

A Review of Correlates for Change in Drinking Behavior from Adolescence to Adulthood

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— (CONTENTS) —

ABSTRACT	of Drinking Behavior
I. Introduction	V. Social Contextual Effects on the
II. Changes in Drinking Behavior as a Function of Age	Change in Drinking Behavior as a Process
III. Antisocial Behavior Hypothesis	VI. Conclusion
IV. Family influences on Development	REFERENCES

ABSTRACT

This is an effort to review epidemiological research on developmental patterns of drinking behavior among youth from adolescence to young adulthood. Selected correlates for changes in drinking behavior include age, antisocial behavior, family influence, and sociodemographic characteristics such as gender, ethnicity and socioeconomic status. An emphasis is given to the relationship between antisocial behavior and developmental patterns of drinking behavior. Also, this review regards observed particular patterns of drinking behavior as being contextualized by group to which individuals belong.

Key Words : drinking behavior, adolescence, change, correlates, antisocial behavior

I. Introduction

Of most importance from public health perspective is knowledge of what factors are associated with development of drinking behaviors over life time. There is epidemiological evidence that the period from adolescence to young adulthood is characterized by specific drinking patterns which are distinguishable from other periods of the life course. Certain patterns account for a high prevalence of alcohol problems which have a high probability of remission at a later age during the period. Despite of significant evidence for developmental discontinuities in drinking patterns, a substantial research evidence suggests continuities of deviant drinking behavior over the life course.

Concerns have been with who becomes involved in deviant drinker and remains an alcohol abuser when getting older. It is argued that those who show continuity tend to have something distinguishable in earlier life from those who show discontinuity in drinking pattern. A tons of efforts have been made to identify the characteristics in earlier life course which are significant

antecedents for later drinking problems. However, these studies focus on changes in drinking behaviors and drinking problem as a static rather than dynamic. Recent alcohol research suggests that drinking behaviors are conceptualized as having developmental patterns over life course and as outcomes of biopsychosocial processes in society.

One of emerging research questions in alcohol studies is to figure out characteristics in early life which lead one to deviant drinking from a developmental perspective and assess the effects of group memberships on developmental changes in drinking behavior. This study intends to evaluate the impacts of group membership on individual drinking behavior, particularly developmental changes with respect to drinking patterns and problems, making use of gender, socioeconomic status, and ethnic groups as main effects of contexts rather than control variables. A emphasis of this review is given on antisocial behavior as a early condition for the continuity of alcohol abuse.

II. Changes in Drinking Behavior as a Function of Age

The fact that age is one of the most

powerful predictors of alcohol use among adolescents has consistently been acknowledged by reviews of adolescent drinking behavior (Johnstone 1991; Yamaguchi 1990). In cross-sectional studies, age-linked increases in prevalence are reported for all types of alcohol use outcomes during this period of the life course (Burke et al. 1990; Oetting and Beauvais 1990). Longitudinal research is somewhat less consistent, perhaps reflecting the lack of replicative designs across studies with respect to differences in initial age of measurement and length of follow up of subjects (e.g., Grant, Harford, and Grigson 1988; O'Malley, Bachman, and Johnston 1988; Elliot, Huizinga, and Menard 1989).

In a cross-sectional study, Burke et al. (1990) makes use of life table survival analysis to estimate age/sex specific hazard rates and median age at onset of alcohol dependence symptoms. The hazard rates for the onset of alcohol dependence are highest between the ages of 15 and 19 years; median age at onset for the total sample is 21 (age 20 for males and 23 for females).

According to Kandel and Yamaguchi (1985), hazard rates for onset of alcohol use increase markedly between ages 10 to 14, peak at age 18, and decline thereafter. Hazard functions for current use of alcohol

stabilize midway through age 19, followed by declines by age 23. Periods of heaviest use of alcohol increase rapidly through age 18, with sharp declines observed after age 20. O'Malley et al. (1988), based on a national surveys report linear increases per year between ages 18 and 21 in monthly and daily use of alcohol, and occasions of heavy use.

Longitudinal research displays less consistency with respect to stability and change in drinking patterns during adolescence to young adulthood. White (1987) reports that the overall intensity of alcohol use and alcohol-related problems remained stable between ages 15 to 18 and 19 to 21. The only exception to this pattern is a large increase in alcohol related problems by males between 15 to 18 years of age. Although the levels of alcohol use remain essentially stable, males experience an increase in problems during this age interval.

Grant et al. (1988) also investigated age-associated change in drinking patterns among youth. The data, drawn from the National Longitudinal Survey of Youth, indicated overall stability in consumption. However, examination of age-specific rates of change indicate substantial short term age effects; the prevalence of alcohol

consumption increases between ages 17-22 for both sexes, with declines thereafter. These findings of stability of drinking patterns and problems are not in accord with the results of previous longitudinal studies that have reported modest continuity, i.e., instability in drinking problems (Kandel, Raveis, and Kandel 1984). Such an instability over time indicates a high rate of remission from heavier drinking and alcohol problems occurring "simultaneously" with a high rate of acquisition of these patterns. In other words, there is a considerable amount of "turnover" in or erratic experimentation with multiple drinking patterns during the period from adolescence to young adulthood. These findings of instability suggest a high probability that youth reporting drinking problems will "mature out" of the problems as they age (Fillmore 1988a).

Consolidation of previous findings suggest that there exist changes age has effects with respect to drinking patterns and problems among adolescence and young adulthood. Such age effects may be complicated by other factors such as period and cohort effects. In comparison with age effects, in fact, period effects reflect more social factors because it is impossible for the

average individual risk factors of alcohol use in the population to change rapidly over time. Yet, the period effect is only a measure of unobserved changes in the social covariates of alcohol use (Yamaguchi 1990).

O'Malley et al. (1988), analyzing results from a cohort-sequential design report evidence for significant period effects independent of age effects. Although the underlying determinants of the period effects are poorly understood, some studies document perceived risks of drug use and personal disapproval as causes of the historical decline in use (Backman et al. 1988). Yamaguchi (1990) also notes that age effects may not be independent of the impact of unobserved population heterogeneity on rates of initiation of alcohol use, and possible confounding with period effects. That is, heterogeneity across individuals with respect to the risk for initiation of alcohol may simply lead to a tendency toward earlier onset of alcohol use by those adolescents at high risk, producing an "apparent" age effect that is actually the product of other factors. Added to confounding effects are the consequences of sample attrition and mortality. It has been argued that these effects are minimal (Fillmore 1987).

Typically, two explanations have been

given to the observed age/drinking relationship. One is biographical or maturational which “assume that persons of similar ages, in similar life stage or in similar periods of development will display similar behavior with regard to drinking patterns and problems regardless of historical or cultural boundaries” (Fillmore 1988a:2). In contrast to maturational explanations are theories which propose cultural explanations for the relationship. For explanations for drinking behavior among youths, maturational theories may not be adequate because of observed differences in the age/drinking relationship among different social groupings such as sex and ethnicity. Evidence of differential age-related drinking behavior among gender and ethnic groups suggest that culture determines how drinking patterns vary by age for each sex and different ethnic groups. Such significant variations in drinking patterns has been accounted by varying beliefs about alcohol, differential age-related role for each sex across different ethnic groups (Fillmore 1988a).

Despite wide acceptance of the significance of group specificity, systematic comparison of age-related changes in adolescent drinking patterns across populations is rare (Johnstone 1991). Fillmore et al. (1991) in a meta-analysis suggests that developmental patterns

with respect to alcohol drinking during adolescence may be highly variable across populations.

III. Antisocial Behavior Hypothesis

It has been repeatedly observed in longitudinal studies that youths in transition from adolescence to young adulthood tend to have a high incidence and remission of alcohol use and abuse, as well as low chronicity of alcohol problems. This observation of instability in patterns of drinking behavior raises a question as to what differentiates those who exhibit continuity of alcohol problems across time compared to those who do not. Antisocial behavior in early childhood has been regarded as a characteristic which would differentiate those who continue to have alcohol use and abuse over the life course from those who do not. Previous studies suggest that boys exhibiting antisocial behavior tend to become alcoholic as adults more frequently than boys who do not exhibit such behavior (Zucker and Gomberg 1986).

Donovan, Jessor and Jessor (1983) suggest that there is an important gender difference

in the continuity of problem drinking, reflecting "problem behavior proneness" from adolescence to young adulthood. The men were not only at greater risk than the women of continuing adolescent problem drinking into young adulthood, but also at greater risk of beginning problem drinking by young adulthood. Robins (1986) reports in longitudinal studies of representative general population samples that conduct disorder in childhood is predictive of adult antisocial behavior, including alcohol problems, but that cross-sectional studies find higher rates of conduct disorder in lower class urban areas. Her findings confirm that conduct disorder in women is a rare but a particularly serious problem. Her study suggests the relationship between antisocial behavior and later behavior problems to be sex-linked.

Windle (1990), utilizing a national probability sample, examines the relationships between antisocial behaviors in early adolescence and alcohol and drug use 4 years later. The data show that correlations between clusters of antisocial behaviors in early adolescence and substance use in late adolescence were of higher magnitude and more uniform for men than for women. For women, vandalism in early adolescence

was more highly associated with alcohol use, alcohol-related problems, and illicit drug use in later than with either status offenses or transgressions against persons.

The antisocial behavior hypothesis may be class-based insofar as alcohol problems are concerned. That is, the distribution of antisocial behavior tends to concentrate on boys from lower-class urban areas. The longitudinal data in Amundsen's (1982) study, utilizing not a sample but an actual universe of 19-year old boys in Norway, showed that lower socioeconomic status and maladjustment in primary school interacted to predict later alcoholism. The study found that some demographic variables at or before age 19 were associated with alcoholism, measured by military records, before age 50. Living in urban environments and the marital change of parents during primary school were the best predictors.

Harford (1991) extended the findings reported by Windle (1990) by relating antisocial behaviors for the total male sample to subsequent alcohol abuse among these same subjects 8 years later. He found significant relationships between antisocial behavior and alcohol dependence symptoms. While this relationship was modified by a positive family history of alcoholism, there was

no significant association with socioeconomic status. In his subsequent analysis, Harford (1992) found that the relationship varied by family history for alcoholism. Antisocial behavior together with a positive family history for alcoholism yielded the highest frequency of alcohol dependence symptoms. The data failed to confirm the presence of lower socioeconomic status, measured by poverty level of respondents in adolescence, as of potential etiologic significance for alcohol dependence.

In sum, despite previous efforts to investigate the link between early antisocial behavior and later alcohol use, inconsistent findings across studies, except in the case of gender differences, suggest that the hypothesis has been inadequately addressed to date. Fillmore (1988b) attributes these diverse findings to use of incompatible operational definitions, lack of replication in independent variables involved, and different sample characteristics across studies. Further, a methodological pitfall of measuring the true change during the period has been tackled by subsequent studies on the antisocial behavior hypothesis.

Most longitudinal studies, as a matter of fact, depend on similar analytical models in which the relationship under study is

examined by the magnitude of correlation or regression coefficients between two time points. With traditional longitudinal research designs the sample is measured at one point in time (Time 1) and at some later point(s) remeasured (Time 2) to predict the later behavior pattern from early antisocial behavior. This kind of measurement design bears an in-built drawback to study the behavioral changes which are not static in nature, even if more than 2 measurement points are employed. It is impossible to take into consideration changes that occur between measurement points with such measurement designs where the conceptualizations of change are insensitive to change as a process. Consideration of alcohol behavior as reflecting a dynamic rather than a static nature (Fillmore 1988a) requires researchers to adopt a research design that links antisocial behavior in early life to later behavioral consequences.

In addition to the methodological issues mentioned, systematic efforts need to be made to determine to what degree and under what social contexts youthful antisocial behavior predicts adult drinking practices and problems. As Fillmore (1988b) pointed out, one of the promising questions with respect to the antisocial hypothesis asks to

what degree is relationship constant or invariant under differing social group memberships such as gender, socioeconomic status, ethnic, and their probable interactional contexts.

An effort of reexamining the antisocial behavior hypothesis has been made by Kim (1993) who incorporated into analysis the dynamic nature of drinking patterns and problems among youths over the life course and testing cross-level effects of group memberships on the hypothesis. With employing an advanced statistical method, he concluded that antisocial behavior in the early life course is positively related to rates of change in drinking behavior. Also, it has been observed that social contextual effects on the relationship are contingent on sociodemographic group memberships and their interactions.

There are, of course, many variables that influence mechanisms relating antisocial behavior to drinking behavior. For example, Barnes and Farrell (1992)'s study makes it clear that peer influence is a strong predictor of delinquent behavior during the period of adolescence even after the effects of parenting have been taken into account. Peer influences interact with family influences in their relationships to the development of

adolescent drinking, deviance, and related behaviors. Where parent-child interaction is problematic, adolescents are likely to withdraw from the family and rely more heavily on influence of peer subcultures. Empirical data has shown that adolescents who value peer opinions, as opposed to those of their parents, for important life decisions and values are at a high risk for alcohol abuse, illicit drug use, and other problem behaviors (Bucholz 1990). Other covariates of substantial importance to adolescent drinking behavior include social psychological factors, including perceived risks of drinking alcohol and personal disapproval of alcohol use. Changes in these factors over time lead youths to changes in involvements of drinking behavior and drinking problems (Yamaguchi 1990). It would be beneficial to assess the period effects on changes in drinking behavior of increased perception of risks associated with alcohol drinking.

IV. Family Influences on Development of Drinking Behavior

The family, as the basic social unit of society, can have powerful influences on the development of social behaviors such

as drinking behavior. It is indisputably established that alcohol problems tend to “run” in families. While some families show many instances of alcoholism within and across generations, other families have no history of alcoholism. Children growing up in families that already have alcoholic members, therefore, are at a relatively greater risk for developing alcohol problems themselves.

A positive family history remains one of the strongest and most robust predictors of alcoholic risk (McGue 1991) since evidence of familial transmission of alcoholism was first noted in clinical and adoption studies (Cloninger, Bohman and Sigvardsson 1981). These studies found that disproportionately high rates of alcohol problems occur among person with alcoholic relatives. In her classic review of family studies, Cotton (1979) concluded that alcoholics were six times more likely than non-alcoholics to report a positive family history of alcoholism. Subsequent reviews of alcoholism family studies (e.g., Merikangas 1990) confirm Cotton's essential conclusion: alcoholics are much more likely than non-alcoholics to come from families which contain other alcoholics. Clinical data also have shown more severe alcohol problems among

alcoholics with positive parental histories than among those with negative parental histories (Worobec et al. 1990). Furthermore, a meta-analysis of the relationship between parent and offspring on the transmission of alcoholism shows that paternal alcoholism is associated with increased rates of alcoholism in both sons and daughters and maternal alcoholism is associated only with increased rates of alcoholism among daughters (Pollock et al. 1987).

Evidence of familial transmission of alcoholism from general population samples confirms findings from clinical and adoption studies that an excess risk of alcohol-related problems among persons with positive family histories of alcoholism. Harford, Haack and Spiegler (1987) found that positive family history was associated with increased odds of alcohol abuse and dependence among men and increased odds of alcohol abuse among women, after adjusting for the effects of sociodemographic covariates. In another multivariate analysis, Parker and Harford (1987) found that men with a positive family history of alcoholism had odds of dependent problem drinking that were almost 60% higher than those with negative history of alcoholism after controlling for age, socioeconomic

status, and race. Among women the effect of positive family history was not statistically significant after adjusting for these demographic factors. Other evidence is derived from a longitudinal study of New Jersey youths, in which a positive family history was associated with a twofold risk of serious alcohol problems (Pandina and Johnson 1990). Using a representative general population sample of 23,152 drinkers 18 years of age and older, Dawson, Harford and Grant (1992) report that positive family history of alcoholism has increased the likelihood of alcohol dependence.

An effort has been made to investigate the possible interaction of family history of alcoholism with demographic subgroups (Barnes and Farrell 1992). The effects of family history did not vary among demographic subgroups such as race, gender, and poverty. The authors reported no observed main effects of family history of alcoholism on regular drinking. Such a finding may be explained by a sample characteristic that adolescents aged 13-16 are still too young to exhibit serious drinking problems. It is concluded by the authors that family history of alcohol abuse is a significant risk factor in child development when it occurs in the context of other demographic risk factors.

Furthermore, Kim (1993) found that familial effects of alcoholism were observed in all demographic groups including gender, ethnicity, and socioeconomic status. However, these familial effects were not uniform on developmental changes of drinking behavior from adolescence to young adulthood. Such a finding may be attributed to biological heredity, to environmental factors, or to an interaction between the two.

Although there exists the mounting body of literature indicating that alcohol problems run in families, others argue that biological vulnerability for alcoholism at best explains a portion of the variance in some severe types of alcoholism (Barnes 1990). Biological vulnerability does not explain adolescents' decisions to begin using alcohol or the variations in adolescent drinking patterns, from abstention to moderate use to problem drinking. Even with a family history of alcoholism, the process of becoming an alcoholic has been described as occurring in a social world and being influenced by a biopsychosocial process (Zucker and Gomberg 1986). This suggests that the etiology of alcohol use and abuse is best understood within the longitudinal-developmental framework that incorporates biological, behavioral, and sociocultural variables.

Furthermore, biological vulnerability to alcohol abuse fails to offer adequate explanations for the strong correlations among alcohol abuse, illicit drug use, and other problem behaviors in both male and female adolescents (Barnes 1990).

In addition to biological factors, there is another dimension of family roles in the etiology of alcohol use and abuse. Strong theoretical and empirical evidence shows the importance of social interaction, especially parent-child interaction, within the family setting on the development of drinking behavior during youth (Barnes 1990; Jacob and Leonard 1991). Most of the existing theory and empirical research supports a "social mold" perspective with parents exerting powerful influences on the development of their children (Foxcroft and Lowe 1991). That is, from "social mold" perspective child socialization occurs within family setting where the children are nurtured and shaped to conform to the values society places on instrumental and socio-interpersonal achievements (Peterson and Rollins 1987). This perspective emphasizes the parent-child relationship as being primarily responsible for child outcomes. As Snyder and Huntley (1990) note, parent-child interaction is the mechanism through which developmental,

contextual, and historical factors exert their impact on the child's development. Thus, the parent-child relationship is the proximal process when these distal variables influence child outcomes.

A meta-analysis of the relationship between adolescent drinking and family environment identifies family structure, family support (i.e., nurturance, attachment, acceptance, love) and family control (i.e., discipline, punishment, supervision, monitoring) as salient and important dimensions of parent-child relationship (Foxcroft and Lowe 1991). Disturbance in these dimensions of the relationship can have severe and wide-ranging effects on the child's social-emotional and cognitive development (Jacob and Leonard 1991).

Family Structure : It is a widely accepted stereotype that adverse child outcomes often develop in the context of a disturbed or dysfunctional relationship between husband and wife. The relationship between marital disruption and alcohol abuse in adults has been amply demonstrated (McCrary 1982). Burnside et al. (1986) found that adolescents from single and step-parent families reported more alcohol use than adolescents in intact families when considering both frequency and quantity of alcohol use. Since adolescents'

alcohol use was significantly associated with parental alcohol use, the authors investigated the possible interaction of family structure and parental drinking patterns on adolescent drinking behavior. After adjusting adolescent alcohol use for parental alcohol use as a covariate, the finding of greater alcohol use by adolescents from non-intact families remained.

Barnes and Windle (1987) have examined the relationship of parental marital status to adolescent drinking behavior. The authors reported a tendency for adolescents living with both natural parents to have fewer alcohol-related problems when compared to those adolescents living with either a single parent or a step-parent. There was greater substance use among young people living in single-parent households. However, such negative influence of parental marital status may be offset by an improved parent-child relationship, even though living in a single-parent home (Barnes 1990).

In contrast with previous findings, Barnes and Farrell (1992) report, after controlling for race, family structure does not predict regular drinking. It is concluded that being in a single-parent versus a traditional two-parent family may not be as critical a factor for "adolescent outcomes as are

parenting per se." The authors suggest assessment of family structure, taking into account measures of parenting practice, support and control aspects of parent-child relationship. Other components of family structure (i.e., family size, sibling spacing and birth order) have been addressed in the literature (Barnes 1990).

Family support : In general, researchers consistently report a linear relationship between parental support and adolescent outcomes, such that the more support or the stronger the attachment, the better the adolescent outcomes (Barnes et al. 1987).

Brook et al.'s (1990) family model acknowledges the multivariate nature of alcohol abuse etiology, including childhood and adolescent personality, marital adjustment, parental personality and drug use and peer and sibling effects. Brook's perspective gives major emphasis to the parental support dimension of the parent-child relationship. It is hypothesized that a conflict-free, warm and supportive relationship between parent and child "enables the parents to convey their version of society's values to their offspring through internalization of more conventional attitudes and behavior. Adolescent conventionality protects the adolescent from associating with drug using peers" (Brook

1990:342). The longitudinal literature relevant to the development of antisocial behavior has repeatedly identified "inadequate parenting" with respect to parent support in the early life course of those who subsequently develop antisocial behavior and alcohol abuse (McCord 1991).

Kandel et al. (1978) found that closeness to parents protects adolescents from initiation into illicit drug use. Parental influences, especially the quality of parent-adolescent relationships, accounted for the largest amount of variance in the most severe stage of illicit substance use. Closeness between parents and adolescents had a significant impact in determining frequency of alcohol use.

Family control : The control construct has been defined as parental behaviors toward the child which are intended to direct the child's behavior in a manner acceptable to the parent (Rollins and Thomas 1979). Excessive drinking among high school students was strongly associated with lax parental controls (Prendergast and Schaefer 1974). Less parental monitoring and less parental discipline were found to be associated with increased adolescent alcohol consumption among the boys (Dishion and Loeber 1985). Holmes and Robins (1987),

drawing from the general population, reported that childhood disciplinary experiences are a significant factor in the development of alcoholism. The authors note that many of the parental practices which are perceived as unfair and cruel by their children appeared to have long-term adverse effects.

With regard to the control dimension of the parent-child relationship, researchers appear to agree that control is curvilinearly related to effective outcomes; that is, optimal functioning is related to a moderate degree of parental control, with too much or too little control leading to problem behaviors (Peterson and Rollins 1987).

To gain a better understanding of the parent-child relationship might require us to examine dimension of parent support, as well as control, in the same models to investigate the potential interactions between these two dimensions of parenting (Barnes and Farrell 1992). Utilizing a general population sample of adolescents, Barnes et al. (1986) examined the interaction of both support and control and found evidence for high parental support and moderate parental control as determinants of nonproblem drinking. Barnes and Farrell (1992) note that parenting styles have an interaction effect with family structure in predicting adolescents'

problem behaviors. For example, adolescents in homes with biological parents and low monitoring have an added risk of deviance.

It is very valuable to determine whether the family transmission of alcoholism is due primarily to either genetic or primarily to environmental influences. In fact, potential family transmission of alcoholism across generations might be made through genetic, environmental mechanisms, or their interaction. A clear separation of the two sources of familial transmission of alcoholism could be made by such research designs as adoption or twin studies. Also, clarification of how and to what extent family influences interact with other major predictors of the youthful drinking is an emerging task to be done in the etiology of alcohol use and abuse.

V. Social Contextual Effects on the Change in Drinking Behavior as a Process

It has been acknowledged to be fruitful to understand the dynamics of aggregate drinking behavior within societies, and the relationship of such group level processes to change in the drinking behavior of individuals (Johnstone 1991). Skog's attempt

to articulate a "developmental dynamics of drinking cultures" is an excellent example of such a link in drinking studies (1985, 1986, 1991). Skog provides insight into how changes in individual drinking behavior should be understood as behaviors may be influenced by group dynamics. Drinking behavior is a social behavior, one which we learn from and practice together with other people in our group. It certainly makes a difference depending on which group you belong to as long as drinking is a learned behavior through interacting with other members in the group.

Skog's social interaction perspective posits that the individual drinker is to a large extent influenced by the habits in his personal social network. As such, individual drinkers tend to adjust his or her drinking according to the changes in the overall level of consumption in his or her culture. Hence, his perspective suggests that there may be a cultural foundation for drinking patterns and drinking problems. The basic presumption of the social interaction model is that an individual's drinking patterns are the product of an interplay among three kinds of factors: his or her social network, individual characteristics that include biological constitution, psychological factors such as

personality and previous experiences, and exogenous factors, including availability of alcoholic beverages, prices and other economic aspects, advertising and other aspects of mass media, as well as general norms and tradition in his or her environment (Skog 1991). These factors tend to combine multiplicatively. Skog's idea that change in alcohol consumption is a collective phenomenon has been supported by a number of empirical studies (Kim 1994).

In sum, it is desirable to understand changes in individual behavior as reflecting collective shifts in the groups to which individuals belong. Turning to identify potential groups as influencing drinking behavior at individual level, this review confines its scope to groups of selected sociodemographic variables.

Gender : Reviews of adolescent drinking behavior consistently conclude that male adolescents are more likely to drink, to drink heavily, and to experience alcohol-related problems than females (Bucholz and Robins 1989; Bucholz 1990; Johnstone 1991). The findings from cross-sectional studies reveal the continued salience of gender differences in drinking behavior (Barnes and Welte 1988; Burke et al. 1990; Harford and Lowman 1989). The longitudinal data also

show significant gender lags in age-specific rates of onset of alcohol use, heavy use and problems (Elliott et al. 1989; Lex 1991).

Recent disputes center around whether sex differences in the prevalence of alcohol use among youths have decreased. There exists a convergence hypothesis: rates of drinking and problem drinking have increased faster among women than among men, and drinking patterns of men and women are becoming alike (Gomberg 1991). This hypothesis was examined and rejected by Bell, Havlicek, and Roncek (1984), suggesting that there is no clear evidence supporting for the hypothesis that rates of problem drinking for women and men have converged. Research findings from studies of young adults are confusing, with some reports revealing a pattern of convergence by an increase in frequent heavy drinking among younger women (Fillmore 1984; Hilton 1991b), and others indicating no pattern (Wilsnack, Wilsnack, and Klassen 1986; Temple 1987). Results from studies of adolescent drinking are also inconsistent. Thompson and Wilsnack (1984) argue that it is probable that the greatest amount of convergence occurred between 1940 and 1970, and consisted largely of increases in the proportion of females who drink at all,

rather than increases in the rate of problem drinking. Some evidence, based on a sample of high school seniors between 1975-1984, for moderate convergence in the overall prevalence of drinking, daily use, and heavy drinking has been reported (Johnston 1985). However, Bachman et al. (1991) report relative stability of gender differences in overall prevalence of current alcohol use for high school seniors during 1976-1989. Johnston et al. (1989) report a quite substantial gender difference in the prevalence of occasions of heavy drinking. There also remain very substantial gender differences in alcohol use among college students and young adults generally, with males drinking more.

Gender differences in the prevalence of alcohol use have been accounted for by both biological factors and sociocultural explanations (Huselid and Cooper 1992). The fact that women produce higher blood alcohol levels at equivalent dosages may explain some of the differences in the quantity consumed (Corrigan 1985). However, sociocultural explanations, especially the impact of sex-role norms, appear to be more powerful predictors of alcohol consumption and drinking problems (Gomberg 1982; Robbins 1989). Drinking and drunkenness

are viewed as more socially acceptable for males than females and as more consistent with traditional male gender roles (Landrine, Bardwell, and Dean 1988; Lemle and Mishkind 1989). Adolescents apparently share these double-standards, as adolescent boys believe that drinking enhances their social image among peers, while adolescent girls do not view drinking as socially desirable (Chassin, Tetzloff, and Hershey 1985). A study (Huselid and Cooper 1992) reports that internalized gender roles rather than gender roles per se substantially, although not completely, mediate the effects of sex on drinking patterns. That is, individuals with conventional gender identities conform more closely to cultural norms that condone drinking among males but not among females.

Focusing on lower rates of heavy drinking and alcohol problems among women than those among men, Fillmore (1988a) hypothesizes that the ascribed minority status of being female disallows the privilege of engaging in heavy drinking and alcohol problems. Also, the fact that women tend to have later onset of drinking problems can be attributed to societal norms which do not permit young women to drink heavily, particularly because they

are perceived to be sexually vulnerable at these ages.

In sum, being male or female is certainly a strong predictor of developing a certain kind of drinking pattern and problems for individuals. Along with symbolic meanings attached to drinking, societal norms ascribed to each sex are in operation to determine individual's drinking behavior.

Ethnicity : The concept of ethnicity in alcohol studies poses special conceptual and measurement challenges because of inconsistent definitions. Heath (1990-91) points out that alternative models of ethnicity emphasize national heritage, race, bureaucratic category, religion, and the notion of special population. Such categorizations may also impute a spurious impression of stasis to ethnic membership and identity (Room 1985) It is very probable that intragroup diversity may seriously attenuate true differences between ethnic groups. Nevertheless, even confining comparisons to broad categorizations, significant and substantially consistent differences are apparent in the drinking behavior of adolescents of different ethnicity (Johnstone 1991). Furthermore, differential patterns among ethnic groups remain after controlling for potential confounding factors, such as family composition, parents' education, and

regional distribution (Harford and Lowman 1989; Bachman et al. 1991).

Studies have consistently shown salient differences between black and nonblack adolescent drinking. Compared to whites, the onset of drinking and heavy drinking tends to occur later among black adolescents, and the proportion of drinkers, average frequency of use and amount consumed per occasion are lower among blacks throughout adolescence (Windle 1990). The magnitude of difference between blacks and whites increases with greater intensity of alcohol use (Bucholz 1990). A similar pattern observed among whites that both the proportion of drinkers and frequency of drinking increase with age is reported for both male and female blacks, although the rate of increase is slower than that of white adolescents; however, it is not clear whether an age-related increase in the quantity of alcohol consumed per typical occasion is observed in adolescence among blacks (Harford and Lowman 1989). Empirical findings from longitudinal data also support for the observation of lower rates of drinking, rates of intoxication, driving while intoxicated, and other problem drinking behavior among blacks throughout adolescence (Elliott et al. 1989). However, based on a sample of

students from New York, Welte and Barnes (1987) suggest that black adolescents experience higher rates of alcohol-related problems per ounce of absolute ethanol intake than whites or other ethnic groups. These findings are in accord with the results from general population studies of alcohol use among black adults (Herd 1989).

Little research effort has addressed the reasons for differences in the overall prevalence of alcohol use by blacks and whites during adolescence. Ringwalt and Palmer (1990) note that black students were more likely than whites to believe that alcohol will lead to problems and is addicting, and expressed greater concern over parental disapproval of drinking.

Little systematic research has been conducted on patterns of alcohol use by Hispanic adolescents (Gilbert and Alcocer 1988). This appears to be partially consistent with findings for adults, however, although evidence is still poorly understood (Johnstone 1991). In most studies, levels of involvement with alcohol by Hispanic adolescents tend to be intermediate between those of white and black adolescents. Such a pattern is observed in rates of age-associated increase in lifetime prevalence of consumption and

intoxication during adolescence, proportion of heavy drinkers, and frequency of intoxication (Bachman et al. 1991).

Considering the lack of explanatory investigations on effects of ethnicity on drinking patterns, Neff's study (1991) is interesting in its attempt to differentiate between socioeconomic and sociocultural influences upon drinking patterns. His study suggests that sociocultural influences operate in the drinking patterns independent of demographic factors. Mexican American drinking patterns appear much more strongly and consistently influenced by global drinking norms while black and Anglo patterns appear more influenced by individual drinking motives.

Socioeconomic Status : Recent evidence of effects of socioeconomic status on adolescents' drinking behavior continues to be inconclusive, attributed mainly to be the discrepancies in the definition and measurement of this concept (Johnstone 1991; Bucholz 1990). Kandel (1980), in her review article, argues that class effects appear to be largely absent for adolescent's drinking behavior. She notes that rates of alcohol use among adolescents are not significantly associated with socioeconomic status. Bucholz (1990), reviewing the literature

on adolescent drinking from the 1980s, posits that associations between socioeconomic status and a variety of alcohol related outcomes are inconsistent (positive, negative, and non-significant association) across studies, even though employing the same measurement of socioeconomic status, e.g., parental education level.

The lack of association between socioeconomic status and alcohol related outcomes reflects that class effects on adolescent drinking may be principally indirect or conditional on other characteristics of sociodemographic status or drinking outcome (Johnstone 1991). Zucker (1979) notes that parents' socioeconomic status mediates peer associations, family dynamics, and other significant influences on drinking. Biddle, Bank, and Marlin (1980) argue that middle-class adolescents tend to adhere to peer group norms about drinking, while working class youth place greater emphasis on parents' norms.

Interactions between socioeconomic status and other demographic variable have also been suggested to influence adolescent drinking. Results from the National Youth Survey show that effects of socioeconomic status on alcohol consumption are absent among adolescents aged 11-17; however,

middle- and upper class adolescents aged 18 and older drank more than their counterparts (Elliott et al. 1989). Some studies have reported that the class effects varies for each sex (Zucker and Harford 1983) and that relatively high personal income among adolescents promotes increased alcohol use (Bachman et al. 1988). Oetting and Beauvais (1990) suggest that higher rates of alcohol use may be observed among low status adolescents who live in ethnic enclaves such as core metropolitan zones or reservations. Selection of outcome variables may mediate the association between socioeconomic status and drinking behaviors. Kandel (1980), for example, acknowledges that a limited class effect may be observed between adolescents from lowest social class and the most deviant forms of alcohol use. However, Fors and Rojek (1983) report a class effect in the opposition direction on frequency of alcohol intoxication.

VI. Conclusion

Previous epidemiological research has observed a particular developmental pattern of alcohol behavior among youth from

adolescence to young adulthood. It still remains a controversial research question regarding the stability/instability of alcohol abuse over the life course. The literature reviews discussed indicate that the observed particular pattern of drinking behavior among youth should be accounted by an analytical model, in which the phenomenon is assumed to be a product of interaction among several factors including biological, psychological, and socio-cultural. One of the emerging tasks in the alcohol field is to understand the dynamic of developmental variations in terms of drinking behavior among adolescent and young adults through a model linking changes in an individual's behavior pattern to aggregate phenomena.

This review presumes that those who displayed an antisocial behavior in earlier life course tend to show higher alcohol problems in later life than those who do not. An attempt to test the antisocial behavior hypothesis incorporates the need to control several confounding factors, including influence from familial transmission of alcohol abuse and socio-cultural factors. Future study needs to employ an analytical model to separate pure biological effects from environmental effects in familial transmission of alcohol behavior and antisocial behavior

across generations.

There is little controversy over social contextual effects on changes in drinking behavior and problems over the life courses. The development of a particular drinking behavior for an individual is assumed to be associated with the drinking behavior of other people in the group to which the individual belongs. An emerging research question in alcohol studies is to link developmental changes in individual drinking behavior to aggregate phenomena in terms of sociodemographic variables.

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