year and 4-year college students, who were most often lumped into the college group by the studies in this review.

Drinking trajectories. Consistent across studies is the finding that college status differentiates long-term drinking trajectories among young adults. Although it was reported that 40%-70% of young adults maintained relatively stable drinking patterns during the college-age years (Jackson et al., 2001), college students were more likely to display increases in risky drinking during college attendance (Bingham et al., 2005; Lanza and Collins, 2006), whereas nonstudent peers maintained relatively high levels of risky drinking (Bingham et al., 2005) or continued to escalate (Lanza and Collins, 2006) throughout young adulthood and adulthood. Graduating from high school (White et al., 2005) and leaving home to attend college (White et al., 2006) increased risk for frequent alcohol use and heavy episodic drinking during young adulthood, but this college-exposure effect diminished over time. College status related to lower levels of substance-use problems at age 18, greater increases from 18 to 21, and greater *decreases* into adulthood (Muthén and Muthén, 2000; White et al., 2005).

Timberlake and colleagues (2007) presented similar findings for drinking behavior across the 4 years of college, such that heavy episodic drinking increased in younger college students (18-19 years), while it decreased in older college students (23-24). These researchers also reported that the age of 18 (or enrollment in college) marked a dramatic increase in heavy episodic drinking. O'Malley and Johnston (2002) reported that heavy alcohol use in college students "increase(s) distinctly more and actually surpass(es) their nonstudent age-mates" (p. 37). During the postcollege years and into adulthood, college status related to the "maturing

out” of heavy drinking behaviors, whereas individuals who never attended college were at the greatest risk for alcohol-related problems in their late 20s and early 30s (Muthén and Muthén, 2000). The onset of college, age, and college status all contributed to drinking behavior changes across time.

Discussion

This first qualitative review of studies of drinking behavior in college-age adults in the United States highlights the lack of consensus for both the conceptualization and operationalization of college and noncollege status across the 18 currently available (published) studies examined. Also highlighted are variables other than college status, such as living situation, age, full-time and part-time status, and type of college (2 year vs. 4 year), which may be more directly related to variations in alcohol consumption than is college status itself. By investigating only college status, researchers may be masking variables of importance.

Beyond these definitional issues, synthesis of findings is further complicated by variability of study designs and outcome variables. What may appear at first to be differing conclusions often are the consequence of subtle definitional and operational decisions by researchers (e.g., the use of frequency of heavy drinking vs. total drinks consumed as outcome variables). To achieve a bottom-line conclusion in the midst of all this variation, we used the simple technique of categorizing all extant outcome variables into very basic indices of frequency and quantity. This approach reveals a more consistent finding of somewhat heavier alcohol consumption among college students, with the most consistency shown for quantity. However, this conclusion is heavily contingent on moderating influences (e.g., living arrangements). But omnibus conclusions are difficult to reach because many of the existing studies do not report on many of the moderating variables of interest. With the future addition of more studies that attend to moderators, a meta-analytic approach to this problem will become helpful.

Despite these ambiguities, a number of themes emerge as these studies are examined closely. Perhaps foremost is the questioning of the very premise itself that college attendance might be related to alcohol consumption. The simple, global question of whether college students drink more is answerable but is not very informative because the term “college” does not convey information regarding pathways of influence. And given that college students and noncollege peers appear to drink at similarly heavy levels during young adulthood, college attendance per se is unlikely to be the determining influence. More likely at issue are contextual influences that come along with college life but may be manifest in noncollege drinkers as well. For example, living without parental supervision and within close proximity to a large cohort of peers may encourage social processes inherent to the developmental needs of emerging adulthood.

We recommend, therefore, changing the question to emphasize the parsing of the college experience into parts that may be potentially more meaningful in relation to drinking and drinking-related adverse impact. Equally important is that we recognize that young people who are not attending college are not just a control group for those who do attend. Most of the dynamic developmental forces that impinge on people in this age cohort are shared by college and noncollege individuals. The added influence of college-specific factors should be viewed as incremental, especially because sizeable numbers of emerging adults move back and forth between college and noncollege status. For example, a study might address the influence on drinking in environments with a high density of late adolescents, such as a comparison of college environments with military bases. We also must not be blind to factors that may be specific to the noncollege experience, such as enrolling in the military or entering the job market. (Faden and Goldman, 2008, review emerging adulthood within the more general phenomenon of child/adolescent development as it relates to underage drinking.)

When focusing on college-specific and noncollege-specific influences, we also must be attentive to the interplay between alcohol use and individual characteristics (e.g., personality, family history, prior experience) that enter into young adults’ choice of a college/job/military and that they bring with them into their chosen context. In loosely classifying meaningful variables in this domain, it becomes evident that most of the known influences can be listed as falling within two familiar sets, context (environments) and individual characteristics (differences).

Context. Even some time ago, it was clear to Dowdall and Wechsler (2002) that a broader lens must be used to study relevant contexts in college environments. Following this line of thinking, researchers have noted (in addition to the specific contexts previously highlighted) college size (e.g., small, medium, large) and location (e.g., college town, urban/rural, embedded in a large city, north/south, east/west) as possibly important sources of variation. Below this macro level, micro contexts such as presence/density of alcohol outlets, presence/absence of a major sports program, presence of a fraternity/sorority system, and religious affiliation of the school have been identified as important. Within the context of any individual school, living arrangements are of obvious interest (e.g., living with one or more roommates, same-sex/coed residence).

When identifying possible pathways of influence, however, the common element among all these variables as they relate to alcohol consumption appears to be the (above noted) extent to which they encourage the expression of behavior that is socially and developmentally important to young adults (see DeJong et al., 2009; Goldman et al., 2002). From this perspective, the preeminent context for adolescents is not their physical surroundings but, instead, the network of social relationships within which they are

placed. The college environment, for example, is likely a proxy for a denser social cluster of young people than is experienced in general society (e.g., college towns, fraternity/sorority systems, dormitory living). Another aspect of this social/developmental context is the amount of discretionary time available to young adults to engage these social needs. Clearly, conventional college attendance includes considerable discretionary time, especially when supported by parents or scholarships.

Individual differences. As noted earlier, the contextual social/developmental influences operate on the individual's pre-existing personality, intellectual, and family-history characteristics. For example, risk-takers and sensation-seekers might differentially attend institutions with a reputation for partying (and drinking; witness ratings of schools as "party schools"). Within a particular institution, individuals likely choose their living and social arrangements—for example, fraternity or religious group, "dry" or "wet" dormitory, on- or off-campus housing, social group or career-oriented group—based on personality characteristics. Furthermore, these choices are temporally dynamic. For example, although some college students may be less attentive to academic requirements early on, they may increase their attention to their studies as they approach graduation and move toward the next level, graduate school, or a job. The use of alcohol itself may result in positive or aversive outcomes, thereby adjusting usage patterns. It is the influence of these reciprocal adjustments playing out over time and within changing conditions that is likely the source of drinking pathways that play out in real life. In the final analysis, college attendance (and the associated variables discussed earlier) is but one version of the lifestyle variation typically experienced during this crucial phase of development and should not be evaluated independently of this larger context.

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