

ALCOHOL CONSUMPTION, WANTEDNESS, AND SUPPORT
OF PREGNANT ADOLESCENTS

by

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I. INTRODUCTION

The prevalence of teenage drinking and adolescent pregnancy are of concern to health professionals and nonprofessionals alike, particularly in light of findings related to drinking during pregnancy and its effects on fetal development. Therefore, it is essential, for the welfare of mothers, children, and society at large, that effective educational and intervention programs be developed to identify mothers, including pregnant teenagers, whose alcohol consumption patterns and levels are potentially damaging to fetal development and maternal wellbeing, and to assist these mothers in reducing alcohol consumption or in abstaining from alcohol use during pregnancy (Rosett, Ouellette, Weiner, & Owens, 1980; Little, Streissguth, & Guzinski, 1980).

Presently, little is known about the volume or variability in alcohol consumption among pregnant teenagers. Research related to adolescent drinking shows that, although the average daily alcohol consumption of adolescent females is not likely to be high enough to cause the full Fetal Alcohol Syndrome (FAS), their moderate consumption and binge drinking patterns may be such that babies born to adolescent mothers may suffer such Fetal Alcohol Effects (FAE) as decreased birth weight, particularly in the first trimester of pregnancy, before pregnancy is detected or confirmed (Hanson, Streissguth, & Smith, 1978; Little, 1977; DeLuca, 1981; Rachal, Hubbard, Williams, & Tuchfield, 1976; Streissguth et al., 1980). Information regarding these drinking patterns is therefore needed in order to plan effective prenatal educational programs for pregnant teenagers and reduce risk of FAE to their infants.

In the last decade, many empirical studies have been conducted to

identify environmental and personality correlates of adolescent drinking. Several of these studies have been conducted within the context of theoretical frameworks which relate individual and environmental correlates to alcohol consumption and other behaviors such as sexual intercourse and the use of other drugs (Donovan & Jessor, 1978; Huba, Wingard, & Bentler, 1979; Jessor & Jessor, 1977; Kandel, 1978, 1980; Margulies, Kessler, & Kandel, 1977; Zucker, 1979). Peer and parental influences appear to be major influences in the onset and continuation of teenage drinking and problem drinking. It is likely that these factors continue to be important influences in pregnant teens' drinking. Other factors, including the wantedness and intendedness of the pregnancy (Miller, 1978; Ryan & Sweeney, 1980; Westoff, 1980), and support from parents and friends during pregnancy (Furstenberg & Crawford, 1980) may affect drinking patterns.

Purpose of the Study

The purpose of this study was to explore relationships between pregnant teens' use of alcohol before and during pregnancy and several personal and social variables. These variables include the wantedness of the pregnancy, the support of the pregnancy by significant others (parents, baby's father, peers), pregnant teens' reasons for drinking, the context of their drinking, and the use of alcohol by significant others.

Statement of the Problem

A lack of information exists about the volume of alcohol consumption, binge drinking, and correlates of alcohol use in pregnant teens.

This information is needed to determine if infants born to teens are at risk of Fetal Alcohol Effects such as decreased birth weight. It is also needed to develop effective programs of prenatal care and education which help in identifying high risk mothers and infants, informing pregnant teens of possible risk, and preventing Fetal Alcohol Effects. This study addressed the following questions:

1. Do pregnant teens consume alcohol in amounts and/or patterns which may endanger fetal development?
2. In what ways do pregnant teens who drink differ from those who abstain? More specifically,
 - a. Is there a relationship between the wantedness of pregnancy and pregnant teens' use of alcohol before and/or during pregnancy?
 - b. Is there a relationship between the support of significant others during pregnancy and pregnant teens' alcohol use before and/or during pregnancy?
 - c. Is there a relationship between pregnant teens' reasons for drinking and their alcohol use before and/or during pregnancy?
 - d. Is there a relationship between the context of pregnant adolescents' drinking and their use of alcohol before and/or during pregnancy?
 - e. Does a relationship exist between the use of alcohol by significant others and pregnant teens' alcohol use before and/or during pregnancy?
 - f. Does a relationship exist between the support of significant others during pregnancy, the use of alcohol by significant others, and pregnant teens' use of alcohol before and/or during

pregnancy?

- g. Is there a relationship between the use of alcohol by significant others and the wantedness of pregnancy and pregnant teens' use of alcohol before and/or during pregnancy?
- h. Is there a relationship between pregnant teens' knowledge about the risks of drinking during pregnancy and their use of alcohol during pregnancy?

Delimitations and Limitations

1. The subjects in this study were urban, low-income pregnant teens utilizing Roanoke Memorial Hospitals (RMH) High-Risk Obstetrics/Gynecology Clinic. Approximately one-fourth of the clients of this clinic are referrals from public health department maternity clinics in surrounding rural areas.

The RMH High-Risk Ob/Gyn Clinic is not publicly funded. Patients attending the clinic pay for laboratory services rendered (but not physician services) unless qualified for Medicaid or covered by private health insurance. (The majority of clients do not have insurance. Approximately half of the patients are able to pay for laboratory services, according to the Director of Obstetrics Education. Remaining costs are paid for by Roanoke Memorial Hospitals,)

Clinic patients are limited to women whose pregnancies are deemed high-risk due to the presence of factors which threaten maternal or fetal health. These factors include maternal age, obstetrical and gynecological history, and the presence of medical

conditions which may threaten maternal or fetal health during pregnancy.

2. The sample was limited to those girls aged 19 and under who visited the clinic between January 1982 and July 1982.
3. Subjects were interviewed in their second or subsequent clinic visit. Thus, the sample was limited to pregnant teens who returned to the clinic for prenatal care, intending to carry their pregnancies to term.
4. Alcohol consumption one month prior to pregnancy and during pregnancy were estimated using written self-report measures. Subjects responded anonymously to these questionnaires. Arguments exist as to the validity of self-report measures. However, Mayer and Filstead (1979:298) report that studies of adolescent behavior conclude that "adolescents generally respond honestly to self-report measures." In addition, use of a questionnaire format which asks for information about several health practices during pregnancy should remove the focus from alcohol consumption patterns (Streissguth, Martin, & Buffington, 1976). Martin, Martin, Lund, and Streissguth (1977) found that a subject's one-month prepregnancy alcohol consumption estimates were better predictors of performance decrements in newborns, as compared with subjects' use during pregnancy estimates. They hypothesize that women may report prepregnancy drinking more honestly and/or that the one-month prepregnancy estimate may be a better indicator of alcohol intake during early pregnancy.
5. Generalizability of the findings of this study is limited to similar clinical populations.

6. The ex post facto nature of this study prevents causal inferences from being made about the relationships between variables.

Definitions

Alcohol Consumption - Each subject was classified as a drinker or non-drinker according to aggregate average daily volume of beer, wine, and liquor consumed, and according to the frequency and variability of binge drinking occasions. If a subject met any one of the six criteria listed below, she was classified as a drinker:

- prepregnancy volume score of 1.0 drinks/day or more,
- prepregnancy binge score of 1.0 or more (indicating consumption of five or more drinks per occasion at least once a month),
- pregnancy volume score of 1.0 drinks/day or more,
- pregnancy binge score of 1.0 or more (indicating consumption of five or more drinks per occasion at least once a month),
- at least one occasion of binge drinking (five or more drinks on one occasion) before pregnancy,
- at least one occasion of binge drinking (five or more drinks on one occasion) during pregnancy.

(See Appendices A and B for computational details.) If a subject reported no consumption of alcohol on any measure, she was classified as an abstainer. Subjects who reported alcohol consumption between zero and 1.0 on any measure were classified as infrequent drinkers. Infrequent drinkers and abstainers were combined into one group,

nondrinkers, for hypotheses testing.

Parental Drinking - Each subject's father was classified as a drinker if the subject perceived that he drank beer, wine, and/or liquor at least once or twice a week and drank five or more drinks per occasion "more than half the time." Those fathers not falling into this category were classified as nondrinkers.* Subjects' mothers were classified in the same way.

Friends' and Boyfriends' Drinking - The subject was asked to indicate the proportion of her friends who drank at least once a week. Those who indicated that at least "several" of their friends drank once a week were classified as "positive" on peer drinking. Others were classified as "negative" on peer drinking.

Subjects were asked if their boyfriends or husbands drank more than once a month. If so, the subject was asked to indicate the frequency of his drinking. Those boyfriends or husbands perceived as drinking once a week or more were classified as drinkers; those perceived as drinking less than monthly were classified as nondrinkers.

Context of Drinking - The context of drinking refers to the setting, or occasion of drinking and the person or people with whom the adolescent drinks. A distinction was made between those settings where adults were present and not present. Settings where adults were present included social activities, celebrations, and special occasions at home, and meals. Settings where adults were not present included social activities,

*The category "nondrinker" includes infrequent drinkers as well as abstainers. For the sake of brevity, the term nondrinker is used hereafter instead of "abstainers and infrequent drinkers."

in cars, drinking with the subject's boyfriend/husband, and alone.

Subjects were asked to indicate the frequency of drinking in each setting. Those who indicated that they drank in a particular setting more than half the time were classified as positive for that setting. Setting categories were consolidated for the purpose of analysis into those where adults were present and those where adults were not present.

Reasons for Drinking - Subjects' reasons for drinking were classified as follows (Research Triangle Institute, 1975:150-151):

- Drinking as a positive social function (Questionnaire statements: "It's something people do on special occasions," "It's a good way to celebrate," "It makes get-togethers more fun.")
- Drinking as a conforming social function (Questionnaire statements: "It's one way of being part of the group," "So I won't be different from the rest of the kids.")
- Drinking for status transformation (Questionnaire statements: "It's part of becoming an adult.")
- Drinking for personal effects (Questionnaire statements: "Feeling under pressure, tense," "Feeling lonely," "Feeling mad," "Feeling sad," "Makes me less shy," "Helps to get my mind off my problems.")
- Other (Questionnaire statements: "I like the taste," "I like getting high.")

Wantedness - In defining whether or not a pregnancy is wanted, a distinction was drawn between intentions to become pregnant and wanting a baby, and between subjects' initial and present responses to pregnancy.

- Intentions - The pregnancy was classified as intended if the subject reported that she planned to become pregnant, and

unintended if she had not.

- Initial response to pregnancy - A pregnancy was classified as initially unwanted if the subject reported that her initial response to being pregnant was negative (Item No. 63, responses 8-10, 12-13), as initially mixed if the subject's initial response indicated mixed feelings about being pregnant (Item No. 63, responses 5-7, 11), and initially wanted if her initial response to being pregnant was positive (Item No. 63, responses 1-4).
- Present response to pregnancy - A pregnancy was classified as presently unwanted if the subject reported that her present response to being pregnant was negative (Item No. 65, responses 8-10, 12, 13), as presently mixed if her present response to being pregnant was mixed (Item No. 65, responses 5-7, 11), and as presently wanted if her present response to being pregnant was positive (Item No. 65, responses 1-4).

Each pregnancy was classified in three ways.

Multiple responses to pregnancy were indicated by 11 subjects.

These responses were classified in the following manner:

- positive--responses were positive and mixed,
- negative--responses were negative and mixed,
- mixed--responses were positive, negative, and mixed.

Using this classification, the initial responses to pregnancy of 11 subjects were reclassified (four positive, six negative, one mixed).

The present responses to pregnancy of nine subjects were reclassified (eight positive, one mixed).

Support of Pregnancy by Significant Others - Support included change in the closeness of relationships due to pregnancy, time spent with parents, peers, and the baby's father, and provision of financial support (Westoff, 1980; Research Triangle Institute, 1978; Furstenberg & Crawford, 1978).

Support was therefore defined as follows:

- Female friends were defined as supportive if the subject reported no change in or a more supportive relationship since becoming pregnant and/or still spends the same amount of time or more with her close female friends.
- The baby's father was defined as supportive if the subject reported no change in or a more supportive relationship with him, and/or that she still saw him steadily, and/or she was married to him or received financial support from him.
- Parents were defined as supportive if the subject reported that her relationship with her parents was as supportive or more supportive and/or she was living at home or receiving some financial support from them.

Hypotheses

Profiles of drinking and nondrinking pregnant teens were developed from the data collected in this study. The following hypotheses were tested:

1. Teens whose pregnancy is wanted will report lower levels of alcohol consumption and/or less binge drinking than pregnant teens whose pregnancy is not wanted.
2. Pregnant teens whose parents are supportive will report less alcohol

consumption and/or less binge drinking during pregnancy than pregnant teens whose parents are not supportive.

3. Pregnant teens whose friends are supportive will report lower levels of alcohol consumption and/or less binge drinking during pregnancy than pregnant teens whose friends are not supportive.
4. Pregnant teens who are supported by the baby's father will report lower levels of alcohol consumption and/or less binge drinking during pregnancy than those who are not supported by the baby's father.
5. Pregnant teens giving personal-effects reasons for drinking will report higher levels of alcohol consumption and/or binge drinking than pregnant teens who do not give personal-effects reasons for drinking.
6. Pregnant teens who drink in settings where adults are not present will report higher alcohol consumption and/or binge drinking than pregnant teens who drink in settings where adults are present.
7. Pregnant teens having significant others who drink will report higher levels of alcohol consumption and/or binge drinking than pregnant teens whose significant others do not drink.

Interaction between wantedness, support of significant others, and the drinking of significant others is possible, but the direction of their relationship with the volume or variability of drinking is unknown. The following interaction hypotheses (in null form) were tested:

8. There is no interaction between the use of alcohol by significant others, the support of significant others, and pregnant teens' volume of alcohol consumption.
9. There is no interaction between the use of alcohol by significant others, the support of significant others, and pregnant teens' binge drinking.
10. There is no interaction between the use of alcohol by significant others, the wantedness of pregnancy, and pregnant teens' volume of drinking.
11. There is no interaction between the use of alcohol by significant others, the wantedness of pregnancy, and pregnant teens' binge drinking.

Significance of the Study

Lack of Information for Program Development

Review of the literature regarding teenage pregnancy, teenage drinking, and Fetal Alcohol Effects revealed only one study which included the drug use patterns of pregnant teens (Ulvedal & Feeg, 1982). Information regarding their alcohol consumption and their consumption of other substances such as caffeine and nicotine is needed in order to determine the actual number of infants endangered by maternal drinking during pregnancy. Information about the dynamics surrounding alcohol consumption patterns is needed to develop effective educational and intervention programs of prenatal care to identify, inform, and assist mothers regarding these hazards to their developing babies and to future children. Given that adolescent drinking behavior appears to

be highly influenced by the behavior and attitudes of significant others such as parents and peers, it is important to determine the extent of this influence on pregnant teenagers. If this is a significant influence, inclusion of parents (particularly the mothers) and/or peers (boyfriends/husbands, girlfriends) in educational and intervention programs may increase the effectiveness of programs in reducing alcohol consumption before, during, and after pregnancy.

Population at Risk

The potential number of infants at risk of suffering from Fetal Alcohol Effects is large, given the number of infants born to adolescents and the prevalence of adolescent girls' drinking in the past decade. Seventeen percent of all births in 1978 were to 12 to 19 year olds (Alan Guttmacher Institute, 1981). More than half of these pregnancies were unintended. Although the birth rate and number of births to teens declined in the 1970s, the rise of out-of-wedlock births continued to increase, especially among 15 to 17 year old whites. More than one in ten teenagers gets pregnant each year, possibly rising to four in ten if present patterns continue (Alan Guttmacher Institute, 1981). These pregnancies are associated with higher rates of maternal/infant mortality and morbidity. These infants are more likely to have low birth weight and birth defects (Baldwin & Cain, 1980). They are more likely to be unintended and unwanted and show impaired emotional and intellectual development in childhood (Alan Guttmacher Institute, 1980). Pregnant teenagers are less likely to seek early and continuous pre- and postnatal care, which could decrease these risks to their infants (Alan Guttmacher Institute, 1981).

The problems of teenage pregnancy have continued during a decade when another social change has taken place-- a rise in the number of teenage girls who consume alcohol. According to nationwide studies in 1974 and 1978 (Rachal et al., 1976; DeLuca, 1981), nearly 75% of high school aged youths have experimented with alcohol. The percentage of females having experience with alcohol was almost the same as that for males. A nationwide study of high school seniors indicated that in 1979, 31% of the females had consumed five or more drinks on an occasion at least once in the past two weeks, and that 12% of the females reported three or more such occasions (Bachman, Johnston, & O'Malley, 1981).

Misuse, in the 1978 study (DeLuca, 1981), was defined in terms of both drunkenness and experience of negative consequences due to drinking. Thirty-one percent of the 10-12 graders studied were classified as misusers, nearly all because of drunkenness. These figures represent the alcohol consumption of both male and female adolescents. Although a larger proportion of misusers were male than female, the number of female misusers increased more than the number of males between 1974 and 1978 (Hindman & Williams, 1980). These statistics indicate that, although daily drinking of adolescent females may be limited in terms of volume, female binge drinking does occur and on an increasing basis. Thus the population of teenage girls who may consume alcohol in sufficient amounts and variability to harm a fetus, particularly during early gestation, is potentially large.

Public Awareness and Knowledge of Risk

The few surveys of public awareness of the risks of alcohol

consumption during pregnancy revealed varying levels of awareness of these risks (69% aware to 96%) (Little, Grathwohl, Streissguth, & McIntyre, 1981). These surveys showed that awareness did not guarantee that appropriate action would be taken to reduce fetal risk.

A telephone survey conducted in Multnomah County, Oregon (includes the Portland area) in 1979 revealed that 90% of the respondents were aware that alcohol consumption during pregnancy could be harmful to the unborn child (Little et al., 1981). One-fourth of all respondents recommended abstinence on a routine basis, while 16% recommended abstinence on special occasions. The remaining respondents who felt that alcohol was harmful gave a mean safe maximum level of more than three drinks on a routine or special occasion basis. Teenage respondents were less likely than other respondents to recommend abstinence. They recommended a higher maximum "safe" level of us for the pregnant woman than other respondents. Males, particularly teenage males, also endorsed higher safe levels of drinking, levels which were contrary to current evidence.

The survey indicated above revealed that although teenagers were generally aware that drinking alcohol posed risks to the unborn, their behavior did not reflect knowledge of specific levels or beverages associated with risk to the fetus. Peer influence has been identified as a major factor affecting teenage use of alcohol. Given their high recommended "safe" maximum levels for drinking during pregnancy, male and female teens may unknowingly encourage drinking behaviors which could endanger unborn children.

Potential Long-Term Benefits for Mother and Child

It appears that the prenatal clinic may be a good place to begin intervention related to alcohol use (Rosett, Ouelette, & Owens, 1977; Sokol, Miller, Debanne, Golden, Collins, Kaplan, & Martier, 1981). Pregnant women may be more motivated to change their drinking patterns out of concern for fetal well-being. Changes in drinking patterns and help-seeking related to alcohol use may carry over following the infant's birth. This may help reduce negative outcomes such as child abuse in early child development, by reducing misuse of alcohol and by improving special support services to mothers in need of them (Phipps-Yonas, 1980; Bolton, Laner, & Kane, 1980; Kinard & Klerman, 1980).

II. REVIEW OF THE LITERATURE

A search of the literature revealed only one study which included pregnant teenagers' use of drugs, including alcohol (Ulvedal & Feeg, 1982). Literature related to alcohol consumption during pregnancy dealt primarily with adult women. Therefore, to obtain information relevant to this study, literature was reviewed in four areas: 1) the effects of moderate and heavy alcohol use during pregnancy, 2) adolescent alcohol use, 3) assessment of alcohol consumption, and 4) adolescent pregnancy. These areas are discussed below.

Effects of Maternal Alcohol Ingestion During Pregnancy

The first area of literature reviewed for this study was that dealing with the effects of alcohol ingestion on the fetus before and during pregnancy. This section review will discuss the Fetal Alcohol Syndrome (FAS) and Fetal Alcohol Effects (FAE), the levels of risk associated with high and moderate levels of maternal alcohol consumption and characteristics of pregnant drinkers, and public awareness of the fetal risk of alcohol-induced effects.

The Fetal Alcohol Syndrome and Fetal Alcohol Effects

In 1973, Jones and Smith identified a pattern of anomalies in infants born to alcoholic mothers. They labeled this pattern the fetal alcohol syndrome (FAS). Since then, many other researchers have identified similar infants and other effects of maternal alcohol ingestion during pregnancy (Green, 1974; Ouelette, Rosett, Rosman, & Weiner, 1977; Sokol, Miller, & Reed, 1980; Morrison & Maykut, 1979). The features of this syndrome include (Clarren & Smith, 1978; Rosett, 1981;

DeLuca, 1981:60):

1. mental retardation and other central nervous system dysfunction including poor coordination and muscle tone, irritability, tremulousness, and hyperactivity in childhood (DeLuca, 1981:60)
2. reduced body length, birth weight, and head circumference due to intrauterine growth retardation rather than pre-term delivery
3. a cluster of facial abnormalities including "short palpebral fissures, a short upturned nose ... a sunken nasal bridge, epicanthal folds ... a thin upper lip ... underdevelopment of the midface, and growth retardation of the jaw" (DeLuca, 1981:60)
4. other malformations in the cardiac, urogenital and skeletal systems.

Further clinical and epidemiological studies reveal a broad continuum of possible effects of alcohol on the developing embryo and fetus, with the FAS on one end and lesser effects, such as decreased birth weight, on the other end (Rosett, 1980; Little, 1977). These effects appear to be linked, at least in part, to ingestion of moderate to heavy amounts of ethanol or binge drinking during early pregnancy or throughout pregnancy (Streissguth, 1978; Lowman, 1982). This continuum of effects is also possibly due to differences in individual metabolism of alcohol combined with individuals' variations in drinking patterns throughout pregnancy. Ingestion of differing amounts of alcohol during different critical periods of infant development may result in the manifestation of different effects (Rosett, 1980). Alcohol may also potentiate or interact with other risk factors in pregnancy, such as maternal

smoking, malnutrition, and use of caffeine and other drugs (Rosett, 1980; Martin et al., 1977). Other maternal risk factors, such as maternal nutrition, age, parity, and obstetric history may also be associated with some of these effects.

The effects described above represent the cumulative effect of alcohol on the fetus. Given the range and variation of possible effects, the term possible or suspected Fetal Alcohol Effects has been suggested as appropriately describing the variety of infant outcomes associated with maternal alcohol ingestion (Clarren & Smith, 1978; Rosett, 1980; NIAAA, 1980; Smith, 1981).

Effects of Heavy and Moderate Drinking and Characteristics of Pregnant Drinkers

Manifestation of the full FAS, as described above, has been associated with high levels of alcohol intake. According to Clarren and Smith (1978), there is definite risk to the fetus with ingestion of 89 ml of absolute alcohol per day (6-7 mixed drinks or equivalent). In addition to the FAS, there is increased risk of low birth weight, length, and head circumference; congenital anomalies; fetal distress during labor; premature separation of the placenta; and neonatal Apgar score below 7 with consumption at this level (Sokol et al., 1980; Russell, 1977). Little, Streissguth, Bar, and Herman (1980) reported significantly lower birth weights among infants whose mothers had a history of alcoholism, but who had abstained during pregnancy.

Sokol et al. (1980) suggested that there is a risk for a range of adverse outcomes associated with maternal alcohol abuse in as many as 50% of the infants. Their medical record based prospective cohort study

of over 12,000 pregnancies was not originally designed to study alcohol use during pregnancy. It is therefore likely that their figure of 1.7% clinically identified alcoholics is an underestimate of the actual number of alcoholics in the study population. Their current prospective study addresses this clinical identification process in greater detail. In addition, their designation of alcohol abuse was based on patient scores on the Michigan Alcohol Screening Test, rather than on volume or variability of intake of alcohol. However, abusers identified by the MAST reported higher intakes of alcohol, heavier smoking, and heavier non-prescription opiate use than did non-abusers (Sokol et al., 1981). Kuzma and Kissinger (1981) reported similar interrelationships between drinking and smoking, caffeine use, and use of illicit drugs in their study of over 12,000 California women.

Levels of alcohol consumption ranging from one to three absolute ounces of alcohol per day (two to six drinks) have also been associated with Fetal Alcohol Effects. In a prospective study at Boston City Hospital (Ouelette et al., 1977), 9% of the women patients were classified as heavy drinkers (1.5 or more absolute ounces of alcohol per day, with five or more drinks on an occasion at least once per month). Twice as many of these women's infants were found to be abnormal as other women's infants. There were significant differences between the heavy drinkers' infants and others' infants in jitteriness; risk of small for gestation age infant; decreased length, birth weight, and head circumference; and increase in various anomalies. Their findings suggested that "heavy drinking during the first trimester has the greatest effect on fetal maldevelopment, whereas heavy alcohol consumption near

term may have a greater effect on fetal nutrition and size" (Ouelette et al., 1977:530). Heavy drinking was more likely to be reported prior to pregnancy than during pregnancy (Alpert, Day, Dooling, Hingson, Oppenheimer, Rosett, Weiner, & Zuckerman, 1981:200). Reduced drinking during pregnancy was also reported. Heavy drinkers were more likely to smoke and to smoke more than other patients, and more likely to report drug use prior to pregnancy. They reported more miscarriages, higher parity, and were less likely to take vitamins or iron during pregnancy. These confounding variables must be controlled in determining the risk of alcohol consumption to the fetus.

A prospective study of over 9,000 French women revealed similar findings for women consuming over 1.6 absolute ounces of alcohol per day (40 cl. of wine with 11% ethanol content) (Kaminski, Rumeau, & Schwartz, 1978; Kaminski, Franc, Lebouvier, du Mazaubrun, & Rumeau-Rouquette, 1981). After adjustment for confounding variables, mean birth weights of heavier drinkers were lower and the risk of a small for gestational age infant was increased. Placental weight was also decreased and the risk of stillbirth from abruptio placenta was higher than for women who drank less than 1.6 ounces of alcohol per day. Drinking in this study consisted of wine and beer consumption. The increase in risk in heavier drinkers was apparently due to beer consumption despite the beer drinkers' lower average ethanol consumption.

The relationship between excess of stillbirths and moderate or heavy drinking was not confirmed in two later studies, although a similar trend was shown (Kaminski et al., 1981). The relationship between preterm births and moderate or heavy drinking was shown in only one of

the three studies reported by Kaminski et al. (1981), but was independent of confounding factors. These later studies indicate that the relationship between decreased birth weight and moderate alcohol use may not be as strong as was thought from earlier studies. Methodological differences between the three studies may account for some of these variations in findings. Further research is needed in all areas.

A prospective study of 1,529 pregnancies at the University of Washington in Seattle was instituted to investigate the effects of moderate and social maternal drinking on infants. Hanson et al. (1978) studied the children of women consuming one ounce of absolute alcohol per day or more or reporting one or more episodes of heavy drinking just prior to or during pregnancy. Eleven of 163 infants were judged to show signs associated with the effect of alcohol on fetal development. Two were classified FAS and had mothers who were heavy drinkers. Two of these infants were from mothers in the light drinking/abstaining control group. The other seven infants who showed lesser manifestations of an FAS-type pattern were born to women who reported drinking an average of one-two ounces of absolute alcohol daily in the month before they recognized they were pregnant. Their data suggest the risk of abnormalities approaches 10% when alcohol consumption is an average of one-two ounces of absolute alcohol per day. This relationship between consumption and fetal outcomes was stronger when the prepregnancy estimate of consumption was used in the comparison than when the during pregnancy estimate of consumption was used. These findings suggested that the fetus is affected during the first weeks of gestation, before the woman is

aware that she is pregnant. They also suggested that the estimate of consumption one month before pregnancy may in fact be the estimate of maternal drinking following conception, but prior to recognition of pregnancy. Heavier drinkers in this study also reported a drop in alcohol consumption during pregnancy, presumably out of concern for fetal welfare.

Behavioral decrements were also noted in analyses of subsamples of the Seattle study. Streissguth, Martin, Martin, and Barr (1981) reported that decreased infant birth weight, length, head circumference, Apgar scores, and sucking pressure were significantly related to maternal alcohol use. Landesman-Dwyer, Keller, and Streissguth's (1978) findings revealed increased tremors, left head turning, hand-face contact, opened eyes, and decreased vigorous limb activity among infants whose mothers were moderate or heavy social drinkers (drank at least one ounce of absolute alcohol daily, or $1\frac{1}{2}$ or more drinks per day before or during pregnancy, or who reported at least one episode of intoxication during pregnancy). Martin et al. (1977) reported decrements in performance on two operant tasks among infants whose mothers were both moderate to heavy drinkers and heavy smokers (≥ 16 mg nicotine/day). Follow-up data showed that maternal drinking during early pregnancy was significantly related to infant motor and mental development at eight months, even when other factors were controlled (Streissguth et al., 1980). These effects were associated with a drinking level of four drinks a day or more. In a four-year follow-up study (Landesman-Dwyer, Ragozin, & Little, 1981:187-192) offspring of moderate drinkers (mean of 0.45 oz. per day during pregnancy) were slightly less attentive, less likely to

obey parental commands, and more fidgety during mealtimes than children of abstainers and infrequent drinkers. These differences were observed during naturalistic observations of the children in their home settings. These small differences are important in light of the enriched home environments of both groups and the low level of maternal drinking.

Little (1977) reported significantly decreased birth weight among offspring of women who drank an average of one ounce of alcohol daily before pregnancy or during late pregnancy. A decrease of 91 grams was associated with a prepregnancy drinking rate of an average of one ounce of absolute alcohol or more per day. A decrease of 160 grams was associated with the same level of consumption in late pregnancy. These associations were independent of other variables, including tobacco use.

Two studies (Harlap & Shiono, 1980; Kline et al., 1980) reported a positive relationship between spontaneous abortion and relatively low levels of alcohol consumption, with likely confounding variables controlled. In the Harlap and Shiono (1980) study, the relationship appeared when one to two drinks were consumed daily. Kline, Stein, Shrout, Susser, and Warburton (1980) also reported increased risk of second trimester spontaneous abortion associated with pregnancies in which the mother reported drinking one ounce of absolute alcohol twice a week.

The findings described above were linked to levels of average daily consumption of alcohol. Assessment of the variability of drinking (including dates, duration, and amounts during "binge" episodes) may also be important in research relating to the outcome of pregnancy (Little & Streissguth, 1978; Kuzma & Kissinger, 1981; Little, 1981;

Smith, 1981; Streissguth, 1981). Brain malformations were found in four neonates who had been exposed to large quantities of ethanol at frequent intervals (Clarren, Alvord, Sumi, Streissguth, & Smith, 1978). Two of these infants were born to mothers who had histories of chronic alcoholism. However, similar brain malformations appeared in two other infants whose mothers reported regular alcohol use with occasional binge periods when they would consume five or more drinks. Of these four infants, only two were diagnosed FAS from external criteria, indicating that structural malformations in the brain may be the only abnormality linked with intrauterine alcohol exposure. These findings are important in light of Little and Streissguth's (1978) findings that alcoholic women reported a drop in regular drinking during pregnancy, but an increase in the number of days of binge drinking. Their definition of binge drinking was slightly more stringent than the one given above; a binge was defined as "a day (or more) when drinking was at least double the regular level, and a minimum of three ounces of absolute alcohol was consumed" (Little & Streissguth, 1978:197). Binges were also separated by at least ten days and made up no more than seven days of a month. Little and Streissguth (1978:182) hypothesize that the increase in binge drinking was a sign of unresolved problems with alcohol that alcoholic women attempt to control during pregnancy.

It is clear from the findings presented above, that alcohol ingestion during pregnancy presents a risk to the fetus. A variety of possible Fetal Alcohol Effects exist, ranging from intrauterine growth retardation to facial malformations to mental retardation. These are associated with varying levels and patterns of maternal alcohol

ingestion. Risk to the fetus appears to be minimal below daily average of one ounce of absolute alcohol (approximately two drinks per day), although no "safe" level of consumption has yet been identified. Consumption of between one and three ounces of absolute alcohol is associated with the risk of a variety of effects, and a definite risk to the fetus appears to be present at average ingestion levels of three or more ounces of absolute alcohol per day. The risk from maternal alcohol ingestion also appears to be related to the time at which alcohol is consumed during pregnancy, with consumption early in pregnancy possibly related to malformation and late in pregnancy related to growth deficiency. Assessment of the effects of short periods of heavy alcohol consumption (binge drinking), particularly in the first trimester of pregnancy, is also needed, to determine such effects on fetal development.

Studies of the characteristics of women who drank during pregnancy indicate the need to control confounding variables such as smoking and caffeine consumption in determining the effects of alcohol consumption on fetal growth and development. Reported decreases in alcohol consumption during pregnancy indicate a high concern for fetal welfare among women of all levels of consumption. Pregnancy may, thus, be an opportunity to successfully intervene and treat maternal alcoholism. Further research is needed to confirm this apparent relationship.

Public Awareness of Risk

In light of these findings, surveys have been conducted to assess public awareness of risk (Little et al., 1981; Little, Streissguth, & Guzinski, 1980; NIAAA, 1981; Lowman, 1982). Little, Streissguth, and Guzinski (1980) reported the results of a survey of King County,

Washington, residents. This survey indicated that the public was aware of the potential risk of alcohol consumption to the fetus. However, over one-third of those interviewed believed that three or more drinks per day was a safe level of consumption during pregnancy. This finding was surprising since Seattle, located in King County, is a major FAS research center and more information regarding the risks of maternal alcohol consumption was available to county residents.

In Multnomah County, Oregon, a telephone survey revealed that over 90% of the residents were aware that consumption of alcohol during pregnancy could be harmful (Little et al., 1981). One-fourth of the respondents felt that pregnant women should abstain during pregnancy, and 16% felt they should be abstinent on special occasions. The remainder of those who felt alcohol was harmful gave a mean "safe" level of more than three drinks per day. Younger respondents, particularly males, were more likely to endorse higher levels of drinking. Adolescent males endorsed a "safe" level of 4.5 drinks per day for customary use. Those respondents who smoked and drank also were more liberal toward drinking during pregnancy. Liquor was cited as harmful by 90% of the respondents, while wine and beer were noted as harmful by 76% of the respondents.

The level of public awareness of the risks of alcohol ingestion during pregnancy in these two surveys (92% and 90%, respectively) was similar to the level of awareness (96%) reported by a Los Angeles survey of women who had recently given birth (Little, Streissguth, & Guzinski, 1980). They were higher than the approximate 66% level of awareness among the total population in 1979 reported in a nationwide survey by the Opinion Research Corporation (NIAAA, 1980). In the Opinion

Research Corporation survey, 80% of the women of childbearing age were aware of fetal alcohol effects. Limited or no drinking during pregnancy was reported by 88% of the women interviewed. Other findings from this study indicated that single pregnant women drank more than married pregnant women, and that older women and women with some college education reported more drinking during pregnancy.

A follow-up study of Seattle women (Lowman, 1982) indicated that a higher proportion of women in 1980-81 abstained from alcohol at the time of conception than women in 1974-75. Alcohol use also decreased among women of all drinking levels upon confirmation of pregnancy. These changes in drinking behavior reflect increased public awareness of the risks of drinking during pregnancy, which corresponds to the large publicity effort of the Seattle FAS prevention project. Women in Buffalo, New York (where there had been little FAE-related publicity) did not show this tendency to prepare for pregnancy by reducing alcohol consumption (Lowman, 1982). According to Russell (as reported by Lowman, 1982) these findings suggest the need for FAE-related medical advice for those women planning pregnancy as well as women already pregnant.

Vaughn (1980:4751-A) reported that women's cognitive beliefs about fetal risk changed positively when exposed to information (a pamphlet) about the FAS. The pamphlet was more effective for older, more educated multiparas who drank minimally. The baby's father was the most significant factor in change of beliefs.

These surveys reveal that, despite high public awareness of potential fetal alcohol effects, the public may be unaware of potentially harmful levels of ingestion during pregnancy, particularly before

pregnancy is detected. These findings also indicate that adolescents, particularly males, may be less aware than adults of the levels of alcohol ingestion associated with fetal risk. They may also be unaware of the hazards posed by all types of alcoholic beverages, rather than liquor alone. Since peer models and attitudes are important influences in adolescent drinking, particularly for girls, these findings suggest that consideration and inclusion of peers in prenatal education may be warranted. Given the unplanned nature of many teenage pregnancies, teenagers are also less likely to reduce drinking during the first trimester, when risk to the fetus may be greatest.

Adolescent Alcohol Use

Since there is no literature about drinking patterns of pregnant teens, literature was reviewed in order to learn more about adolescent drinking in general. More specifically, answers to the following questions were sought: How many teenagers, particularly girls, drink? How many of them are problem drinkers and by what criteria is problem drinking defined? With what major variables is adolescent alcohol consumption associated? Several empirical analyses of adolescent drug use provided some insight into the answers to these questions. These are described below.

Prevalence of Adolescent Drinking

Alcohol is widely used among teenagers. The extent of their alcohol consumption depends upon the study being reviewed. Findings of national household surveys conducted in the 1970s revealed that slightly more than one-half of teens used alcohol at some time in their lives. In

the 1974, 1976, and 1977 surveys, slightly less than half of the 12-17 year olds interviewed indicated they used alcohol within the past year. About one-third indicated some use within the past month (Braucht, 1980: 111). In the 1979 study (Fishburne, Abelson, & Cisin, 1979) new questions about alcohol consumption were used, so the data were not directly comparable with earlier studies. However, 37.2% of the 12-17 year olds interviewed reported drinking within the past month-- 39% of the males and 36% of the females. Of these current drinkers, 26.0% reported drinking on one to four days during the month and 19.1% reported drinking no more than two drinks on any one drinking occasion.

Rachal and associates (1976; DeLuca, 1981) conducted nationwide surveys of adolescent alcohol use in 1974 and 1978. The 1974 findings were based on a nationwide probability sample of 7-12 grade students in the contiguous 48 states and the District of Columbia (Research Triangle Institute, 1975). They classified adolescents' responses according to drinking levels, which combined volume consumed per occasion and number of drinking occasions per year, month, or week (see Appendix C). Their findings reveal that only 27.3% of the adolescents surveyed were abstainers (23.2% of the boys, 31.1% of the girls). Approximately 33% were classified as infrequent drinkers or light drinkers (29.3% of the boys, 36.4% of the girls). Over 15% were classified as moderate drinkers (16.4% of the boys, 14.6% of the girls) and over 18% were classified as moderate/heavy or heavy drinkers (21.1% of the boys and 17.8% of the girls). Thus, although boys tend to drink more than girls, girls' drinking should not be overlooked-- over 32% of the 7-12 grade girls surveyed drank at least once a week.

The 1978 study results are similar to those of the 1974 study--more female abstainers and fewer female heavy drinkers than among males (DeLuca, 1981:23). One in eleven females reported heavier volumes of drinking. Females reported drinking less often and in smaller amounts per occasion than males. Approximately two out of three females reported drinking at moderate levels or less, as compared with one out of two males. These results are similar to the 1974 findings, indicating little change in the numbers of adolescents drinking or in the volume they are drinking.

Bachman et al. (1981) report the results of five nationally representative surveys of high school seniors from 1975 to 1979. Approximately two-thirds of the females (and three-fourths of the males) reported some use of alcohol in the past month, while less than 5% of the females (less than 10% of the males) reported daily use within the past month. As with the Rachal studies, little change in the overall drinking patterns was reported over this five-year period.

Prevalence and Definition of Problem Drinking Among Adolescents

In considering the prevalence of problem drinking among adolescents, it should be noted that problem drinking among adolescents cannot be judged using adult criteria such as dependence symptoms (tremors, inability to stop drinking, blackouts, morning drinking) because these symptoms are infrequently reported in adolescent populations. Adolescence is a time of physical, cognitive, and social skill development. Use of alcohol, as with the use of other drugs, can disrupt the acquisition and development of these skills more easily than in adults (DeLuca, 1981). Definitions of problem drinking for pregnant teenagers, therefore,

must take these differences into account, as well as the effects of alcohol consumption on fetal development in teenage pregnancy.

Several different definitions of problem drinking are implied or directly given in the literature. In his study of the drinking practices of high school students in two small Mississippi communities characterized by abstinence, Globetti (1972) used a problem drinking index developed from Jellinek's (1952) warning signs of approaching alcohol abuse. These include questions asking if the adolescent drank in cars or alleys, drank alone, drank in order to get high or drunk, drank whenever he/she got the chance, and worried about his/her drinking (Globetti, 1972:515). Those who answered two to five of these questions positively were classified as problem drinkers. His study revealed that 17% of the students surveyed were problem drinkers. These students were predominantly males over 16, who drank without parental approval and supervision. They usually drank to attain a high or become drunk and had experienced some kind of social and personal consequences as a result of their drinking. (Globetti's study also points out a sociocultural definition of problem drinking. Adolescents in these communities did not have permission to drink, identified with churches that condemned alcohol abuse, and obtained alcohol from bootleggers. Their drinking of alcohol, in general, could have been designated by some parents, teachers, etc. as "problem drinking.")

In the studies described in the previous section, "serious" or "problem drinking" was also discussed. Bachman et al. (1981) mention daily or near daily use of alcohol. They describe "perhaps the most serious drinking problem among seniors" as the reported frequency of

taking five or more drinks in a row during the prior two weeks. Thirty-one percent of the females in 1979 reported at least one such occasion, while 12% of the females reported three or more occasions of this type.

The Jessors (1977) used both drinking and problem drinking as criteria in their problem behavior theory because of the illegality of drinking for most youth, their recourse to illegitimate means to obtain alcohol, and the upward change in drinking rates during the years of their high school study. Their definition of problem drinking centered around a "pattern of alcohol use that eventuates in negative consequences that elicit sanctions and controls from others or that in itself can be considered excessive" (1977:77). They used two criteria, frequency of drunkenness and experience of negative consequences associated with the use of alcohol in the past year. These negative consequences included: "problems with friends, difficulties at school, criticism on dates, trouble with family, drinking and driving, or trouble with police" (1977:77). Subjects were considered problem drinkers if they reported five or more times drunk and/or negative consequences in two or more life areas within the past year. These cutoffs reflected differences in patterns of alcohol use between groups of subjects. In addition, problem drinkers differed in the context of their drinking. They did more of their drinking with friends and less with their parents, drank alone and in the daytime more than non-problem drinkers, and more of them defined themselves as having a problem with drinking. It should be noted that this definition of problem drinkers does not imply "alcoholism," pathology, or illness (Donovan & Jessor, 1978).

The Jessors' problem behavior theory (explained in the following

section) was used in the conceptual framework of the 1974 and 1978 studies carried out by Rachal and associates at the Research Triangle Institute (RTI) for the National Institute on Alcohol Abuse and Alcoholism (Donovan & Jessor, 1978). In the 1974 study, participants who reported four or more times drunk and/or two or more areas of negative consequences in the past year were classified as problem drinkers (Research Triangle Institute, 1975). Negative consequences of drinking included trouble with teachers or the principal, difficulties with friends, driving after drinking, criticism by dates, trouble with police, drinking while driving around or sitting in a car, or drinking alone. Twenty-eight percent of the adolescents studied fit this definition-- 33.6% of the boys and 22.9% of the girls. Ninety percent of these problem drinkers were classified as moderate to heavy drinkers according to the volume and frequency of their drinking (see Appendix C).

Donovan & Jessor (1978) also analyzed the RTI data, using different levels of the same criteria. Problem drinking was first defined as at least six times drunk in the past year and/or "negative consequences two or more times in the past year in at least three of the five areas ..." (1978:1511-12). Using the entire sample as a base for calculations, 14.8% of the females and 23.1% of the males were classified as problem drinkers. Donovan and Jessor note that 88.7% of the 2,191 participants classified as problem drinkers qualified by the drunkenness criterion alone. They also used two alternate criterion definitions of problem drinking-- one based on drunkenness alone (Definition II) and the other on negative consequences alone (Definition III). Of the moderate or heavier drinkers, 12.1% of the females and 17.3% of the males were

classified as problem drinkers, based on their reports of drunkenness at least twice a month in the past year (approximately 9.4% of the total sample). According to Definition III, experiencing negative consequences at least twice in an area with at least one experience in another area, 11.8% of the females and 17.7% of the males (approximately 8.9% of the total sample) were classified as problem drinkers.

The 1978 study did not reveal marked changes for 10-12 graders (DeLuca, 1981). DeLuca (1981) reported an additional definition of problem drinking developed by Rachal and associates-- that of heavier consumption alone, or drinking at least once a week and five or more drinks on each drinking occasion. According to this definition, 8.9% of the female 10-12 graders and 20.9% of the males were problem drinkers (DeLuca, 1981:39).

The above data indicate that girls are less likely to be problem drinkers than boys, according to each of the definitions given above. However, these definitions did not include the fetal risk from these drinking patterns. The data for female adolescent drinking indicated that one-eighth to one-third of the adolescent females surveyed may consume alcohol in amounts or patterns which could endanger fetal development. Thus, assessment of pregnant teens' drinking is needed to evaluate fetal risk.

In addition, these definitions also did not include consideration of the impact of male adolescent drinking upon females. Their influence on females to drink in ways which endanger fetal development may be great (particularly before pregnancy is detected), given the levels of male problem drinking described above, and given their lack of awareness of

levels of consumption or beverages associated with fetal risk (Little et al., 1981). DeLuca (1981) points out that approximately 20% of the school population is absent on any given day. If a number of problem drinkers are absentees (or drop outs), these school-based data underestimate the prevalence of problem drinking. Pregnant teens' drinking patterns are also likely to be left out of these figures, since many pregnant teens leave school or are in special programs not sampled (Alan Guttmacher Institute, 1981).

These findings also indicate that a definition of problem drinking for pregnant teens should include the effects of drinking on the teenage mother's personal development and parenting abilities, in addition to the possible effects of alcohol consumption during pregnancy to the fetus itself. Neither drunkenness nor the negative consequences described above are conducive to successful adolescent parenting or personal development. The peer-dominated context of adolescent problem drinking may be indicative of or a cause of problems with parents, whose support is needed to moderate the adverse consequences of teenage pregnancy.

Correlates of Drinking and Problem Drinking

In order to identify correlates of moderate and problem drinking in adolescents, particularly females, the work of several researchers was reviewed: 1) Kandel and Zucker's developmental analyses, 2) the Jessor's problem behavior theory, and 3) Huba, Wingard, and Bentler's DOMAIN model. Their works presented different theoretical perspectives about adolescent behavior in general, and/or about adolescent drinking, in particular. Many models related to adolescent behavior besides these

exist. These were chosen for the following reasons: 1) they were based on large samples of longitudinal data; 2) they were developed from an "interactional" viewpoint (Zucker, 1979), which encompassed a wide spectrum of influences on behavior-- physiological, psychological, social, and cultural; 3) these models, particularly the latter two, provided frameworks for adolescent behavior in general and may thus be more useful in looking at alcohol consumption by pregnant teenagers-- one focusing on problem behavior (Jessor) and the other on "behavioral styles" (Huba, Wingard, & Bentler); 4) Kandel's and the Jessors' works, in particular, were widely quoted by other researchers and have been part of the framework for other studies. The Jessor's work has been widely tested. The DOMAIN model served as a contrast to their work, in that it was not "problem-behavior" centered.

Kandel and Zucker discussed adolescent drinking and drug use from developmental perspectives. Kandel (1978, 1980) suggested that in the United States there are stages and sequences in drug use among adolescents. Use of legal drugs, such as beer, wine, and tobacco precede the use of hard liquor, marijuana, and other illicit drugs. She identified four stages of adolescent development in drug use: 1) beer or wine, 2) cigarettes or hard liquor, 3) marijuana, and 4) other illicit drugs. Use of a drug lower in this sequence was a necessary but insufficient condition for progress on to a higher stage in the sequence. This sequence was based primarily on analyses of hierarchical studies of drug use among high school students in New York (Margulies, Kessler, & Kandel, 1977; Kandel, 1978, 1980).

Kandel's (1978) review and analysis of the antecedents of drug use

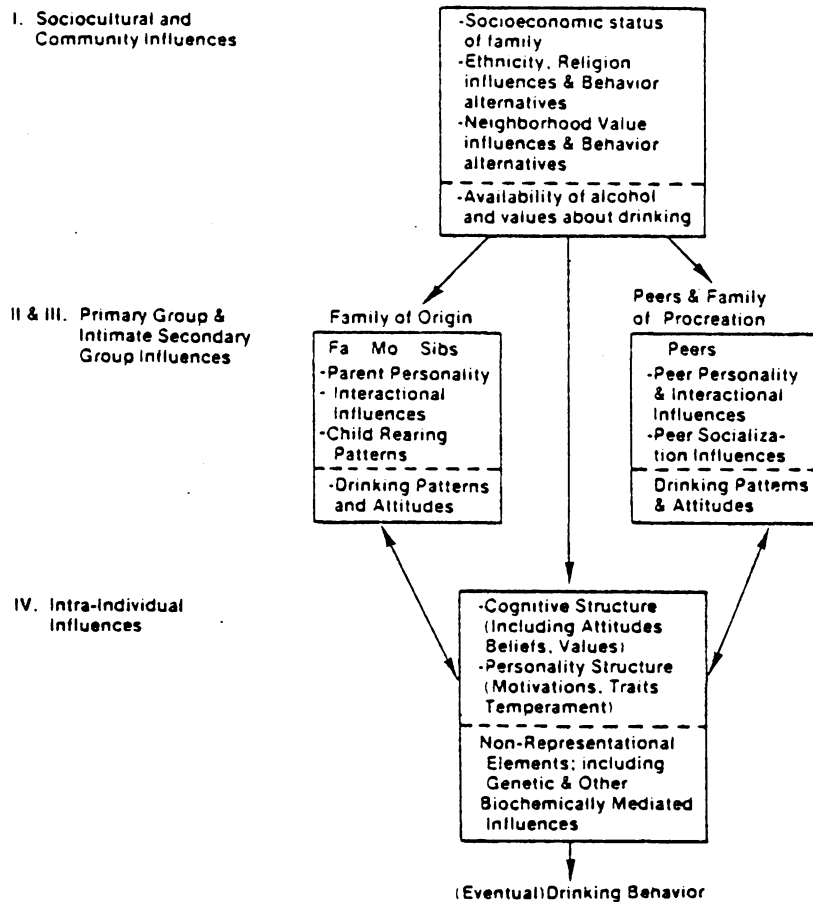
in several longitudinal studies of drug use in the late '60s and early '70s presented several propositions which supported and expanded this sequence. Adolescent beliefs and attitudes about drug use were involved in transition from one stage to the next. Initiation into the three latter stages was preceded by the belief that use of the drug-- hard liquor, marijuana, or other illicit drugs-- was not harmful. Peer and parental models and attitudes were strong predictors of adolescent drug use, particularly for girls in regard to initiation of hard liquor use (Margulies, Kessler, & Kandel, 1977; Kandel, 1978). This influence operated both through a process of selection of friends with similar values and behaviors and through a process of socialization, through which friends' behaviors influenced each other over time (Kandel, 1978). In addition to this general peer influence, the influence of a single best friend appeared to be involved in the transition from alcohol and marijuana to other illicit drugs (Kandel, 1980). Greater social involvement with and attachment to peers preceded initiation into hard liquor and marijuana use. Parental use of hard liquor also predicted initiation into hard liquor usage. Psychological variables were least important among the sets of variables. Earlier transition into these stages was related to a greater likelihood of continued and heavy involvement with drugs. In addition, a social setting favorable to drug use appeared to reinforce individual predisposition to use.

The sequence Kandel described was based on the compiled results of a wide variety of studies, with differing purposes, samples, definition of usage, and conducted over varying lengths of time. Few studies she discussed dealt with onset of beer and wine use, that is, initial entry

into the sequence. The Margulies, Kessler, and Kandel (1977) study of onset of drinking dealt with onset of consumption of distilled spirits. The sample of nonusers on which they based their findings constituted a minority of the students sampled. Her analysis provided useful insight and direction for future research but was limited by these factors.

Zucker's (1979) review was much broader than Kandel's (1978). His purpose was to "establish a developmental model of drinking that is able to link age to drinking phenomena in an orderly way" (1979:93). This included relating initiation into and maintenance of drinking to maturational processes and learning. His model specified four classes of drinking and non-drinking specific influences: I) sociocultural and community influences, which set the stage for drinking behavior, II and III) primary-group and intimate secondary-group influences, which included the models and socialization processes involving family and peers, and IV) intra-individual influences, which included attitudes, personality variables, temperament, and physiological factors. See Figure 2.1 for a diagram of this model.

His review of literature related to three developmental periods-- conception through early childhood, middle childhood through adolescence, and young adulthood and beyond-- provided additional findings which related to this study. In early adolescence, differences in social class, religion, and ethnic backgrounds differentiated drinkers from abstainers and problem drinkers from non-problem drinkers. However, Rachal et al.'s (1975) data showed that persons in urban and rural areas no longer differed greatly in their alcohol consumption patterns.



Source: Zucker, R. A. Developmental aspects of drinking through the young adult years. In H. T. Blane and M. E. Chafetz (Eds.), Youth, alcohol and social policy. New York: Plenum Press, 1979, p. 98.

Figure 2.1

Zucker's Developmental Model of Adolescent Drinking Behaviors

Zucker also discussed the work of Jahoda and Cramond (1972) in Glasgow. Their study utilized a Piagetian frame of reference to explore the development of cognitive representations and attitudes about alcohol in six, eight, ten, and 14 year olds. Their findings indicated that early childhood impressions of alcohol were favorable and included anticipation of drinking. In early adolescence a negative attitudinal structure was also learned which corresponded to the "negative institutional values implanted by both parents and teachers" (1979:115). If education about alcohol at ages 12-14 (often recommended) reflected these "negative institutional values" there may have been a great deal of resistance at this time, because of earlier unchanged positive childhood impressions about alcohol, coupled with observations of peer drinking. Thus, many traditional educational efforts may be at a developmentally inappropriate time. This, of course, could greatly influence the success of educational efforts in schools and clinics.

Zucker's review, which included the Margulies, Kessler, and Kandel (1977) study, also pointed to the association between peer group behavior and transition to drinker status. Parental and family influences, already an influence in early childhood, continued steadily into adolescence. Peer influences appeared to increase through adolescence. Zucker also pointed out that family relationships of abstainers were closer and included more parent/child dialogue than in families of drinkers. Intra-personal influences related to drinking and problem drinking included those discussed by Kandel and the Jessors-- more social involvement, involvement in minor delinquent activity, poorer school achievement, less church involvement, and increased independence and rebelliousness.

Studies of drinking in young adulthood (past age 18) revealed peaks in problem drinking (ages 18-20) and in drinking (ages 22-25). Zucker (1979) suggested a slightly different restructuring of the Jessor findings-- asking whether engagement in "transgressive or antisocial behavior" was critical, or whether involvement in behaviors "productive of independence from family and established institutions" (1979:129) were critical factors explaining the rise in drinking in late adolescence and early adulthood. Change in drinking behavior was seen as the result of "preexisting behavioral repertoires" and environmental press (particularly peers as well as expectations about the future and a person's internal belief structure). Thus, the increased value on independence, increased deviant behavior, and positive attitudes toward drinking reported by the Jessors were seen as future oriented activities related to the developmental tasks of leaving high school and home. He speculated that the decrease in problem drinking and drinking in young adults was related to another developmental shift-- that of beginning a family and related values (increased interdependence, need and desire for a steady job, etc.). His proposition that increasing interpersonal intimacy and responsibilities moderated drinking behavior was speculative but interesting and provided an additional framework for interpreting data related to drinking in adolescence and adulthood.

Zucker's review pointed out the importance of considering developmental processes in determining the salience of various predictors of drinking and problem drinking. He indicated that internal restructuring of environmental influences takes place throughout life and that this restructuring should be considered in determining predictors of drinking.

Educational messages related to alcohol should take into account the cognitive capacity of the learners, the social norms which affect the individual, and the developmental transitions and tasks which individuals face.

The Jessors formulated a social psychological framework for studying adolescent behavior. It was referred to as "problem behavior theory" (Jessor & Jessor, 1975; Jessor & Jessor, 1977, 1980). The term "problem" was used to mean behaviors defined as problems, concerns, or as undesirable by the adult conventional society and which usually elicits some response from these institutions (Jessor & Jessor, 1977). It consisted of three interrelated systems-- personality, environment, and behavior. The end result of the interaction of the variables in these systems was a state of "problem behavior proneness," or the likelihood that problem behavior, as opposed to conventional behavior, would be engaged in. These behaviors, such as alcohol drinking and sexual intercourse, were "normatively age-graded" (Jessor & Jessor, 1975:474), meaning that at certain developmental stages they were permitted (adulthood), while at earlier stages (adolescence) they were discouraged or prohibited. Engaging in these behaviors at earlier ages indicated a departure from conventional norms-- a proneness to engage in problem behavior.

This likelihood of engaging in certain behaviors could also be described as "transition proneness" when it is mapped onto the concept of transition through developmental stages (Jessor & Jessor, 1975). In this way, the Jessors' theoretical framework may explain "the occurrence of behaviors marking transition toward a more mature status and ...

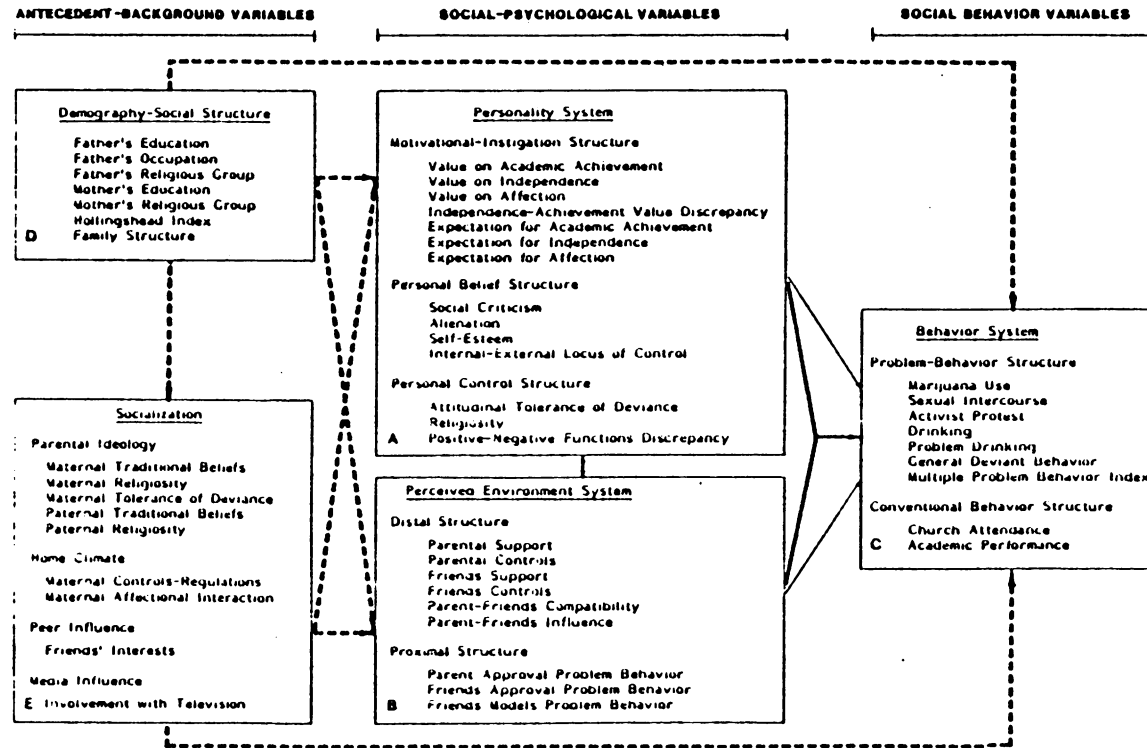
variation in the time (or age) of their occurrence" (1975:474). Therefore, the terms "problem behavior proneness" and "transition proneness" referred to the likelihood that certain developmentally significant behaviors would be engaged in at a particular age or ages.

Their framework was also useful in that each system included many personality and social concepts relevant to adolescent development. The systems and structures are presented in Figure 2.2.

The personality system included intrapersonal variables arranged into three structures: motivational-instigational, personal belief, and personal control. The variables in the first two structures were distal, or more indirectly related to the problem behavior, while personal control variables were considered proximal to the behavior being studied (Jessor & Jessor, 1980).

The motivational-instigational structure variables focused on the goals and motivational pressures which influenced behavior. Achievement, independence, and affection have been found to be important goals for adolescents. The expectation of achieving goals and the value of goals will influence behavior. The independence-achievement value discrepancy variable indicated the relative value of independence and achievement, which has been shown to be strongly related to behavior (Jessor & Jessor, 1977, 1980).

The personal belief structure variables represented the generalized cognitive controls which acted against instigations to engage in problem behavior, both from the other structures of the personality system and the perceived environment system. These variables included social criticism, alienation, self-esteem, and locus of control (Jessor &



Source: R. Jessor and S. L. Jessor, Problem Behavior and Psychosocial Development: A Longitudinal Study of Youth (New York: Academic Press, 1977), p. 38.

Figure 2.2

Jessors' Problem Behavior Theory Model

Jessor, 1977). The variable, social criticism, was a scale of beliefs about the opportunities and institutions in American society. Alienation scale items focused on sense of isolation from others. Self-esteem covered areas such as "intellectual accomplishment, social attractiveness, decision-making ability, potential for self-development" (Jessor & Jessor, 1977:59). Internal locus of control was interpreted as the individual's perception of having control over nonconforming behavior, in contrast to the perception of control from outside forces over nonconforming behavior.

The variables in the personal control structure represented more specific controls against engaging in problem behavior. They included the individual's attitudinal tolerance of deviance, religiosity, and positive-negative functions discrepancy (Jessor & Jessor, 1977). Attitudinal tolerance of deviance was a generalized attribute which indicated regulation of tendencies to lie, steal, vandalize or act aggressively. Religiosity referred to the importance of involvement with religious teachings and services. Positive-negative functions discrepancy was problem-behavior specific. It was an index of the degree to which positive reasons for engaging in a behavior prevailed over negative reasons for engaging in it. In regard to drinking, reasons for drinking have also been classified as indicating drinking as a positive social function, a conforming social function, as a means of status transformation, or for personal effects (Jessor, Graves, Hanson, & Jessor, 1968; Research Triangle Institute, 1975).

Positive social reasons for drinking referred to "drinking for the pleasure of the social interaction which accompanies it" (Jessor et al.,

1968:171). Moderate consumption characterized this type of drinking and it included the ritual use of alcohol and alcohol use with meals. Conforming social reasons for alcohol consumption were indicative of the use of alcohol to overcome social inadequacies or to be accepted by one's companions. The status transformations category referred to drinking to be more adult-like (Research Triangle Institute, 1975). Drinking for personal effects reasons indicated use of alcohol to cope with personal problems or "to achieve otherwise unattainable goals" (Jessor et al., 1968:170). Jessor et al. (1968) suggested that this usage of alcohol more likely would be related to heavier and more frequent drinking and negative consequences of alcohol use than the other functions of drinking listed above. This classification provided additional information about the meaning of adolescent drinking, but has not provided clear discrimination between problem drinkers, drinkers, and abstainers (Research Triangle Institute, 1975). In summary, the corporate interactions of these personality variables provided an indicator of the dynamic relationships between instigations for and controls against engaging in problem behaviors such as drinking and sexual intercourse.

The perceived environment system included proximal and distal structures, consisting of those variables which were directly and indirectly linked to the specific behavior. The distal structure of the perceived environment served to define the social context of the youth-- whether it tended to be more family or peer oriented, and whether congruence or conflict existed between these two groups. Location in a parental context indicated less likelihood of problem behavior (Jessor & Jessor, 1980).

The variables in the proximal structure of the perceived environment indicated the prevalence of and social support for problem behavior in the environment of the adolescent. If an adolescent's network of friends was heavily involved in and supportive of problem behavior, the likelihood of the occurrence of problem behavior was high unless strong influences from other structures were present. Problem drinkers did more drinking with peers than with parents. The dynamic balance between social controls against a behavior and support for and models of a behavior was represented by these variables in the perceived environment system (Jessor & Jessor, 1977, 1980).

The behavioral system consisted of problem behavior and conventional behavior structures. Problem behaviors were those behaviors designated by conventional society or adult authorities as problems, concerns, or undesirable and included drinking, drug use, sexual intercourse, militant social activism, and general deviance (stealing, lying, disruptive behavior, vandalism). They elicited responses from verbal disapproval to incarceration, and they served a variety of functions for the adolescent. Conventional behaviors were those behaviors approved and expected for adolescents and included academic achievement (grade point average) and involvement in formal religion. Engagement in either structure was seen as a restraining behavior on the other structure (Jessor & Jessor, 1980).

The Jessors' study and analysis of data obtained from over 400 high school students from 1969 to 1973 (1968, 1975, 1977) and Donovan and Jessor's (1978; Jessor, Chase, & Donovan, 1980) analysis of the 1974 Research Triangle Institute study data conducted by Rachal et al.

(1976) showed that a consistent pattern of these variables accounted for the occurrence of sexual intercourse, onset of drinking, and problem drinking (as well as marijuana use) among adolescents. In the personality system this pattern of problem behavior proneness was as follows:

lower value on academic achievement; higher value on independence; greater value on independence relative to value on achievement; lower expectations for academic achievement; greater social criticism and alienation; lower self-esteem and an orientation toward an external locus of control; greater attitudinal tolerance of deviance; lesser religiosity; and more importance attached to the positive, relative to the negative, functions of problem behavior.

(Jessor & Jessor, 1980:105)

It should be noted that not all of these variables, particularly the personal belief structure variables, differentiated between adolescents on each of these problem behaviors. In addition, not all of these variables were included in Donovan and Jessor's analysis of the Research Triangle Institute data (1978; Jessor et al., 1980). However, the pattern is clear.

The pattern of problem behavior proneness in the perceived environment included:

low parental support and controls; low peer controls; low compatibility between parent and peer expectations; and low parent, relative to peer, influence, ... low parental disapproval of problem behavior, and both high friends models for and high friends approval of engaging in problem behavior

(Jessor & Jessor, 1980:107)

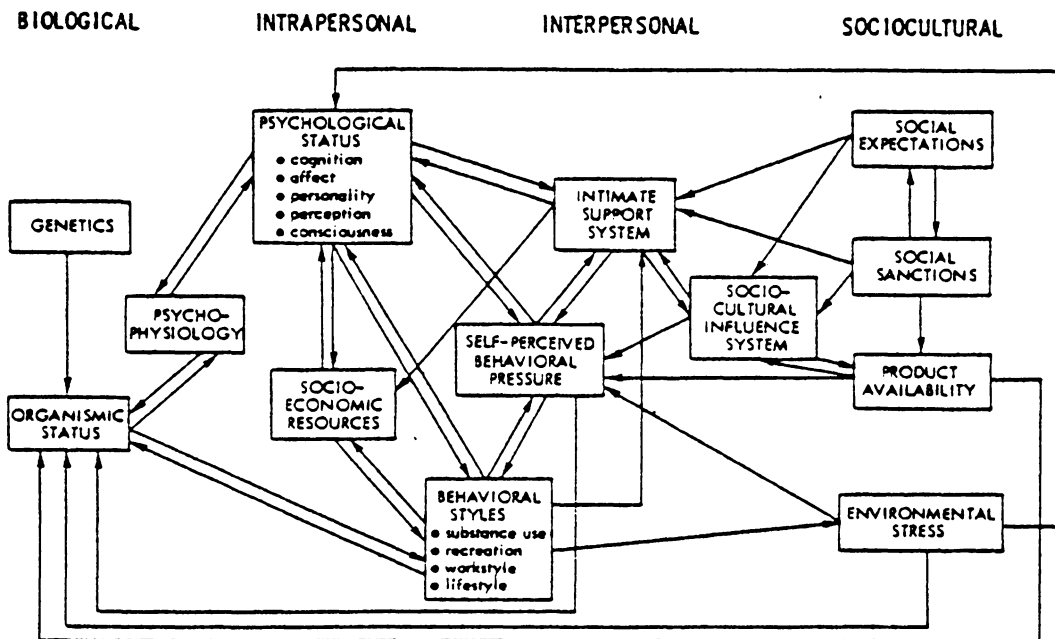
In the behavior system, problem behavior proneness was shown by low involvement in church or academic activities and involvement in other problem behaviors such as minor delinquency (lying, stealing, and aggression), marijuana use, sexual intercourse, and problem drinking

(depending upon the behavior being studied). Environmental variables were stronger predictors than personality variables and accounted for more of the total variance in multiple regression analyses. Personality variables, however, consistently bore a low level relationship to problem behavior.

Analysis of male vs. female data indicated that the overall pattern of transition proneness or problem behavior proneness was particularly strong for female non-virgins. All variables together accounted for 33% (sexual intercourse) to 44% (problem drinking) to over 50% of the variation in marijuana use (Jessor et al., 1980).

Analysis of male vs. female data for each category of problem behavior showed that not all differences were significant for both sexes. In addition, not all measures discriminated for each type of behavior. Taken together, however, a general pattern of proneness to transition or problem behavior emerged, with possible application to drinking in teenage pregnancy. Although this study did not test problem behavior theory, several variables from the Jessors' model were included in this study: functions of drinking (reasons), context, and parents' and friends' models of drinking.

Huba, Wingard, and Bentler presented a comprehensive interactive model which placed drug use within the larger context of behavioral styles (Huba et al., 1980a, 1980b; Huba and Bentler, in press). Drug use was determined by several domains of influence, each of which represented many variables, factors, and latent variables (see Figure 2.3). Both the effect of domains on behavioral style and the effects of behavioral style on these domains were indicated. Presumed causal



Source: G. J. Huba, J. A. Wingard, & P. M. Bentler, Application of a theory of drug use to prevention programs. Journal of Drug Education, 1980, 10, p. 27.

Figure 2.3

The DOMAIN Model

influences between these domains were indicated by arrows. Some of these links were substantiated by this team's empirical research (Huba & Bentler, in press, 1980; Huba et al., 1980c, 1979; Wingard, Huba, & Bentler, 1980). The model, in general, attempted to integrate various themes of many researchers (including Kandel and the Jessors). Their DOMAIN model was a general one, into which drug specific theories and more narrow concepts of drug use could be incorporated. In addition, it was designed to permit detailed hypothesis testing using a variety of analytical techniques, including causal modeling with latent variables and various multivariate methods, as well as experimentation.

The DOMAIN model included constructs which did not directly influence drug use or alternative actions. These were included so that both indirect influences on drug use could be assessed, as well as the consequences of drug taking on these domains (Huba et al., 1980b; Huba & Bentler, in press).

The biological area included the genetic and organismic status domains, which referred to the innate biological features and the physical status of the individual. The psychophysiological domain included the elements of the physiological status which were intertwined with psychological status, and it included such variables and indicators as reactions to stress and arousal levels. Organismic status, according to the model, was a function of genetic and psychophysiological influences, as well as influences from the interpersonal and sociocultural areas (Huba et al., 1980a, b; Huba & Bentler, in press).

In the interpersonal area, five areas of psychological status were differentiated: cognition, affect, personality, perception, and

consciousness. This area also included the individual's socioeconomic resources, which included his or her "actual and perceived discretionary income" (Huba & Bentler, in press:48).

The interpersonal area included the intimate support system, perceived behavioral pressure, and the sociocultural influence system. The intimate support system consisted of the proximal interpersonal environment of family, friends, and significant others and included latent variables such as parent-peer compatibility, peer culture involvement, and time spent with friends. Indicators included whether friends were known and liked by parents, parents known and liked by peers, frequency of getting together with friends, and telling friends about problems. The sociocultural influence system consisted of the more distal cultural influences affecting the individual, including advertising, and other impersonal influences, as well as the influences of persons outside the intimate support circle. The self-perceived behavioral pressure domain included the individual's judgments, perceptions, and evaluations about performing a specific act, such as alcohol use. Indicators for this domain included significant others' performance of this act, as well as the perceived cost or gain from performing this act. This domain was differentiated from the intimate support system in that behavioral pressure referred to interpersonal models which were specific to a certain act, while the intimate support system included more general interpersonal models (Huba & Bentler, in press).

The sociocultural area included several domains which defined society's influence on an individual's behavioral style. These domains included social sanctions, social expectations, product availability, and

environmental stress. Social sanctions were society's formal and informal rewards and punishments for certain actions. Social expectations were the "general cognitive stereotypes and shared cultural schematas" for how individuals should act (Huba & Bentler, in press:49). Product availability included the ease of access to certain substances involved in behavioral style. Environmental stress included events which represented both pleasant and unpleasant changes to the individual. Indicators of this domain, according to Huba and Bentler (in press) included physical surroundings, changes in family structure, relocation (including new job, school, and home), greater financial independence, pregnancy, and a new dating pattern.

Huba, Wingard, and Bentler have tested several submodels of the domain framework, including the influence of personality, intimate culture, and perceived pressure on alcohol use, the influence of rebelliousness upon cannabis use, and the influence of cannabis use upon positive self-concept. These submodels were tested using data from questionnaires given to 1068 adolescents on two occasions three years apart (Huba & Bentler, in press). These questionnaires were administered as part of the UCLA Study of Adolescent Growth, a five-year longitudinal study beginning in 1975 with 7th, 8th, and 9th graders from 11 schools in the greater metropolitan area of Los Angeles (Huba, 1981; Huba, Wingard, & Bentler, 1979, 1980c; Huba & Bentler, 1980).

Findings from the first submodel study indicated that perceived supply and support for alcohol use were more important indicators of drug use than were more general indicators of peer culture. In addition, the intimate support system affected alcohol use through behavioral

pressure, although the specific mechanism by which this influence occurs has not been identified (Huba et al., 1979, 1980b, c). Also, by the ninth grade, the alcohol use patterns of both boys and girls were more highly correlated to perceived peer use than to adult use (Huba & Bentler, 1980). Tests of personality variables related to alcohol use indicated that alcohol use was related to a cluster of character traits associated with unconventionality (non-Abidance with the Law, Extra-version, lack of Deliberateness and Religious Commitment and Leadership) (Wingard et al., 1980). In addition to these nonconventional traits, however, four additional personality factors were related to alcohol use-- Generosity, Ambition, Agility, and Cheerfulness. These same factors were not related to marijuana use, although several of the indicators of nonconventionality were. Additional factors of non-Cheerfulness, Attractiveness, and lack of Trustfulness were associated with marijuana use. This indicated that personality factors other than those associated with nonconventionality may be related to drug use, and that some of these additional factors may be drug specific, possibly reflecting different (although overlapping) subcultures of drug use or differing functions of drug use not related to deviance (Huba & Bentler, 1980; Huba et al., 1979, 1980c).

Summary

In summary, the literature related to adolescent drinking revealed that a third of adolescent females surveyed may consume alcohol in amounts or patterns hazardous to fetal growth and development. In addition, the impact of male adolescents' drinking patterns on those of female adolescents may be high, again, in ways which endanger fetal health. Correlates of alcohol use included intrapersonal traits

health. Correlates of alcohol use included intrapersonal traits such as high value on independence and low value on achievement, less religiosity, and personal effects reasons for drinking. In the social environment, parental and peer use of alcohol and the context of drinking (peer oriented as opposed to parent oriented) were strong correlates of adolescent drinking and problem drinking.

Assessment of Alcohol Consumption

Detecting and measuring alcohol consumption accurately may be difficult, especially with heavier drinkers who may deny drinking or be unable to recall precise amounts and occasions of drinking. Self-reports of drinking to an obstetrician may have questionable validity, especially if the patient is defensive about her drinking. In addition, most physicians and nurses have little special training or experience in measuring alcohol use. Studies by Sokol and Miller (1980) and Little (1976) showed the value of a structured screening instrument administered by specially trained independent interviewers in obtaining more accurate and definitive reports of alcohol use. Sokol and Miller (1980) diagnosed alcohol abuse in 1.7% of the over 12,000 pregnancies they studied at Cleveland Metropolitan General Hospital/Case Western Reserve University. They found that the identification of alcohol abuse increased significantly as clinicians' awareness of the risks of maternal alcohol use increased (from 1.3% to 2.1%). However, when specially trained individuals screened all pregnant patients using the Michigan Alcohol Screening Test (MAST), the actual incidence of alcohol abuse was found to be at least eight to ten percent. Thus, three out of four of their alcohol abusing patients were probably not diagnosed as such during

prenatal care. To remedy this situation, they suggested using one of the many formal screening tests available. However, they pointed out that these instruments may take more time than a busy clinic nurse or physician has to give. They therefore outlined questions they use in obtaining an alcohol abuse history, suggesting that it be part of an inquiry about personal habits. Upon learning that a patient drank, they proceeded to ask about past drinking behavior, and then present use, including amounts, patterns, context, and disruptive effects of drinking. They indicated that clinicians should exhibit a nonjudgmental and unsurprised attitude throughout the questioning. Suggesting relatively high amounts of consumption has also been shown to reduce defensiveness and increase accuracy of the assessment of the amount of alcohol consumed.

Little (1976) compared the reports that 67 women gave about their alcohol consumption to their obstetrician and to an independent interviewer. (These women were a subsample of a group of 900 women interviewed in their fourth and eighth months of pregnancy. All were paying members of a health maintenance organization in Seattle. They were primarily white and middle class.) Most women reported "occasional" consumption to their physicians, who had asked patients if they drank and if so, how much. No women gave indications of heavy drinking to their physicians and only two reported "moderate" consumption. However, personal interviews, using a format similar to the one used by Jessor et al. (1968) indicated that two patients were heavy drinkers and ten could be classified as moderate drinkers. Infrequent drinkers tended to overestimate their consumption (as estimated by the Jessor format) when talking with their obstetrician. About 10% of the women gave

conflicting reports to the interviewer and to the physician. Based on her findings, Little (1976) suggested that women of various drinking levels report similar quantities to their physicians. A structured interview format by an independent interviewer appeared to provide finer gradations of use and was more likely to spot heavier users than physician questioning.

In both of these studies, structured questionnaires were utilized to obtain more accurate self-reports of alcohol use. In developing the questionnaire for use in this study, the MAST (used by Sokol & Miller) and the Jessor formats (as used by Little) were examined, along with the Adolescent Alcohol Involvement Scale (Mayer & Filstead, 1979, 1980). These questionnaires and their scoring will be discussed below.

The Michigan Alcoholism Screening Test (MAST) was developed by Selzer (1971:1653) to "provide a consistent, quantifiable, structured interview instrument to detect alcoholism, ... that can be rapidly administered." It consisted of 25 questions, including questions used by other researchers to detect alcoholism (see Figure 2.4). These questions asked about the consequences of the respondent's drinking, significant others' concerns about the respondent's drinking, arrests associated with drinking while driving or in public, and hospitalization and need for professional care associated with drinking. The questions were given a value of 1, 2, or 5 points, with the more discriminatory questions given greater weight. A total score of three or less was considered nonalcoholic, a score of four points was considered to suggest alcoholism, and a score of five or more indicated alcoholism. The MAST was initially tested with five groups: "hospitalized alcoholics, a

Points	Questions
2	*1. Do you feel you are a normal drinker?
2	2. Have you ever awakened the morning after some drinking the night before and found that you could not remember a part of the evening before?
1	3. Does your wife (or parents) ever worry or complain about your drinking?
2	*4. Can you stop drinking without a struggle after one or two drinks?
1	5. Do you ever feel bad about your drinking?
2	*6. Do friends or relatives think you are a normal drinker?
0	7. Do you ever try to limit your drinking to certain times of the day or to certain places?
2	*8. Are you always able to stop drinking when you want to?
5	9. Have you ever attended a meeting of Alcoholics Anonymous (AA)?
1	10. Have you gotten into fights when drinking?
2	11. Has drinking ever created problems with you and your wife?
2	12. Has your wife (or other family member) ever gone to anyone for help about your drinking?
2	13. Have you ever lost friends or girlfriends/boyfriends because of drinking?
2	14. Have you ever gotten into trouble at work because of drinking?
2	15. Have you ever lost a job because of drinking?
2	15. Have you ever neglected your obligations, your family, or your work for two or more days in a row because you were drinking?
1	17. Do you ever drink before noon?
2	18. Have you ever been told you have liver trouble? Cirrhosis?
2	19. Have you ever had delirium tremens (DTs), severe shaking, heard voices, or seen things that weren't there after heavy drinking?
5	20. Have you ever gone to anyone for help about your drinking?
5	21. Have you ever been in a hospital because of drinking?
2	22. Have you ever been a patient in a psychiatric hospital or on a psychiatric ward of a general hospital where drinking was part of the problem?
2	23. Have you ever been seen at a psychiatric or mental health clinic or gone to a doctor, social worker, or clergyman for help with an emotional problem in which drinking had played a part?
2	24. Have you ever been arrested, even for a few hours, because of drunk behavior?
2	25. Have you ever been arrested for drunk driving or driving after drinking?

*Negative responses are alcoholic responses.

Source: M. L. Selzer, The Michigan Alcoholism Screening Test: The quest for a new diagnostic instrument. American Journal of Psychiatry, 1971, 127, 1653-1658.

Figure 2.4

Michigan Alcoholism Screening Test (MAST)

control group, persons convicted of drunk driving, persons convicted of drunk and disorderly behavior, and drivers whose licenses were under review (1971:1653). Validity was assessed by obtaining independent evidence of drinking from medical and social records and arrest records. The MAST detected more persons as problem drinkers than did the record searches and required considerably less time to administer than was required by records searches. It was, however, suggested that the MAST be used with arrest records to reduce false negatives. In another experiment using the MAST, hospitalized alcoholics were asked to lie about their drinking behavior. Using the same scoring criteria, 92% of them revealed enough information to be classified as alcoholics.

The MAST does appear to distinguish adult male alcoholics. However, its effectiveness may be limited for women. Selzer (1971) tested it only with males. Females who abuse alcohol may display patterns of medical, social, and legal consequences of drinking which are different from those of men (Mantek, 1977; Morrissey, 1978). However, Sokol et al. (1981) reported that the MAST did discriminate groups of heavier and lighter pregnant drinkers. These groups differed significantly on several measures related to fetal outcome. MAST score related significantly to the volume and variability of alcohol intake although the instrument does not include items relating to amount and frequency of alcohol consumption. Sokol et al. (1981:208) suggested that the MAST score may relate more to chronic effects of alcohol intake, while volume and variability indices may relate to acute effects of alcohol consumption during pregnancy. Further research is needed to confirm these hypotheses.

Although the MAST may be appropriate for use with pregnant women

(Sokol et al., 1981), its use has not been validated for teenagers. Selzer (1971) points out that the MAST may not be as useful in distinguishing younger alcoholics because they are less likely to display the medical, legal, and social characteristics upon which the MAST is based. Therefore, the MAST was deemed less appropriate for use in this study than other instruments.

The Adolescent Alcohol Involvement Scale (Mayer & Filstead, 1979, 1980) consisted of 14 questions which were compiled from a systematic examination of the various instruments used to collect data on adolescent alcohol use and misuse (see Figure 2.5). Alcohol misuse was defined as alcohol use by the adolescent which interferes with psychological functioning, social relations, and family living. Responses to questions received different weights, and a total score of 42-79 points indicated alcohol misuse, or disruption of these life areas. Content validity and cutoff scores were assessed by alcohol counselors and psychiatrists at a private psychiatric hospital. It was also given to 23 psychiatric hospitalized adolescents (not hospitalized for alcoholism). Additional data were collected from adolescents identified as alcoholics and from adolescents who were infrequent drinkers. These data established the cutoff scores. The AAIS was then administered to 3662 high school students, and their responses were factor analyzed. This analysis showed that each item contributed to the total variance. Mayer and Filstead (1980) concluded that, despite the general limitations of a self-report device, the AAIS can be a useful tool in identifying adolescents who misuse alcohol. Its short length and uncomplicated format seemed to increase adolescent receptivity to filling out the AAIS. In light of

1. How often do you drink?
 - a. never
 - b. once or twice a year
 - c. once or twice a month
 - d. every weekend
 - e. several times a week
 - f. every day
2. When did you have your last drink?
 - a. never drank
 - b. not for over a year
 - c. between 6 months and 1 year ago
 - d. several weeks ago
 - e. last week
 - f. yesterday
 - g. today
3. I usually start to drink because:
 - a. I like the taste
 - b. to be like my friends
 - c. to be like an adult
 - d. I feel nervous, tense, full of worries or problems
 - e. I feel sad, lonely, sorry for myself
4. What do you drink?
 - a. wine
 - b. beer
 - c. mixed drinks
 - d. hard liquor
 - e. a substitute for alcohol--paint thinner, sterno, cough medicine, mouthwash, hair tonic, etc.
5. How do you get your drinks?
 - a. supervised by parents or relatives
 - b. from brothers or sisters
 - c. from home without parents' knowledge
 - d. from friends
 - e. buy it with false identification
6. When did you take your first drink?
 - a. never
 - b. recently
 - c. after age 15
 - d. at ages 14 or 15
 - e. between ages 10-13
 - f. before age 10
7. What time of day do you usually drink?
 - a. with meals
 - b. at night
 - c. afternoons
 - d. mostly in the morning or when I first awake
 - e. I often get up during my sleep and drink
8. Why did you take your first drink?
 - a. curiosity
 - b. parents or relatives offered
 - c. friends encouraged me
 - d. to feel more like an adult
 - e. to get drunk or high
9. How much do you drink, when you do drink?
 - a. 1 drink
 - b. 2 drinks
 - c. 3-6 drinks
 - d. 6 or more drinks
 - e. until "high" or drunk

Source: J. Mayer & W. J. Filstead. The Adolescent Alcohol Involvement Scale. Journal of Studies on Alcohol, 1979, 40, p. 293-4.

Figure 2.5

Adolescent Alcohol Involvement Scale (AAIS)

Figure 2.5, continued

10. Whom do you drink with?
- | | |
|----------------------------------|-----------------------|
| a. parents or relatives only | d. with older friends |
| b. with brothers or sisters only | e. alone |
| c. with friends own age | |
11. What is the greatest effect you have had from alcohol?
- | | |
|------------------------|------------------------------------------------------------------------|
| a. loose, easy feeling | d. became ill |
| b. moderately "high" | e. passed out |
| c. drunk | f. was drinking heavily and the next day didn't remember what happened |
12. What is the greatest effect drinking has had on your life?
- | | |
|---------------------------------------------|---------------------------------------------------------------------------------------------|
| a. none-no effect | e. have lost friends because of drinking |
| b. has interfered with talking to someone | f. has gotten me into trouble at home |
| c. has prevented me from having a good time | g. was in a fight or destroyed property |
| d. has interfered with my school work | h. has resulted in an accident, an injury, arrest, or being punished at school for drinking |
13. How do you feel about your drinking?
- | | |
|-------------------------------------------------------------|--------------------------------------------------------|
| a. no problem at all | d. I often feel bad about my drinking |
| b. I can control it and set limits on myself | e. I need help to control myself |
| c. I can control myself, but my friends easily influence me | f. I have had professional help to control my drinking |
14. How do others see you?
- | | |
|-------------------------------------------------------------------------|--------------------------------------------------------------------|
| a. can't say, or a normal drinker for my age | d. my family and friends tell me to get help for my drinking |
| b. when I drink I tend to neglect my family or friends | e. my family or friends have already gone for help for my drinking |
| c. my family or friends advise me to control or cut down on my drinking | |

Scoring: The highest total score is 79. An a response is scored 1 (except on questions 1, 2, 6, 12, 13, and 14, on which a=0); b=2; c=3; and so on to h=8. When more than one response is made, the one with the higher or highest score is used. An unanswered question is scored 0.

the needs of this study, the AAIS provided a useful outline of indicators of adolescent misuse. However, it did not provide a sensitive measure of the volume or frequency of consumption, and was therefore not entirely suitable for use in this study.

The FAS researchers in Seattle (Little et al., 1977; Streissguth et al., 1977) and in Boston (Rosett et al., 1976) used an instrument originally used by Straus and Bacon (1953), adapted by Mulford and Miller (1959), and used by Cahalan et al. (1969) (see Appendix E, items 21-24 for sample format). The Jessors (1969, 1977) also used a variation of it in the testing of their problem behavior theory, and it was also used in the 1974 and 1978 nationwide studies of junior and senior high school youth (Research Triangle Institute, 1978). With this format, separate inquiry was made about the respondent's beer, wine, and liquor ingestion. The respondent indicated her drinking frequency (ranging from three or more times a day to never) and the frequency with which she consumed five or more drinks, three to four drinks, and one to two drinks. Responses to these beverage-specific questions have been scored differently, providing several different indices of alcohol consumption. These included Cahalan et al.'s (1969) Quantity-Frequency-Variability (QFV) index and Volume Variability (VV) index, Jessor's (1969) method of estimating average daily ounces of absolute alcohol ingested (AA score) and Little et al.'s Absolute Alcohol-Quantity-Pattern (AAQP) index.

The QFV index took into account the quantity of a beverage consumed at a sitting; the frequency of beer, wine, and distilled spirits consumption; and the variability of drinking. The latter was shown by combining the modal, or most usual amount of alcohol consumed and the

maximum amount consumed at least "once in awhile" (Cahalan et al., 1969: 12). The respondent was classified into one of five QFV groups (abstainer, infrequent, light, moderate, heavy) by cross-tabulating their frequency of overall drinking against the quantity-variability classification for the beverage used most frequently. QFV scores could also be computed for each beverage (Streissguth et al., 1977; Little et al., 1977).

The AA score (Jessor et al., 1969) was an estimate of the average daily consumption of ethanol. It was strictly a measure of volume consumed. To arrive at the AA score, the average amount of alcohol in each type of drink (beer, wine, liquor) was estimated. It was multiplied by the average number of drinks per occasion and the frequency of drinking occasions per day. Scores for each beverage were then summed to obtain an overall AA score, the number of ounces of absolute alcohol consumed daily.

The VV index (Cahalan et al., 1969:213-14) attempted to combine these two scoring systems (Little, Schultz, & Mandell, 1977). Abstainers and infrequent drinkers were classified as for the QFV score. For other drinkers, a two-part score was involved. The drinker was classified according to average daily volume and the variability of average daily consumption. The volume score differed from the AA score in that the VV score did not differentiate between the different amounts of ethanol in beer, wine, and liquor. It provided a measure of volume in terms of average number of drinks per day. Each volume score was classified low (0.05-0.58 drinks per day), medium (0.59-1.49 drinks per day), and high (1.5 or more drinks per day).

Each volume group was then subdivided according to whether drinkers consumed a "high maximum" (five or more drinks at least once in awhile) or a low maximum (never drank as many as five drinks). The VV therefore divided the population into eight groups: abstainers, infrequent drinkers, and higher maximum and lower maximum drinkers within low, medium, and heavy volume categories.

The AAQP index (Little et al., 1977) attempted to combine the AA score (a continuous variable) with a more precise and easily interpreted measure of variability, or binge drinking (consumption of five or more drinks on an occasion). The score consisted of two parts: 1) an AA score to indicate aggregate volume, and 2) "a value on an ordered scale of four points indicating how frequently the subject has five or more drinks on a single occasion" (Little et al., 1977:559). The four categories were: A (0.0) - never had five or more drinks on an occasion, B (0.01 to 0.99) - had five or more drinks at least once during the study period, but less than once a month, C (1.0 to 4.2) - had five or more drinks on an occasion at least once a month, but less than once a week, and D (4.2+) - had five or more drinks on one or more occasions per week. According to Little et al. (1977), the resulting score could detect binge occasions more precisely than either the QFV or VV indices, which could not detect binges occurring less than monthly. Because volume was not collapsed into three categories (as with the VV index), the magnitude of differences in binge drinking was more easily and precisely noted. The score was also more easily interpreted. However, it could not sum massed drinking across beverages, and therefore may have underestimated the massed consumption of drinkers who combined beverages. As presently

designed, the AA continuum was limited because the instrument stopped at five or more drinks. Streissguth and associates (Martin & Buffington, 1977; Martin & Martin, 1977) dealt with this by administering a set of additional questions to women who reported that they drank five or more drinks on an occasion.

In addition to measures of quantity and frequency (Jessor's AA score, Cahalan's VV and QFV scores, and supplemental questions), Streissguth, Martin, and Martin (1977) asked about number of intoxications (including timing, duration, amount consumed, type of alcohol, hours of drinking) in selecting their experimental group. They also obtained information about number of personal effects reasons for drinking (Jessor et al., 1968) and number of alcohol related problems. A variety of criteria was used to determine possible risk, because the effects of volume of alcohol consumed vs. the spacing of consumption are not known at this time. The use of a variety of criteria may identify patients whose volume of consumption would not be considered moderate or heavy and yet whose pattern of consumption could affect fetal development at critical points during gestation. In addition, since many pregnant teens do not seek prenatal care until well into the second trimester of pregnancy (Alan Guttmacher Institute, 1981), the use of multiple indicators of risk could help overcome problems associated with long-term recall of alcohol consumption before pregnancy and during early pregnancy.

Little information was available about the validity and reliability of these measures. Streissguth, Martin, and Buffington (1976) conducted a study to determine the short term test-retest reliability of the QFV,

VV, and AA scores. They obtained a subsample of 78 women from the University of Washington study and interviewed them two times, a week apart, in their homes. The same interviewer conducted both interviews to minimize interviewer bias. The overall interview was complex and repetitive enough to minimize memory as a factor in the subjects' responses. The one-week interval was chosen to minimize score changes due to actual changes in drinking patterns. The test-retest reliabilities indicated a high degree of consistency between scores. At higher levels of consumption, there was increased variability of the AA scores. Streissguth et al. suggested that this variability may have been due to heavier drinkers' variability in consumption from week to week or less reliable reporting by heavy drinkers. The construction of the test may also have contributed to this variability, since heavier drinkers were asked to make more precise discriminations in their drinking than were abstainers and light drinkers. There was no consistent direction of change among these scores which did change from test to retest. Streissguth et al. (1976) suggested that embedding the alcohol consumption questions in a larger interview format, following similar questions about coffee and tea consumption contributed to the consistency between scores. This procedure lessened subjects' fear of censure regarding their drinking habits, and increased their familiarity with the interview format. In addition, responses were given verbally, allowing any questions to be resolved during the interview.

Alpert et al. (1981) interviewed 328 women twice; prenatally and in the hospital following delivery. Using the Volume Variability Scale (Cahalan et al., 1969), 10.7% of the women reported heavy drinking during

pregnancy in the prenatal interview, while only 3.6% reported heavy drinking in the hospital interview. Heavy drinking before pregnancy was reported by 11.5% of the women in the prenatal interview and by 8.2% in the hospital interview. These findings indicate the need for further reliability studies of the various alcohol intake scores.

Adolescent Pregnancy

The final section of this literature review will present study findings related to the prevalence and consequences of teenage pregnancy. The characteristics of pregnant teens will be discussed. This discussion will include the characteristics of contraceptive users, non-contraceptive users, and those who obtain abortions. It will conclude with discussions of intendedness and wantedness and the role of family support in moderating the adverse effects of teen pregnancy.

Prevalence and Consequences of Adolescent Pregnancy

According to a recent report published by the Alan Guttmacher Institute (1981), more than one in ten teens get pregnant each year. If present trends continued, four in ten teenage girls would become pregnant once in their teens. There are presently about 1.3 million children living with 1.1 million teenage mothers, with more than half of these mothers being unmarried. Although the overall number and rate of births to 15-19 year olds declined in the 1970s, the rise in out-of-wedlock births has continued, especially among 15-17 year old white females. Two out of three of the 554,000 births to teenagers in 1978 were unintended. However, 87 percent of all teen mothers and 96 percent of unmarried teen mothers kept their children with them. Adoption was

an option rarely used by teens. Many unwanted pregnancies among unwed mothers were terminated by abortion (particularly in higher socioeconomic groups). If the pregnancy was not terminated by abortion, most unwed mothers kept their babies.

Teenage childbearing has serious consequences for the children, the parents, and society at large. The infants born to teenage mothers were at a higher risk of dying in their first year and of suffering from low birth weight and developmental abnormalities at birth (Alan Guttmacher Institute, 1981; Baldwin & Cain, 1980). They were also more likely to have lower motor and mental development scores and more behavioral problems than children born to older parents. These consequences were not so much the result of maternal age or of inadequate prenatal care. Even with excellent prenatal care, they were more the results of the social and economic environment in which adolescent childbearing took place (Baldwin & Cain, 1980). This was pointed up by findings that the children of teenage parents were at a higher risk of being victims of child abuse (Bolton, Laner, & Kane, 1980; Kinaid and & Klerman, 1980), and were more likely to continue the cycle of lower educational achievement, etc. experienced by their parents (Phipps-Yonas, 1980).

Pregnant teens and teenage mothers were more likely to have inadequate prenatal care and inadequate income. Many teenage mothers with small children were dependent on public welfare for support (Moore, 1978; Alan Guttmacher Institute, 1981). Teenage parents were less likely to finish high school and find employment. If employed they were likely to hold low-prestige and low paying jobs. Teen marriages were more likely to result in separation and divorce. Teenage parents also tended to

have more children than older parents (Card & Wise, 1978; Baldwin & Cain, 1980; Alan Guttmacher Institute, 1981). Thus, the cost of teenage pregnancy is high, in psychological, social, and economic terms.

Characteristics of Pregnant Teenagers

Given the consequences associated with teenage pregnancy, it was important to learn more about the girls who become teenage mothers. A review of the literature relating to teenage pregnancy revealed a disjointed picture; due, in part, to the variety of perspectives about teenage pregnancy (psychological, sociological, pathological, etc.), inconsistent definitions of terminology, use of small, clinical samples, and failure to use multivariate designs (Baizerman, Sheehan, Ellison, & Schlesinger, 1974; McKenry, Walters, & Johnson, 1979; Plionis, 1975). Studies were primarily descriptive in nature, rarely proceeding from a theoretical base or a comprehensive approach. Even in those studies which did utilize multivariate techniques, it was evident that a complex of interrelated variables existed which predicted risk of pregnancy, risks in pregnancy and detrimental outcomes related to teenage pregnancy (Jorgensen, King, & Torrey, 1980).

Despite these limitations and shortcomings, a consistent pattern emerged which was aptly expressed by Phipps-Yonas (1980:403): "It is suggested that, while the typical teenage girl is biologically ready for motherhood, a complex set of social and psychological variables leads those least well-suited for the role into becoming teenage parents."

Studies of teenagers who used contraceptives, and/or who obtained abortions, as compared with teens who carried their pregnancies to term revealed these variables. Contraceptive use varied as a factor of

knowledge, access, circumstances, and attitude. According to the Alan Guttmacher Institute (1981), nearly two-thirds of sexually active teenage women did not regularly use contraceptives. Forty-one percent thought they could not become pregnant-- that it was the wrong time of the month, they were too young or had intercourse too infrequently. Of those who knew they could become pregnant (39.1%), 16.2% did not expect to have intercourse and 8.2% could not obtain contraceptives. Attitudes that contraception was wrong, dangerous, no fun, or too hard to use were given by 6.9% of these teens as reasons for non-use. (Twenty percent of the respondents were either pregnant or trying to become pregnant.) According to Phipps-Yonas (1980:410), reasons given for failure to use contraception and unintended pregnancies were 1) "the it-won't-happen-to-me" attitude and 2) guilt feelings regarding sexual intercourse. The first attitude may have reflected real ignorance and/or denial. The guilt excuse involved a sense of guilt from "preparing" for intercourse by obtaining and using contraceptives combined with the belief that intercourse was all right if one was "swept away in the heat of passion."

According to Jorgensen, King, and Torrey's (1980) study of 12-18 year old females attending family planning clinics, peer contraceptive use and relationship satisfaction were positively related to both the frequency of sexual intercourse and the consistency of contraceptive use. Female power in the dyadic relationship was inversely correlated with the frequency of sexual intercourse and positively with consistent contraceptive use. These qualities of the interpersonal relationship of the adolescent couple were more strongly related to pregnancy risk than either peer or family relationships.

Schinke, Gilchrist, and Blythe (1980) reported that training in interpersonal communication skills resulted in visible improvements in social skills as well as positive changes in locus of control and self-esteem among pregnant teenage social work clients. They suggested that poor interpersonal communication skills were positively related to unwanted intercourse and poor contraceptive utilization. Although the long-term efficacy of these changes in preventing unwanted and unprotected intercourse has not been evaluated, the authors concluded that this model has promise in prevention of teenage pregnancy.

Those adolescent girls who choose to terminate their pregnancies in abortion tended to be slightly older and of a higher social class than girls who carried their pregnancies to term (Olson, 1980; Phipps-Yonas, 1980; Alan Guttmacher Institute, 1980). They also tended to have better academic records and had higher educational and career goals. They were also more likely to be independent of parent and peer influences in decision-making and had fewer attitudes against abortion (Olson, 1980). Findings concerning their home environments were mixed (Phipps-Yonas, 1980). In addition, adolescents who carried their pregnancies to term may have viewed their pregnancies in a more positive light than those who aborted. Those of low socioeconomic status may also have had few alternatives besides motherhood to gain recognition in the community or may have believed that postponing pregnancy would not help them escape their poverty (Olson, 1980).

Ulvedal and Feeg (1982) interviewed 32 pregnant adolescents who attended an alternative educational program in the Washington, D.C. suburbs to obtain information about their family configurations and

relationships; cigarette, alcohol, and drug use for subjects and their significant others; special problems; and outcomes of the pregnancy. All of their subjects had chosen to carry their pregnancies to term.

They found that the male figure in the home usually was not the biological father, but instead was the mother's boyfriend or stepfather. Relationships with the male figures were usually poor, while relationships with the mother were good, and improved during pregnancy. Male figures in the home and boyfriends/husbands were frequently alcohol abusers. If subjects had been abusers, they usually stopped when pregnancy was confirmed. Some said they would continue abstaining following pregnancy. The pregnant teens' mothers often had been pregnant themselves and subjects had sisters who were pregnant as teens. A supportive atmosphere was recommended so significant others might become involved in the counseling. The importance of these interviews in providing appropriate services was highlighted.

These characteristics were viewed by Ulvedal and Feeg (1982) as risk factors of teenage pregnancy. They suggested including them in health education so that students could become aware of their own life patterns and potential risk of pregnancy. Ulvedal and Feeg (1982) also emphasized the need for follow-up substance abuse counseling for subjects in order to raise their awareness of the dynamics of substance abuse in close relationships and make desired changes in life patterns.

The variables described above indicated that there are many factors associated with a teenager's becoming pregnant and carrying a pregnancy to term. These variables, ignorance, unmet needs, poor decision making processes, and life circumstances, indicate that few teens plan to become

pregnant. Those that do bear a child, intended or not, appear to do so with less than a realistic and constructive view of the demands and rewards of pregnancy and parenthood.

Wantedness and Intendedness of Pregnancy

Although nationwide surveys indicated that few teens intend or plan to become pregnant, it cannot be assumed that this was true for all subgroups within the population. Nor can it be assumed that unintended pregnancies were also unwanted or undesired pregnancies. Although teenage pregnancy and parenthood had serious consequences, some teenagers did want to become pregnant. Others, while not consciously desiring pregnancy, became pregnant by default, that is by not actively preventing pregnancy. In either case, the teenager's feelings about being pregnant may have been or have become positive during the pregnancy. Ryan and Sweeney's (1980) findings illustrated these things. In their in-depth interviews with 87 pregnant teens in a large Southern city, they found that the majority of them felt happy or "ok" about being pregnant. Almost all of them had knowledge of contraception, but over half consciously did not use contraception. Most had attitudes against abortion and most had friends who had babies. They reported few problems with parents or friends related to their pregnancies.

Similar findings appeared in a Philadelphia study of male and female high school students by Freeman, Rickels, Huggins, Mudd, Garcia, and Dickens (1980). Only a third of the respondents definitely indicated that pregnancy would be unwanted. Approximately one-fifth said it would make life no better or worse, and the remainder did not know what effect a child would have on their lives. When these youths were asked how

they would feel if they (females) or their partners (males) became pregnant within the next month, 15% said they would be happy and 31% said they would be upset, but that having a baby would work out. These study findings indicated that it is important to distinguish between intendedness and wantedness in studying teenage pregnancy.

Miller (1978) discussed the concepts of wantedness and intendedness at length. Based on his interviews with married women who had just had their first child, Miller (1980:213) rated each case as to "1) the intendedness of the conception, 2) the wantedness of the pregnancy at the time of the conception, 3) the wantedness of the pregnancy at the time of quickening ..., and 4) the wantedness of the child six months after its birth." He distinguished between the individual or couple's intentions to conceive and their feelings of acceptance of, desire for, and happiness about the pregnancy after conception.

His intendedness scale included both the intention to conceive and the intention to prevent it with degree of "subintended" conceptions falling in between. Subintentions referred to the mental state of people who did not consistently pursue either conception or prevention. His intendedness scale consisted of seven points; from stopping conception in order to conceive through nonuse or irregular use of contraception, to regular and effective use of contraception (in which case pregnancy occurred because of a true contraceptive failure).

The wantedness scale included both the subject's feelings and her perceptions of her partner's feelings. It consisted of five points which ranged from active desire for pregnancy or a child with no important reason for not wanting it, to passive acceptance of the pregnancy

or child, to active expression of rejecting the pregnancy or child, (including adoption, abandonment, or hostile child care). Miller found that wantedness increased considerably from conception to six months post partum in all categories of intendedness (except Category I, where the pregnancy had been intended). High intendedness and wantedness were also associated with greater frequency of worship, selection, and consistent use of more effective contraceptive methods, and personality characteristics which were associated with inclinations toward planning children and with valuing the life style associated with having children. High wantedness was also associated with more traditional attitudes toward female roles. Low wantedness was associated with a higher incidence of life events causing changes in subjects' lives.

The wantedness and intendedness classifications in this study were made from data gathered during two hour semi-structured interviews. Since this arrangement was not feasible for use in a busy clinic, other methods of rating the wantedness of pregnancy were sought. Westoff (1980) describes the definitions and format used in the 1975 National Fertility Study. Pregnancies were classified as planned, unplanned, or unwanted. Planned pregnancies were those which were intended. Unplanned pregnancies were timing failures-- those pregnancies in which the couple wanted a child, but not at that time. Unwanted pregnancies were those which occurred after a couple had all the children they desired. In addition, women were asked to select from 11 different reactions the reaction which best typified their reactions upon first learning they were pregnant. These 11 reactions were grouped into positive, mixed, and negative reactions. Comparisons of the planning status and reactions

to pregnancy showed inconsistencies between the two. A pregnancy could be unwanted or unplanned and yet a woman could respond positively to it. The opposite was also possible. Westoff's (1980) analyses also indicated that nonusers of contraceptives may have rationalized unplanned pregnancies as planned, and unwanted pregnancies as wanted. His findings of inconsistencies between the two types of pregnancy classifications indicated the importance of distinguishing between intendedness of and reaction to pregnancy in obtaining a clearer picture of the dynamics involved in teenage pregnancy.

Family Support in Teenage Pregnancy

Findings from the Guttmacher Institute report (1981) and other studies indicated that family support may be an important moderator of the adverse consequences of teenage pregnancy. Baldwin and Cain's (1980) review indicated that the presence of adults (grandparents or other relatives) with the teenage mother reduced adverse consequences for both mother and child. Smith (1975) suggested that members of the health team work with pregnant teens' mothers throughout pregnancy since they can reinforce and help implement the health team's goals. In addition, this could facilitate the development and/or maintenance of a positive relationship between mother and daughter within which decisions about childcare, schooling, and the like could be made, and in which conflicts could be eased. Pregnant teens in Held's (1981) study indicated that they perceived their mothers as most disapproving of their pregnancies. However, they also ranked their mothers as their most important significant others. This indicates the importance of including pregnant teens' mothers in any type of counseling.

Furstenberg and Crawford (1978) traced the flow of family support via the residential changes of the teenage mother. Most of the support received was supplied by the nuclear family and included free room and board and at least partial child care. Material support was greater when the teenager remained in her parents' home, although it sometimes continued after she left home. Their analysis also suggested that family support increased the teenage mother's chances of returning to school and obtaining better future employment. The teenage mother's child may have also benefited. They reported that children of unmarried mothers who were cared for by their grandmothers scored better on a test of cognitive skills than children who lived with their mothers alone. (The findings, however, were not statistically significant.)

Colletta, Hadler, and Gregg's (1981) findings highlighted the role of family support in teenage pregnancies. They reported that a teenage mother's major coping response in task oriented situations was asking others, particularly family members, for assistance. In interpersonal conflicts, avoidance was the major response. They suggested that this may reflect immaturity in social skills or may mimic parents' interpersonal interaction style.

Baldwin and Cain (1980) and Furstenberg and Crawford (1978) suggested that family support was an important mediating variable in reducing adverse consequences of teenage pregnancy and parenthood and should be taken into account in policy and program development and implementation. Panzarine, Elster, and McAnarney (1981) presented a systems approach to adolescent pregnancy which defined the effects of family members and the infant's father upon the outcome of pregnancy and teen

parenting, as well as the effects of pregnancy upon the family and infant's father. This approach was useful in determining the interventions needed to obtain a "positive emotional resolution of pregnancy, labor and delivery, and parenthood" (Panzarine et al., 1981:288). These interventions may include special programs for parents and the infant's father, as well as involvement in counseling and educational programs for the teenage mother.

Summary of Review

This review of literature has surveyed literature related to fetal alcohol effects, adolescent alcohol use, assessment of maternal drinking, and adolescent pregnancy. Literature related to fetal alcohol effects indicated levels of risk associated with different fetal effects. The average daily consumption of one ounce of absolute alcohol per day or more and binge drinking appear to be important considerations. The review of this area also indicated that the public awareness of the risk of fetal alcohol effects varies, and that awareness does not guarantee knowledge or action which will reduce fetal risk.

The literature related to adolescent alcohol use indicated that as many as a third of adolescent females may drink in ways which endanger fetal health if they were to become pregnant. Different definitions of problem drinking were presented. Three theoretical outlooks (developmental, problem-behavior theory, and behavioral style/DOMAIN theory) were reviewed to discover important correlates of teenage drinking. Psychological variables included religiosity and reason for drinking. Environmental variables, especially parental and peer drinking and the context

of drinking, emerged as important correlates.

The review of instruments and interview protocols provided a useful comparison of instrument formats which identify different types of problem drinking. Scoring techniques to estimate volume and variability of alcohol consumption were also explored.

The review of literature related to teenage pregnancy indicated that teenage pregnancy goes beyond ethnic, racial, and social lines. Facts about teenage pregnancy were presented and variables associated with it were discussed. Reasons for nonuse of contraceptives include ignorance, guilt, other attitudes, lack of access, and circumstances. Girls who carry their pregnancies to term appear to differ from those who seek abortions. Intendedness and wantedness are different, but related concepts. Family support is important in reducing adverse consequences of adolescent pregnancy.

III. METHODOLOGY

Subjects

The subjects were pregnant teenagers, aged 14-19, who attended the High Risk Obstetrics/Gynecology Clinic at Roanoke Memorial Hospitals (RMH), Roanoke, Virginia, and agreed to participate in the study. The coordinator of the High Risk Clinic provided for the interviewer a list of names of pregnant teenagers expected in the clinic on a particular day. The interviewer then approached each girl and explained the study. Those girls agreeing to participate were given the questionnaire to complete. Eighty-eight girls were approached; four girls declined to participate. Two of those who completed questionnaires were over 19 years old; consequently, their questionnaires were omitted from analysis. Thus, the final study sample was comprised of 82 subjects.

Patients eligible for the services of the High Risk Clinic are not limited to pregnant teenagers. Criteria for high risk status include age, parity, obstetrical/gynecological history, and the presence of other medical conditions which may threaten maternal and fetal health during pregnancy. Subjects aged 17 and under were classified as high risk according to age alone. High risk status determination was based on the presence of medical conditions for 18 and 19 year old subjects.

Patients at the High Risk Clinic were primarily low income residents of Roanoke City and Roanoke County, with some referrals from surrounding areas. Few adolescent patients were covered by private medical insurance. The majority of adolescent patients paid for laboratory services and hospitalization on a contract or fee for service basis (see Appendix D for contract details). Medical costs for the remaining adolescent patients

were paid for by Medicaid, or by Roanoke Memorial Hospitals.

Instrumentation

Subjects anonymously completed a questionnaire developed specifically for this study (see Appendix E). It included questions about the subjects' consumption of beverages containing caffeine and alcohol; smoking; parents' and peers' consumption of alcohol; the context of subjects' drinking; the subjects' reason(s) for drinking; and the subjects', parents', and peers' feelings about and support of the pregnancy. In addition, demographic and medical data were obtained with the questionnaire, including month and year of birth; race; highest grade completed in school; residence; number of pregnancies, stillbirths, and miscarriages; number of children; delivery date; and subjects' and parents' religious preferences.

This instrument was constructed incorporating items from several widely used questionnaires (Cahalan et al., 1969; Huba et al., 1979; Jessor et al., 1968; Jessor & Jessor, 1977; Little, 1979; Little et al., 1977, 1981; Research Triangle Institute, 1975, 1978; Ryan & Sweeney, 1980; Streissguth, Martin, and Martin, 1977; Westoff, 1980). Data about alcohol and caffeine consumption before and during pregnancy were obtained using an adaptation of the interview format used by Little and her associates (Little, 1979). This format was adapted from the sociological research conducted by Cahalan et al. (1969) and by Jessor and associates (Jessor et al., 1968; Jessor & Jessor, 1977). The expertise of these authors acts as an assurance of construct validity.

The alcohol format permitted calculation of both the aggregate

volume and the number of binge drinking occasions. It differed from Little's beverage-specific format in that the subject was not asked to respond to items dealing specifically with beer consumption, wine consumption, and liquor consumption. Instead, subjects were asked to indicate overall consumption of all alcoholic beverages. Subjects indicated their usual beverage(s) consumed on two additional questions. This change was made in order to: 1) reduce the length of the questionnaire and thus, the clinic time needed to administer it, 2) reduce the appearance of redundancy to the subject, and 3) attempt to account for massed drinking across beverages.

This format was pretested in a Personal Health class at Virginia Tech during the Second Summer Session 1981 in order to determine the correspondence between the beverage-specific and the overall formats. Forty-three students completed a questionnaire consisting of questions relating to the frequency and quantity of beer, wine, and liquor consumed, and overall consumption of alcoholic beverages (see Appendix F). Volume-Variability scores (Cahalan et al., 1969) and Quantity-Pattern scores (Little et al., 1977) were then computed based on the responses to questions relating to consumption of specific alcoholic beverages (see Appendices A and B). Overall volume and binge scores were also computed, based on the responses to questions relating to overall alcohol consumption. Using the SPSS Pearson Corr procedure, correlation coefficients comparing the volume and binge scores were computed. For volume scores, $r = 0.86$ and for binge scores, $r = 0.88$. Using the SPSS Crosstabs procedure, data were cross-tabulated by volume and binge classifications. Volume scores were classified as follows:

Abstainer/infrequent drinker - one who averages no more than .05 drinks per day.

Light drinker - one who averages .05 to 1.0 drinks per day.

Moderate drinker - one who averages 1.0 to 1.9 drinks per day.

Heavy drinker - one who averages two or more drinks per day.

(One drink is equivalent to 12 ounces of beer, five ounces of wine, or one ounce of 100 proof liquor.) Binge scores were classified according to Little et al.'s (1977) QP index categories (see Chapter II, p. 66).

These analyses showed that some respondents were classified into different levels for the beverage-specific and overall scores. In the volume comparison, eight persons were classified into different categories of consumption, all into lower categories (see Table 3.1). In the binge comparison, six persons were classified into lower consumption categories, and one into a higher category (see Table 3.2).

Based on these analyses, it appears that the beverage-specific procedure and the overall procedure yielded similar results, although the latter procedure may underestimate consumption and miss some heavier drinkers when used in a clinical setting. Changes in the classification of moderate and heavy drinkers or changes in the numerical weights assigned to quantify items could improve this situation. Moderate or heavy drinkers could be routinely questioned in greater detail in order to obtain an accurate account of their drinking patterns.

Questionnaire respondents were also asked to report the actual number of binge occasions before and during pregnancy. This is based on Streissguth, Martin, and Martin's (1977) use of the number of intoxications as an additional means of identifying women in their study who

Table 3.1
 Cross-Tabulation of Overall Volume and
 Beverage-Specific Volume Scores
 from Instrument Pre-Testing

Beverage-Specific Volume Score	Overall Volume Score				Raw Total
	Abstainer/ Infrequent	Light	Moderate	Heavy	
Abstainer/ Infrequent	5 11.6%	0	0	0	5 11.6%
Light	2 4.7%	14 32.6%	0	0	16 37.2%
Moderate	1 2.3%	1 2.3%	1 2.3%	0	3 7.0%
Heavy	1 2.3%	0	3 7.0%	15 34.9%	19 44.2%
Column Total	9 20.9%	15 34.9%	4 9.3%	15 34.9%	43 100.0%

Table 3.2
 Cross-Tabulation of Overall Binge and
 Beverage-Specific Binge Scores
 from Instrument Pre-Testing

Beverage- Specific Binge Score	Overall Binge Score				Raw Total
	Abstainer/ Infrequent	Light	Moderate	Heavy	
Abstainer/ Infrequent	14 32.6%	0	0	0	14 32.6%
Light	1 2.3%	2 4.7%	1 2.3%	0	4 9.3%
Moderate	2 4.7%	0	5 11.6%	0	7 16.3%
Heavy	0	0	4 9.3%	14 32.6%	18 41.9%
Column Total	17 39.5%	2 4.7%	10 23.3%	14 32.6%	43 100.0%

had potentially harmful alcohol consumption patterns. If a women reported one intoxication during pregnancy, she was placed in their experimental group. Given the variable meaning of the word intoxication among teenagers, the number of binge occasions was used to gain additional information about alcohol consumption.

Literature regarding the reliability and validity of the alcohol consumption and binge drinking scores is limited (Streissguth, Martin, & Martin, 1977). The short-term test-retest reliability of the Volume Variability score, the basis for the volume score used in this study, was evaluated by Streissguth, Martin, & Buffington (1976) (see Chapter 2). Their study indicated a high degree of consistency between scores obtained from interviews conducted one week apart in subjects' homes. Information about reliability and validity of the binge drinking and binge occasions scores was not available.

Reliability testing of the alcohol consumption instrument developed for this study was not conducted. Questionnaires were completed anonymously, and therefore follow-up interviews with clients could not be conducted. In addition, clinic appointments were spaced once a month or bimonthly. If follow-up interviews were conducted at these intervals in the clinic, changes in scores could reflect actual changes in drinking habits rather than variations in completing the questionnaires.

The list of reasons for drinking used in this questionnaire was adapted from questionnaires used in research conducted by Jessor et al. (1968), Jessor and Jessor (1977), and by Rachal et al. (Research Triangle Institute, 1975). These items are indicators of four different categories of drinking: drinking for personal effects, for status transformation,

as a conforming social function, and as a positive social function. Two items, categorized as "Other," were added following pilot testing, to obtain additional information about reasons for drinking. Subjects were also asked if their consumption of alcoholic beverages had decreased and if so, to indicate their reason(s) for the decrease. These reasons were divided into the following categories: concern for fetal welfare, physical discomfort, distaste, and other.

Items concerning parental drinking were adapted from the Cahalan et al. (1969) format, using a reduced list of frequencies. Peer drinking items were adapted from the survey used by the Research Triangle Institute (1978) and by Huba et al. (1979). Items regarding the context of drinking were adapted from the Research Triangle Institute survey (1978). An additional item about boyfriends'/husbands' drinking was included.

Items used to indicate wantedness of the pregnancy were taken from the 1970 and 1975 National Fertility Studies, as reported by Westoff (1980). Questions related to support of pregnancy by friends and parents were adapted from those used by Ryan and Sweeney (1980) and from the Research Triangle Institute survey (1978).

Three items were adapted from Little et al.'s (1981) telephone survey to determine subjects' knowledge of risk levels of alcohol consumption during pregnancy. An additional item was developed to determine subjects' sources of information about risk levels of alcohol consumption during pregnancy.

Pilot Testing

During its development, the questionnaire was pilot tested at a local ob/gyn group practice. The resident nurse practitioner gave a draft questionnaire (see Appendix G) to 16 patients who agreed to complete it during their initial visit for prenatal care. These questionnaires were examined to determine needed changes in wording or directions.

At this stage of development, the resident nurse practitioner, the Director of Obstetrical Education at Roanoke Memorial Hospitals, and the RMH High-Risk Clinic Coordinator made suggestions for improvement in content and readability. Following these modifications, the questionnaire and proposed procedures were pilot tested at the RMH High-Risk Clinic.

The purposes of this pilot testing were:

1. to further evaluate the readability of the questionnaire,
2. to determine the procedures for recruiting subjects which least interfered with clinic routine,
3. to determine the feasibility of administering the questionnaire in a small group setting,
4. to obtain a preliminary estimate of the proportion of drinkers among the clients attending the clinic.

For two weeks (four clinic days) patients were recruited and given the questionnaire to complete. During the first week, the questionnaire was administered in small groups of three to five subjects. Each question was read aloud by the interviewer and the subjects responded in writing. This format proved to be very impractical given the physical layout of the clinic, the rate at which clients were processed, and the length of time needed to complete the questionnaire. Reading the questions aloud in

a small group was a poor technique given the varying reading levels of the girls and the amount of time this required. The subjects were very willing to ask questions for clarification. During the second week, recruiting of subjects and administration of the questionnaire was done on an individual subject basis. This arrangement was more compatible with clinic routines and physical space available for the study. In addition, the personal assistance of the interviewer in answering questions and clarifying directions was facilitated by this arrangement.

A total of 13 girls were interviewed in this pilot testing. Seven of them were classified as drinkers using the criteria given in the Definitions section of Chapter I. Of these seven, three girls were classified as drinkers solely according to the number of binge occasions in the month before pregnancy. One drinker was classified as such because she reported one binge occasion during pregnancy. The other three were classified as drinkers by a combination of their prepregnancy volume and binge scores (see Table 3.3).

As a result of the pilot testing, administration procedures and the questionnaire content were changed. Recruitment of subjects and explanation of the directions for the questionnaire were carried out on an individual patient basis, or at most, in pairs, depending upon the rate at which girls were proceeding through clinic routine. Each girl completed the questionnaire at her own pace. The interviewer checked in with the subject periodically to answer questions.

Three items were added to the questionnaire as a result of this pilot testing. The following two reasons for drinking were added:

Table 3.3
Comparison of Pilot Test Subjects' Alcohol Consumption Scores

Subject Number	Alcohol Consumption Score*					
	PPVOL	PVOL	PPBINGE	PBINGE	N25	N30
1	.16	1	.50	0	7	0
2	.7	0	.20	0	6	0
3	1.00	0	4.20	0	8	0
4	.1	1	0	0	0	0
6	.2	1	0	0	0	0
7	.1	0	0	0	0	1
8	.2	0	0	0	0	0
9	4.40	0	12.00	0	0	0
10	0	0	0	0	0	0
11	0	0	0	0	0	0
12	0	0	0	0	0	0
13	1.05	0	1.40	0	1	0
14	.6	0	1.6	0	1	0

* PPVOL = Prepregnancy volume score; PVOL = Pregnancy volume score;
PPBINGE = Prepregnancy binge score; PBINGE = Pregnancy binge score;
N25 = Number of binge occasions in the month before pregnancy; N30 =
Number of binge occasions during pregnancy.

1) "I like the taste," and 2) "I like getting high." The third item which was added asked subjects to indicate if their drinking decreased during pregnancy, and if so, why their drinking decreased.

Following the pilot testing, items assessing subjects' knowledge of risk levels of alcohol consumption during pregnancy were added. The informed consent form was finalized and RMH and Human Subjects Committee approvals were obtained for the study (see Appendix H).

Procedures

Following the pretesting and final development of the instrument, the study was conducted according to the following procedures.

The RMH High-Risk Ob/Gyn Clinic operates weekly on Monday and Thursday afternoons. A list of teenage subjects having appointments at the clinic on each clinic day was prepared by the Coordinator of the High-Risk Clinic for the interviewer. A check was made with the receptionist to confirm arrivals and cancellations. After the prospective subject had completed necessary lab work, she was given a letter explaining the purpose and content of the study (see Appendix I).

After reading the letter, the prospective subject was asked if she would like to participate in the study by filling out the questionnaire. If she hesitated, it was explained that no one else at the clinic would see her responses and that her name would not be connected with her responses in any way. (Most patients, however, agreed without hesitation to participate.) Those who declined to complete the questionnaire were thanked, and they returned to the waiting room; their names

were recorded and given to the Coordinator to avoid repetition in recruiting.

Study subjects proceeded to the study site. Initially, this was the clinic social worker's office; after two months, an examining room was used. The interviewer orally reviewed the consent form with the subject (see Appendix J). After all of the subject's questions were answered, she signed the consent form, which was then detached from the questionnaire to preserve anonymity. General directions for questionnaire completion were given and some specific items were explained, e.g., the term "drinks" was explained using models to illustrate equivalent amounts of beer, wine, liquor, and mixed drinks (see Appendix J). The subject then completed the questionnaire, left it in the room, and returned to the waiting room. Informed consent forms were retained by the Coordinator as a record of those participating in the study. Referring to these forms eliminated duplication in recruiting of subjects.

Design and Data Analysis

Patients consenting to participate in the study were interviewed one time during their pregnancies. Using their responses to the questionnaire, these patients were classified into different drinking categories using the definitions given in Chapter I.

The responses to the alcohol consumption questions were used to classify the subjects into drinkers, infrequent drinkers and abstainers. Comparisons were made across these groups with regard to demographic, attitudinal, and knowledge variables. These variables included: reasons for drinking, context of drinking, intendedness of pregnancy, initial and

present wantedness of pregnancy, parents' and peers' alcohol consumption, parents' and peers' support of pregnancy, and knowledge about risk levels of alcohol consumption during pregnancy.

Hypotheses 1 through 7 were testing using the chi-square test of independence from the SPSS Crosstabs subprogram (Nie, Hull, Jenkins, Steinbrenner, & Bent, 1975). Drinker status was the dependent variable. Abstainers and infrequent drinkers were combined into a nondrinker category for testing of Hypotheses 1 through 4 and 7. Abstainers were omitted from the testing of Hypotheses 5 and 6, which referred only to subjects who drank. Hypotheses 8 through 11 were not evaluated statistically because expected cell frequencies for a majority of cells were below 5.0.

CHAPTER IV. FINDINGS

This chapter consists of two sections: a description of subjects' responses to several items cross tabulated by race and drinker status, and the testing of the hypotheses.

Description of Subjects' Responses

Data for several variables were cross tabulated by race and drinker status. These variables were demographic and medical variables, religious preference and attendance, caffeine consumption and cigarette smoking, drinker status, reasons for drinking and abstaining, setting, significant others' drinking, intendedness and wantedness of pregnancy, support of significant others and knowledge of risk levels and sources of information. Response frequencies for all questionnaire items are presented in Appendix F.

Drinker Status

The sample consisted of 43 abstainers (52.4%), 18 infrequent drinkers (22.0%), and 21 drinkers (25.6%). There were 35 blacks and 44 whites in the sample; three subjects did not report their races. Blacks constituted one-fifth of the drinkers, and three-fifths of the abstainers, as shown in Table 4.1.

The mean and range of each of the alcohol consumption measures are displayed in Table 4.2. Volume of alcohol consumed during pregnancy and binge drinking decreased for both infrequent drinkers and drinkers. Alcohol consumption during pregnancy was reported by 16 subjects, seven infrequent drinkers, and nine drinkers (see Appendix K).

Various alcohol consumption scores of the drinkers are presented

Table 4.1
 Drinker Status by Race

Drinker Status	Race		
	Black	White	Missing
Abstainer			
Number	26	16	1
Percent of total	61.9	38.1	
Infrequent drinker			
Number	5	12	1
Percent of total	29.4	70.6	
Drinker			
Number	4	16	1
Percent of total	20.0	80.0	
Total			
Number	35	44	3
Percent of total	44.3	55.7	

$\chi^2 = 11.588; p \leq 0.01.$

Table 4.2
 Mean and Range of Alcohol Consumption Scores
 for Infrequent Drinkers and Drinkers

Alcohol Consumption Score	Infrequent Drinkers (n=18)	Drinkers (n=21)	Total Sample (n=82)
Prepregnancy			
Volume Score			
Mean (drinks/day)	0.07	1.132	0.305
Range	0.01-0.37	0-10.800	0-10.800
No. of scores above 0.0	18	19	37
Pregnancy			
Volume Score			
Mean (drinks/day)	0.015	0.035	0.012
Range	0-0.09	0-0.443	0-0.443
No. of scores above 0.0	7	6	13
Prepregnancy			
Binge Score			
Mean (drinks/day)	0.082	5.688	1.475
Range	0-0.40	0-72.000	0-72.000
No. of scores above 0.0	5	18	23
Pregnancy			
Binge Score			
Mean (drinks/day)	0.013	0.131	0.036
Range	0-0.24	0-2.100	0-2.100
No. of scores above 0.0	1	3	4
No. of Binge Occasions Before Pregnancy			
Mean	0	2.095	0.537
Range	0	0-8.000	0-8.000
No. of subjects indicating binge occasions	0	14	14
No. of Binge Occasions During Pregnancy			
Mean	0	0.619	0.159
Range	0	0-5.000	0-5.000
No. of subjects indicating binge occasions	0	6	6

in Table 4.3. Decreased volume of consumption and decreased binge drinking were reported by all subjects. However, an increase in the number of binge occasions was reported by four drinkers. The three prepregnancy criteria detected the greatest number of drinkers. The prepregnancy volume and binge scores revealed the same five drinkers, but the binge scoring criteria revealed seven additional subjects. The pregnancy volume score detected no drinkers. The number of binge occasions before pregnancy measure detected seven drinkers not detected by other criteria and the number of binge occasions during pregnancy measure revealed one drinker not detected by the other five criteria.

Data on alcoholic beverages most often consumed are presented in Table 4.4. Beer was the most commonly consumed beverage, followed by mixed drinks. Wine was consumed by only four subjects, and none were classified as drinkers. Consumption of more than one type of alcoholic beverage during a drinking occasion was indicated by one abstainer, one infrequent drinker, and nine drinkers.

Demographic and Medical Variables

Subjects' ages ranged from 14 years old to 19 years old, with a mean of 16.68 years as shown in Table 4.5. Blacks, which numbered 34, were slightly older as a group, with a mean age of 16.85, compared with the 44 whites, whose mean age was 16.57. The 42 abstainers were slightly younger than the 21 drinkers and 18 infrequent drinkers.

Data pertaining to subjects' marital status, residence, parity, and term of pregnancy are presented in Table 4.6. Twenty-eight percent of the subjects were married, and all married subjects were white. Almost half of the infrequent drinkers were married, while only one-fifth of the

Table 4.3

Drinkers' Prepregnancy and Pregnancy Alcohol Consumption Scores

Case No.	Prepregnancy Volume Score	Pregnancy Volume Score	Prepregnancy Binge Score	Pregnancy Binge Score	No. Prepregnancy Binge Occasions	No. Pregnancy Binge Occasions
75	0.00	0.00	0.00	0.00	0	1 ^a
73	0.93 ^c	0.17	2.10 ^a	0.40	2 ^a	3 ^a
69	10.80 ^a	0.00	72.00 ^a	0.00	8 ^a	0
63	0.84	0.06	5.60 ^a	0.24	0	2 ^a
60	0.10	0.00	0.30	0.00	2 ^a	0
56	0.51	0.00	2.10 ^a	0.00	0	1 ^a
51	1.17 ^a	0.00	2.80 ^a	0.00	0	0
42	0.21	0.00	0.75	0.00	2 ^a	0
41	1.05 ^a	0.00	2.80 ^a	0.00	3 ^a	0
40	1.25 ^a	0.00	4.50 ^a	0.00	4 ^a	0
37	0.10	0.00	0.30	0.00	2 ^a	0
28	0.84	0.00	5.60 ^a	0.00	0	0
24	0.33	0.01	0.75	0.00	3 ^a	0
23	0.51	0.44	2.10 ^a	2.10 ^a	5 ^a	5 ^a
19	0.08	0.01	0.30	0.00	1 ^a	0
15	0.18	0.00	0.75	0.00	4 ^a	1 ^a
14	0.84	0.00	5.60 ^a	0.00	5 ^a	0
13	0.89	0.04	2.10 ^a	0.00	0	0
11	0.00	0.00	0.00	0.00	2 ^a	0
5	3.10 ^a	0.00	9.00 ^a	0.00	0	0
4	0.04	0.00	0.00	0.00	1 ^a	0

^aDrinker detected by this measure.

Table 4.4
 Frequency Breakdown of Beverages
 Most Often Consumed by Subjects

Sample Group	Beverage				
	Beer	Wine	Mixed Drinks	Liquor	Abstain
Blacks					
Number	7	0	3	3	22
Percent	20.0	0	8.6	8.6	62.9
Whites					
Number	15	0	8	4	17
Percent	34.1	0	18.2	9.1	38.6
Abstainers					
Number	2	1	2	1	37
Percent	4.7	2.3	4.7	2.3	86.0
Infrequent Drinkers					
Number	9	1	7	0	1
Percent	50.0	5.6	38.9	0	5.6
Drinkers					
Number	12	0	3	6	0
Percent	57.1	0	14.3	28.6	0
Total					
Number	23	2	12	7	38
	28.0	2.4	14.6	8.5	46.3

Table 4.5
Subjects' Ages by Race and by Drinker Status

Sample Group	No. of Subjects	Mean Age
Blacks	34 ^a	16.853
Whites	44	16.568
Abstainers	42 ^a	16.643
Infrequent Drinkers	18	16.778
Drinkers	21	16.667
Total Sample	81 ^a	16.679

^aOne subject did not respond.

Table 4.6

Frequency Breakdown of Residence, Marital Status, Parity, and Term by Race and by Drinker Status

Sample Group	Residence				Marital Status		Parity			Term of Pregnancy		
	Married		Single		Total Married	Total Single	1st Pregnancy	2nd, 3rd, or 4th Preg.	Missing	2nd Trim.	3rd Trim.	Missing
	Living In Own Place	Living with Parents	Living with Parents	Living with Others								
Blacks	**	**	**	**	**	**						
Number	0	0	30	5	0	35	27	8	0	11	22	2
Percent	0	0	85.7	14.3	0	100.0	77.1	22.9		33.3	66.7	
Whites	**	**	**	**	**	**						
Number	8	14	17	5	22	22	38	5	1	14	29	1
Percent	18.2	31.8	38.6	11.4	50.0	50.0	88.4	11.6		32.6	67.4	
Abstainers	*	*	**	*	*	*						
Number	4	4	32	3	8	35	37	5	1	12	29	2
Percent	9.3	9.3	74.4	7.0	18.6	81.4	88.1	11.9		29.3	70.7	
Infrequent Drinkers	*	*	*	*	*	*						
Number	3	5	6	4	8	10	14	4	0	6	10	2
Percent	16.7	27.8	33.3	22.2	44.5	55.5	77.8	22.2		37.5	62.5	
Drinkers	*	*	*	*	*	*						
Number	1	6	11	3	7	14	14	7	0	8	12	1
Percent	4.8	28.6	52.4	14.3	33.3	66.7	66.7	33.3		40.0	60.0	
Total												
Number	8	15	49	10	23	59	65	16	1	26	51	5
Percent	9.8	18.3	59.8	12.2	28.0	72.0	80.2	19.8		33.8	66.2	

*
** $p < 0.10$.
*** $p < 0.00001$.

abstainers were. One-third of the drinkers were married. Of the 23 married subjects, a third lived on their own (not with parents, other relatives, or friends), while two-thirds lived with their parents, in-laws, or others. A higher percentage of married drinkers lived with their parents. Of the 22 single whites, 77.3% resided with their parents, while 85.7% of the blacks, all of whom were single, resided with their parents. A higher percentage of single abstainers than single infrequent drinkers and drinkers reported living with parents. The relationships between race and marital status, race and residence, were all significant ($p \leq .00001$). The significance ($p < .10$) of the relationship between drinker status and residence may be questionable, given that over half of the valid cells have expected frequencies less than 5.0.

Eighty percent of the subjects reported that this was their first pregnancy. Of the 16 subjects reporting more than one pregnancy, 11 were in their second pregnancy, and three of these subjects had children. Of the remaining five subjects, two were in their fourth pregnancy. One of these subjects had one child and the other had two children. A higher percentage of whites and abstainers were in their first pregnancy.

In this sample, about one-third of the women were in their second trimester of pregnancy, and two-thirds were in their third trimester. A higher percentage of drinkers than abstainers responded to the questionnaire in their second trimester.

Religious Preferences and Attendance

Religious preferences were indicated by almost two-thirds of the subjects, as shown in Table 4.7. Almost two-thirds of subjects' mothers

Table 4.7

Frequency Breakdown of Subjects' and Parents' Religious Preferences
and Subjects' Church Attendance

Sample Group	Subjects' Preferences			Subjects' Church Attendance			Fathers' Preferences				Mothers' Preferences			
	Preference Indicated	No Preference	Missing	Attended 1-2/mo or more	Attended Rarely	Missing	Preference Indicated	None	No Father	Missing	Preference Indicated	None	No Mother	Missing
Blacks														
Number	23	8	4	16	17	2	16	7	5	7	18	8	2	7
Percent	74.2	25.8		48.5	51.5		57.1	25.0	17.9		64.3	28.6	7.1	
Whites														
Number	23	19	2	13	30	1	19	17	6	2	27	14	0	3
Percent	54.8	45.2		30.2	69.8		45.2	40.5	14.3		65.9	34.1	0	
Abstainers														
Number	24	13	6	16	24	3	17	13	6	7	22	13	0	8
Percent	64.9	35.1		40.0	60.0		47.2	36.1	16.7		62.9	37.1	0	
Infrequent Drinkers														
Number	12	5	1	5	12	1	12	4	0	2	12	3	1	2
Percent	70.6	29.4		29.4	70.6		75.0	25.0	0		75.0	18.8	6.3	
Drinkers														
Number	11	10	0	8	13	0	8	7	5	1	12	7	1	1
Percent	52.4	47.6		38.1	61.9		40.0	35.0	25.0		60.0	35.0	5.0	
Total														
Number	47	28	7	29	49	4	37	24	11	10	46	23	2	11
Percent	62.7	37.3		37.2	62.8		51.4	33.3	15.3		64.8	32.4	2.8	

were perceived as having religious preferences, and slightly over half of the fathers were perceived as having religious preferences. Baptist and Holiness denominations predominated. Religious preferences of subjects and their parents also included Catholic, Presbyterian, Charismatic, Seventh Day Adventist, and Jehovah's Witnesses. Twenty percent more blacks than whites indicated religious preferences. Proportionately more blacks indicated their fathers' religious preferences, but similar percentages of blacks and whites reported their mothers' preferences. A higher percentage of infrequent drinkers reported having preferences and reported that their parents had religious preferences. The lowest percentages of subject and parent religious preferences was reported by drinkers.

Attendance at religious services twice a month or more was indicated by over a third of the subjects. This level of attendance was reported by almost half the blacks and under a third of the whites. Attendance at religious services was similar for abstainers and drinkers, with slightly lower attendance reported by infrequent drinkers.

Caffeine Consumption and Cigarette Smoking

The data on caffeine consumption and cigarette smoking are presented in Table 4.8. Caffeine consumption before and during pregnancy differed little among blacks, whites, drinkers, infrequent drinkers, and abstainers. Heavy caffeine consumption (five or more cups of a caffeinated beverage per day) before pregnancy was reported by fewer than ten percent of the subjects. Heavy caffeine consumption during pregnancy was reported by fewer than five percent of the subjects.

Smoking during pregnancy was reported by 37.8% of the sample and

Table 4.8

Frequency Breakdown of Subjects' Caffeine Consumption and Cigarette Smoking

Sample Group	Prepregnancy Caffeine Consumption		Pregnancy Caffeine Consumption		Smoking During Pregnancy		Number of Cigarettes Smoked Daily		
	5 drinks daily	5+ drinks daily	5 drinks daily	5+ drinks daily	Smoker	Non smoker	Non smoker (0)	Less than a pack (1 - 19)	A pack or more (20+)
Blacks									
Number	34	1	34	1	9	26	24**	11**	0**
Percent	97.1	2.9	97.1	2.9	25.7	74.3	68.6	31.4	0
Whites									
Number	40	4	42	2	20	24	24**	10**	10**
Percent	90.9	9.1	95.5	4.5	45.5	54.5	54.5	22.7	22.7
Abstainers									
Number	41	2	41	2	11*	32*	31*	10*	2*
Percent	95.3	4.7	95.3	4.7	25.6	74.4	72.1	23.3	4.7
Infrequent Drinkers									
Number	16	2	17	1	9*	9*	9*	5*	4*
Percent	88.9	11.1	94.4	5.6	50.0	50.0	50.0	27.8	22.2
Drinkers									
Number	19	2	20	1	11*	10*	9*	7*	5*
Percent	90.5	9.5	95.2	4.8	52.4	47.6	42.9	33.3	23.8
Total									
Number	76	6	78	4	31	51	49	22*	11
Percent	92.7	7.3	95.1	4.9	37.8	62.2	59.8	26.8	13.4

* $p < 0.10$.
 ** $p < 0.01$.

was reported by higher percentages of whites, infrequent drinkers, and drinkers. Smoking a pack or more of cigarettes a day was also more often reported by whites, infrequent drinkers, and drinkers.

Reasons for Drinking and Abstaining

The frequencies and percentages of subjects' reasons for drinking in general and for decreased drinking or abstaining during pregnancy are presented in Table 4.9. Positive social functions reasons were indicated by more than half of the whites, but only a quarter of the blacks. Other reasons were indicated by 40% of the whites but under 20% of the blacks. The personal effects and positive social functions reasons were the categories most indicated by infrequent drinkers and drinkers. Confirming social functions and status transformation categories were indicated by few subjects, most of them abstainers and infrequent drinkers.

Concern for fetal welfare was the reason most often given for decreasing alcohol consumption or abstaining from alcohol consumption during pregnancy. Other reasons included distaste, sickness, and decisions to "just stop drinking." Concern for fetal welfare was the reason for decreased consumption or abstention during pregnancy indicated by two-thirds of the drinkers, and all of the infrequent drinkers who indicated a reason for decreased consumption during pregnancy.

Setting

In Table 4.10, data pertaining to setting are presented. A higher percentage of whites than blacks reported drinking in both types of settings more than half the time. Drinking in settings where adults were not present more than half the time was reported by more whites and drinkers. Responses to these items were similar for infrequent drinkers

Table 4.9
 Frequency Breakdown of Subjects' Reasons for Drinking
 and for Abstaining During Pregnancy

Sample Group	Reasons for Drinking					Reasons for Decreased Consumption or Abstention During Pregnancy		
	PE	PSF	CSF	ST	Other	Fetal Welfare	Other Reasons	Abstain
Blacks								
Number	13	10	1	2	6	12	2	21
Percent	37.1	28.6	2.9	5.7	17.1	34.3	5.7	60.0
Whites								
Number	18	23	5	1	18	21	8	15
Percent	40.9	52.3	11.4	2.3	40.9	47.7	18.2	34.1
Abstainers								
Number	7	6	1	2	5	7	3	33
Percent	16.3	14.0	2.3	4.7	11.6	16.3	7.0	76.7
Infrequent Drinkers								
Number	8	12	4	1	9	15	0	3
Percent	44.4	66.7	22.2	5.6	5.0	83.3	0	16.7
Drinkers								
Number	17	17	1	0	12	13	7	1
Percent	81.0	81.0	4.8	0	57.1	61.9	33.3	4.8
Total								
Number	32	35	6	3	26	35	10	37
Percent	39.0	42.7	7.3	3.7	31.7	42.7	12.2	45.1

Note: PE = personal effects reasons; PSF = positive social functions reasons; CSF = conforming social functions; ST = status transformation; Other = other reasons; Fetal welfare = concern for fetal welfare; Abstain = Not a drinker or no answer.

Table 4.10

Frequency Breakdown of Settings by Race and Drinker Status

Sample Group	Drank in Settings With Adults Present		Drank in Settings With Adults Not Present	
	More Than Half the Time	Less Than Half the Time	More Than Half the Time	Less Than Half the Time
Blacks				
Number	2	33	4	31
Percent	5.7	94.3	11.4	88.6
Whites				
Number	5	39	10	34
Percent	11.4	88.6	22.7	77.3
Abstainers				
Number	1	42	3	40
Percent	2.3	97.7	7.0	93.0
Infrequent Drinkers				
Number	2	16	2	16
Percent	11.1	88.9	11.1	88.9
Drinkers				
Number	5	16	10	11
Percent	23.8	76.2	47.6	52.4
Total				
Number	8	74	15	67
Percent	9.8	90.2	18.3	81.7

and abstainers.

Significant Others' Drinking

The data pertaining to subjects' perceptions of their parents' and peers' alcohol consumption are shown in Table 4.11. Perceived drinking of significant others did not differ significantly by race. Fifteen subjects (six abstainers, four infrequent drinkers, five drinkers) reported that at least one parent was a drinker. One subject (a white drinker) reported that both parents were drinkers. None of the black subjects perceived their mothers as drinkers.

Two-thirds of the drinkers reported that at least several of their friends drank at least once a week, while only a third of the abstainers and infrequent drinkers reported this. Ten subjects (two abstainers, eight drinkers) indicated that both their boyfriends or husbands and several of their friends drank at least once a week. Relationships between drinker status and peers'/boyfriends'/husbands' drinking were significant at the .10 level or beyond. A positive response to all four measures relating to significant others' drinking was given by one subject.

Intendedness and Wantedness of Pregnancy

Table 4.12 displays the data related to intendedness and wantedness of pregnancy. Unplanned pregnancies were indicated by more than 70% of the sample. The highest percentages of unplanned pregnancies were reported by blacks and abstainers. Initially wanted pregnancies were reported by under half of the respondents. Presently wanted pregnancies were reported by approximately three-quarters of the subjects. A higher percentage of whites and infrequent drinkers indicated initially wanted

Table 4.11

Frequency Breakdown of Significant Others' Alcohol Consumption by Race and by Drinker Status

a. Parental drinking

	<u>Both Parents Drink</u>		<u>One Parent Drinks</u>		<u>Father Drinks</u>		<u>Mother Drinks</u>	
	No	Yes	No	Yes	No	Yes	No	Yes
Blacks								
Number	35	0	30	5	30	5	35	0
Percent	100.0	0	85.7	14.3	85.7	14.3	100.0	0
Whites								
Number	43	1	35	9	36	8	42	2
Percent	97.7	2.3	79.5	20.5	81.8	18.2	95.5	4.5
Abstainers								
Number	43	0	37	6	38	5	42	1
Percent	100.0	0	86.0	14.0	88.4	11.6	97.7	2.3
Infrequent Drinkers								
Number	18	0	14	4	15	3	17	1
Percent	100.0	0	77.8	22.2	83.3	16.7	94.4	5.6
Drinkers								
Number	20	1	16	5	16	5	20	1
Percent	95.2	4.8	76.2	23.8	76.2	23.8	95.2	4.8
Total								
Number	81	1	67	15	69	13	79	3
Percent	98.8	1.2	81.7	18.3	84.1	15.9	96.3	3.7

Table 4.11, continued

b. Peers' drinking

Sample Group	Peers & Boyfriend/ Husband Drinks		Peers or Boyfriend/ Husband Drinks		Peers Drink		Boyfriend/Husband Drinks		
	No	Yes	No	Yes	0-2 Friends	Several, Most, All	Less Than Monthly	Infreq.	Weekly
Blacks									
Number	31	4	16	19	21	14	15	11	9
Percent	88.6	11.4	45.7	54.3	60.0	40.0	42.9	31.4	25.7
Whites									
Number	38	6	20	24	24	20	16	18	10
Percent	86.4	13.6	45.5	54.5	54.5	45.5	26.4	40.9	22.7
Abstainers									
Number	41	2	25*	18*	29*	14**	23**	14**	6**
Percent	95.3 [†]	4.7 [†]	58.1	41.9	67.4	32.6	53.5	32.6	14.0
Infrequent Drinkers									
Number	18	0	7*	11*	12**	6**	6**	7**	5**
Percent	100.0 [†]	0 [†]	38.9	61.1	66.7	33.3	33.3	38.9	27.8
Drinkers									
Number	13	8	6*	15*	7**	14**	3**	9**	9**
Percent	61.9 [†]	38.1 [†]	28.6	71.4	33.3	66.7	14.3	42.9	42.9
Total									
Number	72	10	38	44	48	34	32	30	20
Percent	87.8	12.2	46.3	53.7	58.5	41.5	39.0	36.6	24.4

*
** $p < 0.10$.
† $p < 0.05$.
 $p < 0.0001$.

Table 4.12

Frequency Breakdown of Intendedness and Wantedness of Pregnancy by Race and Drinker Status

Sample Group	Intended ?		Initial Wantedness				Present Wantedness			
	Yes	No	Wanted	Unwanted	Mixed	Missing	Wanted	Unwanted	Mixed	Missing
Blacks										
Number	6	29	13	8	14	0	26	1	7	1
Percent	17.1	82.9	37.1	22.9	40.0	0	76.5	2.9	20.6	0
Whites										
Number	14	29	19	5	19	1	33	2	8	1
Percent	32.6	67.4	44.2	11.6	44.2	0	76.7	4.7	18.6	0
Abstainers										
Number	7*	36*	17	6	20	0	31	2	10	0
Percent	16.3	83.7	39.5	14.0	46.5	0	72.1	4.7	23.3	0
Infrequent Drinkers										
Number	8*	9*	9	3	5	1	13	0	3	2
Percent	47.1	52.9	52.9	17.6	29.4	0	81.3	0	18.8	0
Drinkers										
Number	7*	13*	8	4	9	0	18	1	2	0
Percent	35.0	65.0	38.1	19.0	42.9	0	85.7	4.8	9.5	0
Total										
Number	22	58	34	13	34	1	62	3	15	2
Percent	27.5	72.5	42.0	16.0	42.0	p	77.5	3.8	18.8	0

* p < 0.05.

pregnancies. A higher percentage of drinkers reported presently wanted pregnancies.

Support of Significant Others

Data pertaining to support of significant others are presented Table 4.13. A high level of parental support was reported by all subjects. All blacks reported having parental support, whereas only 89% of the whites indicated parental support. Higher percentages of support from girlfriends were indicated by infrequent drinkers and blacks. Support from the baby's father was reported by over 80% of all subjects. Support from parents, girlfriends, and the baby's father combined was reported by over 50% of all subjects, with higher percentages of blacks and infrequent drinkers reporting support from all three sources.

Initial wantedness was significantly related to support from the baby's father ($\chi^2 = 11.3311$, $p = .0035$). Support from the baby's father was reported by all subjects who indicated initially wanted pregnancies (see Table 4.14). Initial wantedness was also significantly related to religious preference ($\chi^2 = 7.118$, $p = .0285$). A religious preference was indicated by higher percentages of subjects whose pregnancies were initially not wanted or who reported mixed feelings.

Present wantedness was significantly related to all four support measures, as shown in Table 4.15. However, the significant probabilities for these measures are questionable, given that one-third or more of the valid cells had expected cell frequencies less than 5.0. Support from girlfriends and from all three sources combined was positively related to present wantedness. No support from girlfriends and support from

Table 4.13

Frequency Breakdown of Significant Others' Support by Race and Drinker Status

Subject Group	<u>Parents' Support</u>		<u>Girlfriends' Support</u>		<u>Baby's Fathers' Support</u>		<u>Support from All 3 Groups</u>	
	Support	No Support	Support	No Support	Support	No Support	All 3	No
Blacks								
Number	35	0	24	11	31	4	23	12
Percent	100.0	0	68.6	31.4	88.6	11.4	65.7	34.3
Whites								
Number	39	5	26	18	36	8	22	22
Percent	88.6	11.4	59.1	40.9	81.8	18.2	50.0	50.0
Abstainers								
Number	40	3	25	18	35	8	23	20
Percent	93.0	7.0	38.1	41.9	81.4	18.6	53.5	46.5
Infrequent Drinkers								
Number	17	1	15	3	16	2	13	5
Percent	94.4	5.6	83.3	16.7	88.9	11.1	72.2	27.8
Drinkers								
Number	20	1	12	9	18	3	11	10
Percent	95.2	4.8	57.1	42.9	85.7	14.3	52.4	47.6
Total								
Number	77	5	52	30	69	13	47	35
Percent	93.9	6.1	63.4	36.6	84.1	15.9	57.3	42.7

Table 4.14

Frequency Breakdown of Initial Wantedness by Support from Baby's Father
and Religious Preference

Initial Wantedness	Support from Baby's Father		Religious Preference									
	No Support	Support	Subject			Subjects' Fathers			Subjects' Mothers			
			Indicated	None	Missing	Indicated	None	Missing or Has No Father	Indicated	None	Missing or Has No Mother	
Wanted												
Number	0**	34**	14*	17*	3	13	14	7	12	17	5	
Percent	0	100.0	45.2	54.8	-	48.1	51.9	-	41.4	58.6	-	
Mixed												
Number	9**	25**	22*	9*	0	15	7	12	24	4	6	
Percent	26.5	73.5	71.0	29.0	-	68.2	31.8	-	85.7	14.3	-	
Unwanted												
Number	4**	9**	10*	2*	3	8	3	2	9	2	2	
Percent	30.8	69.2	83.3	16.7	-	72.7	27.3	-	81.8	18.2	-	
Total												
Number	13	68	46	28	6	36	24	21	45	23	13	
Percent	16.0	84.0	62.0	37.8	-	60.0	40.0	-	66.2	33.8	-	
Number and percent of cells with expected frequency less than 5.0	$\chi^2 = 11.33, p = 0.0035$ [1 out of 6 (16.7%) of cells have ex- pected frequency less than 5.0]		$\chi^2 = 7.118, p = 0.0285$ [1 out of 6 (16.7%) of cells have expected frequency less than 5.0]			$\chi^2 = 2.936, p = 0.2304$ [1 out of 6 (16.7%) of cells have expected frequency less than 5.0]			$\chi^2 = 13.944, p = 0.0009$ [1 out of 6 (16.7%) of cells have expected frequency less than 5.0]			

Table 4.15

Frequency Breakdown of Present Wantedness by Support from Significant Others

Present Wantedness	Parental Support		Girlfriends' Support		Boyfriends' Support		Support from All Sources	
	Support	No Support	Support	No Support	Support	No Support	Support	No Support
Wanted								
Number	61	1	42	20	55	7	39	23
Percent	98.4	1.6	67.7	32.3	88.7	11.3	62.9	37.1
Mixed								
Number	12	3	9	6	10	5	7	8
Percent	80.0	20.0	60.0	40.0	66.7	33.3	46.7	53.3
Unwanted								
Number	2	1	0	3	2	1	0	3
Percent	66.7	33.3	0	100.0	66.7	33.3	0	100.0
Total								
Number	75	5	51	29	67	13	46	34
Percent	93.8	6.3	63.8	36.3	83.8	16.3	57.5	42.5
	$\chi^2 = 10.87, p = 0.0044.$ 4 of 6 cells (66.7%) have expected cell frequency less than 5.0.		$\chi^2 = 5.795, p = 0.0552.$ 2 of 6 (33.3%) cells have expected cell frequency less than 5.0.		$\chi^2 = 4.981, p = 0.0829.$ 3 of 6 (50%) cells have expected cell frequency less than 5.0.		$\chi^2 = 5.51989, p = 0.0633.$ 2 of 6 (33.3%) cells have expected cell frequency less than 5.0.	

less than all three sources was indicated by the three subjects whose pregnancies were presently unwanted.

Knowledge of Risk Levels and Sources of Information

Knowledge that all types of alcoholic beverages could be harmful to the fetus was indicated by 70% or more of the whites, drinkers, and abstainers and 64% or more of the blacks and infrequent drinkers, as shown in Table 4.16. Abstention on a daily basis was indicated by higher proportions of whites, infrequent drinkers, and drinkers. Abstention on special occasions was indicated by higher proportions of whites and abstainers.

The sources of subjects' knowledge about risk levels of alcohol consumption during pregnancy are listed in Table 4.17 by race and drinker status. Five sources were indicated most often by all groups: mothers, pamphlets or books, school health class, the RMH Clinic, and television. Drinkers also indicated boyfriends as key sources of information. The school health class may refer to the Children's Home Society special classes for pregnant teenagers. Pamphlets and books may refer to materials received during the initial visit to the RMH Clinic.

Testing of Hypotheses

The results of the chi-square test of independence used to test the first seven research hypotheses are presented in Table 4.18. The number and percentage of cells with expected cell frequency less than 5.0 are also included in this table. The breakdown of the cell frequencies associated with significant outcomes are presented in subsequent tables.

Table 4.16

Frequency Breakdown of Knowledge of Potentially Harmful Beverages and Risk Levels

Sample Group	Beverage						Safe Level - Daily Use				Safe Level - Special Occasions			
	Beer	Wine	Liquor	Mixed Drinks	Combination	All Four	0 Drinks	1-2 Drinks	3-4 Drinks	5+ Drinks	0 Drinks	1-2 Drinks	3-4 Drinks	5+ Drinks
Blacks														
Number	1	0	4	2	5	22	18	12	1	1	14	17	1	0
Percent	2.9	0	11.8	5.9	14.7	64.7	56.3	37.5	3.1	3.1	43.8	53.1	3.1	0
Whites														
Number	0	0	2	1	7	34	28	12	0	1	19	22	1	0
Percent	0	0	4.5	2.3	16.0	77.3	68.3	29.3	0	2.4	45.2	52.4	2.4	0
Abstainers														
Number	1	0	4	2	4	32	23	14	1	2	23	16	1	0
Percent	2.3	0	9.3	4.7	9.3	74.4	57.5	35.0	2.5	5.0	57.5	40.0	2.5	0
Infrequent Drinkers														
Number	0	0	1	1	4	12	12	5	0	0	5	12	0	0
Percent	0	0	5.6	5.6	22.3	66.7	70.6	29.4	0	0	29.4	70.6	0	0
Drinkers														
Number	0	0	2	0	4	14	14	5	0	0	8	11	1	0
Percent	0	0	10.0	0	20.0	70.0	73.7	26.3	0	0	40.0	55.0	5.0	0
Total														
Number	1	0	7	3	12	58	49	24	1	2	36	39	2	0
Percent	1.2	0	8.6	3.7	14.7	71.6	64.5	31.6	1.3	2.6	46.8	50.6	2.6	0

Table 4.17

Frequency Breakdown of Sources of Information About Potential Risks
of Alcohol Consumption During Pregnancy

Sample Group	TV	Radio	Newspapers	Pamphlets, Books	Magazines	Mother	Girlfriends	Boyfriend	School Health Class	School- Other	RNH Clinic	Other Clinic	Doctor's Office	Other
Blacks Number	10	1	4	11	5	12	1	4	13	4	13	2	9	2
Percent	28.6	2.9	11.4	31.4	14.3	34.3	2.9	11.4	37.1	11.4	37.1	5.7	25.7	5.7
Whites Number	11	4	6	19	7	21	10	8	18	7	11	2	4	2
Percent	25.0	9.1	13.6	43.2	15.9	47.7	22.7	18.2	40.9	15.9	25.0	4.5	9.1	4.5
Abstainers Number	12	2	4	14	6	20	3	6	16	6	15	4	10	3
Percent	27.9	4.7	9.3	32.6	14.0	46.5	7.0	14.0	37.2	14.0	34.9	9.3	23.3	7.0
Infrequent Drinkers Number	6	2	2	9	3	5	4	1	8	3	5	0	1	0
Percent	33.3	11.1	11.1	50.0	16.7	27.8	22.2	5.6	44.4	16.7	27.8	0	5.6	0
Drinkers Number	4	1	4	8	3	9	4	5	7	2	4	0	2	1
Percent	19.0	4.8	19.0	38.1	14.3	42.9	19.0	23.8	33.3	9.5	19.0	0	9.5	4.8
Total Number	22	5	10	31	12	34	11	12	31	11	24	4	13	4
Percent	26.8	6.1	12.2	37.8	14.6	41.5	13.4	14.6	37.8	13.4	29.3	4.9	15.9	4.9

Table 4.18

Chi-Square Values for Hypotheses 1 to 7

Hypothesis Number	Hypothesis	χ^2	p = Significance	No. of Cells Less Than 5.0
1	Teens whose pregnancy is wanted will report lower levels of alcohol consumption and/or less binge drinking than pregnant teens whose pregnancy is not wanted.			
	Initial wantedness	0.01829	0.892	1 (25%)
	Present wantedness	0.0	1.000	2 (50%)
2	Pregnant teens whose parents are supportive will report less alcohol consumption and/or less binge drinking during pregnancy than pregnant teens whose parents are not supportive.	0.0	1.000	2 (50%)
3	Pregnant teens whose friends are supportive will report lower levels of alcohol consumption and/or less binge drinking during pregnancy than pregnant teens whose friends are not supportive.	0.18420	0.668	0
4	Pregnant teens who are supported by the baby's father will report lower levels of alcohol consumption and/or less binge drinking during pregnancy than those who are not supported by the baby's father.	0.0	1.000	1 (25%)
5	Pregnant teens giving personal-effects reasons for drinking will report higher levels of alcohol consumption and/or binge drinking than pregnant teens who do not give personal-effects reasons for drinking.			
	Personal-effects reasons	4.1394	0.0419	0
	Positive social functions reasons	0.4235	0.5152	1 (25%)
	Conforming social functions reasons	1.3123	0.2520	2 (50%)
	Status transformation reasons	0.0061	0.9377	2 (50%)
	Other reasons	0.0154	0.9014	0
6	Pregnant teens who drink in settings where adults are not present will report higher alcohol consumption and/or binge drinking than pregnant teens who drink in settings where adults are present.			
	Adults not present	4.4716	0.0345	0
	Adults present	0.3471	0.5408	2 (50%)
7	Pregnant teens having significant others who drink will report higher levels of alcohol consumption and/or binge drinking than pregnant teens whose significant others do not drink.			
	Fathers' drinking	0.6570	0.4174	0
	Mothers' drinking	0.000	1.000	2 (50%)
	Boyfriends/husbands' drinking	6.9069	0.0086	1 (25%)
	Peers' drinking	6.0580	0.0138	0

The null forms of Hypotheses 1 to 4 were retained at the .10 level, indicating that wantedness and support of significant others were not significantly related to alcohol consumption in this sample. The null form of Hypothesis 5 was rejected, indicating a relationship between whether a person gave personal effects reasons for drinking and drinker status. The cross tabulation of personal effects reasons and drinker status is shown in Table 4.19, which reveals that proportionately more drinkers than infrequent drinkers indicated personal effects reasons for drinking. This relationship did not exist between the other types of reasons given for drinking and drinker status.

The null hypothesis associated with Research Hypothesis 6 was rejected at the .05 level. According to the data presented in Table 4.20, proportionately more subjects who drank in settings where adults were not present were drinkers than infrequent drinkers. Research Hypothesis 7 was supported in the cases of peers' and boyfriend/husbands' drinking, but not in the cases of parental drinking. Proportionately more subjects who reported having several peers drinking weekly were drinkers than nondrinkers according to Table 4.21. The data in Table 4.21 also indicated that subjects whose boyfriends or husbands drank weekly were more likely to be drinkers than nondrinkers.

Testing of Hypotheses 8 to 11 was not conducted. It was not possible to conduct these tests because when three-way classifications were attempted, there were too few people in the resulting cells for meaningful comparisons to be made. For example, in regard to Research Hypothesis 9, few subjects reported no support from significant others, which resulted in low cell frequencies. In regard to Research

Table 4.19
 Personal Effects Reasons by Drinker Status

Personal Effects Reasons	Infrequent Drinkers	Drinkers	Total
No			
Number	10	4	14
Percent	71.4	28.6	35.9
Yes			
Number	8	17	25
Percent	32.0	68.0	64.1
Total			
Number	18	21	39
Percent	46.2	53.8	100.0

Table 4.20
Setting by Drinker Status

Drank Where Adults Were Not Present	Infrequent Drinkers	Drinkers	Total
Less than half the time			
Number	16	11	27
Percent	59.3	40.7	69.2
More than half the time			
Number	2	10	12
Percent	16.7	83.3	30.8
Total			
Number	18	21	39
Percent	46.2	53.8	100.0

Table 4.21

Peers' and Boyfriends'/Husbands' Drinking by Drinker Status

Significant Others' Category	Drinker Status		Total
	Nondrinker	Drinker	
<u>Peers</u>			
0-2 friends drink weekly			
Number	41	7	48
Percent	85.4	14.6	58.5
Several to all friends drink weekly			
Number	20	14	34
Percent	58.8	41.2	41.5
Total			
Number	61	21	82
Percent	74.4	25.6	100.0
<u>Boyfriends/Husbands</u>			
Drinks less than monthly			
Number	29	3	32
Percent	90.6	9.4	61.5
Drinks weekly			
Number	11	9	20
Percent	55.0	45.0	38.5
Total			
Number	40	12	52
Percent	76.9	23.1	100.0

Hypothesis 11, the low number of subjects reporting unwanted pregnancies was responsible for low cell frequencies.

Summary

In summary, drinkers differed from nondrinkers on several variables. Higher percentages of drinkers than abstainers were white, married, had been pregnant at least once in the past, and intended to become pregnant. Proportionately fewer drinkers indicated religious preferences or attended church services on a regular basis. Drinkers were more likely to smoke and smoked more than abstainers. Reasons for drinking among drinkers included personal effects, positive social functions, and other reasons, while among infrequent drinkers, conforming social functions reasons were also reported. Personal effects reasons for drinking, consumption in settings where adults were not present, and weekly consumption by peers and boyfriends/husbands was reported by significantly higher percentages of drinkers than nondrinkers. Drinkers and nondrinkers did not significantly differ in support from significant others or wantedness of pregnancy.

CHAPTER V. DISCUSSION AND CONCLUSIONS

The purposes of this study were to: 1) determine whether pregnant teens consumed alcohol in amounts or patterns which may endanger fetal health and 2) determine if wantedness, support, context, reasons for drinking, significant others' use of alcohol, and knowledge were related to pregnant teens' consumption of alcohol before and during pregnancy. This chapter will discuss the findings in light of these purposes. It will also include discussions of methodological considerations and educational and clinical implications.

Previous studies (Little, 1977; Ouellette et al., 1977; Clarren & Smith, 1978; Hanson et al., 1978; Landesman-Dwyer et al., 1978) indicated that fetal alcohol effects were associated with alcohol consumption levels of two or more drinks per day. Other studies (Harlap & Shiono, 1980; Kline et al., 1980) indicated that consumption of one-two drinks per day or two-four drinks twice a week was associated with second-trimester spontaneous abortion. These levels were used in determining the criteria for drinker status.

In this study alcohol consumption in the month before pregnancy or during pregnancy was reported by 39 subjects (48% of the sample). In all but five cases, the volume of alcohol consumed before pregnancy was below one drink per day (see Appendix K). The prepregnancy volume scores indicated that one drinker's infant may be at risk of Fetal Alcohol Syndrome, if this level of consumption continued into the first trimester of pregnancy. These scores also indicated that one additional drinker's infant may have been at risk of developing some type of Fetal Alcohol Effect.

Pregnancy volume scores indicated very low levels of alcohol consumption during pregnancy (.44 drinks per day or less) among those classified as drinkers in this study. The two drinkers whose prepregnancy levels of drinking indicated risk situations reported no alcohol consumption once they were aware of their pregnancies. There was no increase in volume of alcohol consumed during pregnancy according to these scores. Therefore, the pregnant teenagers in this study who drank would not be considered at risk of Fetal Alcohol Effects if volume of alcohol consumed were the sole indicator.

Prepregnancy and pregnancy binge scores revealed a slightly different situation. As stated in Chapter IV, the binge scores and the number of binge occasions measures detected all of the drinkers. In eight of these cases, binge drinking occurred either weekly (binge score of 4.2 or more), four times or more during the month before pregnancy, or five times during the pregnancy (see Appendix K). In four additional cases, binge drinking scores indicated that five or more drinks per occasion were consumed on one to three occasions during the month before pregnancy. If (as seems probable) binge drinking endangers fetal growth and development, then several of these drinkers could be at risk.

Thus, though pregnant teens in this study did not consume the volume of alcohol currently associated with risk to the fetus, the data indicate that they may be at risk if binge drinking endangers the fetus. These data also highlight the need for further research to evaluate the effects of binge drinking before and during pregnancy and to determine the levels and critical periods of binge drinking which can be harmful to fetal

growth and development.

These findings about volume of consumption and binge drinking have application for the design of instruments for routine clinical use. Since prepregnancy scores detected most of the drinkers, instruments should include items related to consumption before pregnancy, as well as during pregnancy. Binge drinking before and during pregnancy was evaluated using six items from this questionnaire (items 21, 22, 25, 26, 27, and 30). Evaluation of volume and binge drinking was assessed using ten items (items 21 to 30). Both questionnaire formats are short and easy to understand and could be easily administered and scored by clinic personnel during initial and subsequent prenatal visits and following delivery. The data obtained from these questionnaires could provide a measure of drinking before and during pregnancy which could be compared with patient statements to the nurse interviewer. These data could also be compared with infant outcomes in order to validate these measures, particularly the prepregnancy scores, and to further understand effects of moderate and binge drinking on fetal development.

Initial and present wantedness of pregnancy and support from significant others were independent of drinker status. Less than 20 percent of the total sample reported initially unwanted pregnancies, and of these, only four indicated that they had considered abortion. These findings are consistent with Olson's (1980) suggestion that adolescents who carry their pregnancies to term view their pregnancies more positively than those who abort. In addition, subjects were interviewed in the second or third trimester, past the point when abortions could be obtained. Wantedness increased during pregnancy. A high level of support from

significant others was reported. These findings are not unexpected in light of the findings of Ryan and Sweeney (1980), Miller (1978), and Olson (1980). In addition, those whose pregnancies are initially wanted and who are supported by significant others are more likely to be willing and able to seek out prenatal care at a clinic like the RMH Clinic.

Initial wantedness was related to support from the baby's father and to whether a religious preference was indicated by the respondent for herself or her parents (see Table 4.14). Subjects who reported support from the baby's father were more likely to report initial wantedness. It may be that early support from the baby's father made it more desirable to continue a pregnancy rather than abort it. Initial wantedness was higher among those who expressed a personal or parental religious preference. Fear of parental reaction to the pregnancy based on religious preference may have caused feelings of anxiety, guilt, or fear, resulting in initial unwantedness or mixed feelings. Expressions of religious preferences may also explain why more subjects did not terminate the pregnancy. Their own personal and/or their parents' beliefs may have been overtly inconsistent with abortion. In other cases, subjects may have perceived that funds for abortion were less readily available from parents than funds for prenatal care. Discussions by Olson (1980), Phipps-Yonas (1980), and researchers at the Alan Guttmacher Institute (1980) indicate that teenage girls who choose to continue their pregnancies are less supportive of abortion. In addition, almost 60% of the subjects indicated that their close friends had babies, which indicates an additional source of social support for continuing the

pregnancy (see Appendix E).

The timing of the questionnaire administration may have been a factor in the high level of present wantedness reported by subjects. Most subjects responded to the questionnaire after quickening-- that point when the baby's movements can be felt. This is an exciting time, a time when the reality that there is truly life inside becomes clear.

Present wantedness was positively related to support from parents, girlfriends, and the baby's father. Once the initial confrontation about the pregnancy was over, it is clear that these pregnant teenagers perceived that they were supported. This is not unexpected, given that financial support is necessary for most girls to pay for clinic services. Those who do not have this support are not likely to come to this clinic. In addition, mothers and boyfriends/husbands were encouraged at the clinic to participate in prenatal care when possible and in the entire parenting process. Also, during pregnancy, a great deal of special attention is focused on the mother-to-be-- attention from parents, friends, and the staff at the RMH Clinic. Girls could also attend a special school for pregnant teens if they desired-- another source of special attention. In addition, because it is a high-risk clinic which offers educational programs, subjects to continue to attend the RMH Clinic become sensitized to their responsibility in protecting their unborn children and to the dependence of their unborn children upon them. If teenagers become pregnant because they want to do something important, or to be needed and loved, this dependence may help fulfill that need. Given the time of administration of the questionnaire, the self-selection of the sample, the support of and special

attention from significant others, and the movements and needs of the baby, it is not surprising that a majority of subjects would report present wantedness of pregnancy.

The context and reasons for drinking measures were adapted from the research of the Jessors (1968, 1980) and Rachal et al. (Research Triangle Institute, 1975). Indication of personal effects reasons for drinking and drinking in a peer-oriented rather than parent-oriented culture were hypothetically related to problem behavior proneness. Findings in this study support these hypothetical relationships. Subjects who drank infrequently reported drinking for positive social reasons, e.g. to celebrate, have a good time. Drinkers reported both personal effects and positive social functions reasons for drinking, indicating that alcohol was used by some to cope with problems and stress. A higher percentage of drinkers reported drinking in peer-dominated settings. If these relationships were replicated with a larger, and random sample, they could indicate problem drinking during pregnancy or following pregnancy, when the stresses of teenage parenting multiply.

The primary reason for decreased alcohol consumption or abstention during pregnancy was concern for fetal welfare. This concern appeared to outweigh subject's personal effects reasons for drinking, as reflected in the decreased consumption during pregnancy. The high levels of support from significant others likely facilitated this behavior change.

The format of items related to setting, which asked subjects to indicate what proportion of the time they drank in each setting, may have confused some subjects, and thus affected the significance of the

relationships between setting and drinker status. It was difficult to interpret responses to these items in accordance with the hypotheses. A more simple format, such as a ranking of settings or a "yes-no" response format to the items on this questionnaire might have been clearer to subjects and easier to interpret.

Kandel (1980), Zucker (1979), the Jessors (1968, 1977, 1980), and Huba et al. (1979, 1980, 1981) considered the alcohol consumption of friends to be a proximal influence on teens' drinking behavior. This relationship was supported by this study. Alcohol consumption of peers and/or boyfriends/husbands was significantly related to drinker status (see Tables 4.11, 4.18, 4.21). However, drinker status refers primarily to prepregnancy drinking, since alcohol consumption decreased during pregnancy. Alcohol consumption during pregnancy was not related to alcohol consumption of peers and/or boyfriends/husbands. This is not unexpected, given the high level of support of pregnancy from peers and boyfriends/husbands, the finding that for drinkers, boyfriends were key sources of information about risks of drinking during pregnancy, and the concern for fetal welfare evidenced by infrequent drinkers and drinkers (see Table 4.9). Significant others were concerned for fetal welfare, as evidenced by the comment from one pilot test subject, "The Daddy said, 'If I did he'd break my neck, I'm not to play around with his only child!'" This influence of significant others in promoting decreased drinking during pregnancy should not be overlooked in education and treatment.

Parental drinking was independent of drinker status. This finding is not surprising in light of the low number of parents perceived as

drinkers (see Table 4.11). The definition of parental drinking may have been too restrictive and thus may have obscured a relationship between parental drinking and subject drinker status. However, it is likely that parents are not heavy drinkers, given the high percentage of parents perceived as having religious preferences which encourage moderate drinking or abstinence. In addition, alcohol consumption in the Roanoke area is lower than in other areas of the state and the nation (DeLuca, 1981; Highlights, 1980).

In Little et al.'s (1981) study of public awareness of the risks of alcohol consumption during pregnancy, teenagers were less likely to recommend abstinence during pregnancy and recommended higher safe levels of use than other respondents. By the time of this questionnaire administration, at least two-thirds of the sample knew that any alcoholic beverage could be harmful and that consumption of more than two drinks a day or on special occasions could be harmful to fetal development (see Table 4.16). Higher percentages of drinkers and infrequent drinkers than abstainers recommended abstinence on a daily basis. A higher percentage of abstainers than infrequent drinkers and drinkers recommended abstention on special occasions. This is consistent with the finding that pregnant teenage drinkers were characterized by binge consumption of alcohol rather than daily consumption. The sample as a whole, however, knew that consumption over two drinks a day could be harmful. While most authorities recommend abstinence, when dealing with heavy drinkers, some authorities question the value of promoting abstention during pregnancy because it may be counterproductive in terms of detecting those at risk. In addition, with promotion of

abstention, infrequent drinkers who are concerned about fetal welfare may become overly concerned if they consume only one or two drinks during their pregnancies.

Reported alcohol consumption during pregnancy was consistent with subjects' knowledge of harmful beverages and risk levels, and their concern for fetal welfare. These findings are similar to those of Vaughn (1979). This may indicate real changes in behavior following exposure to information. However, some subjects, particularly those who drink, may report abstention so that they will please clinic personnel and silence reminders about not drinking (see cases 69 and 5, Appendix K). A few subjects (nondrinkers and drinkers) wrote comments on their questionnaires which indicated that any drinking had been done prior to pregnancy. They wanted to assure the researcher and clinic personnel that they were not drinking during pregnancy. This desire is likely to be due to genuine concern for fetal welfare, uneasiness about any drinking during pregnancy, a desire to conceal heavy drinking, or a combination of these factors.

It is clear that subjects were informed about the risks of alcohol consumption during pregnancy, and reported alcohol consumption consistent with this knowledge. What is not clear is the point in time at which subjects became informed-- before becoming pregnant or after pregnancy was suspected or confirmed. Subjects may have been unaware of risk before becoming involved in prenatal care. If pamphlets came from the RMH Clinic or special school for teenagers, and if school health class refers to the special school, then it is likely that some subjects did not become informed until they received prenatal care. Thus, changes

in drinking behavior may not have taken place until prenatal care was received in the fourth month of pregnancy or later. In the case of heavy drinking, this could increase risk of Fetal Alcohol Effects, particularly if critical periods of effect are discovered. Even if a subject was informed about the risks of consuming alcohol during pregnancy, the unplanned nature of most of these pregnancies would preclude change in drinking patterns before becoming pregnant.

Sources of information about risks of alcohol consumption during pregnancy have implications for educational and clinical practice. If pamphlets and books refer to the materials distributed at the RMH Clinic or special school for pregnant teens, then it is clear that some subjects read and understand these materials. Subjects' mothers (and boyfriends in the case of drinkers) are key sources of information and therefore efforts should be made to ensure that they have correct information. Their involvement in prenatal care may also ensure closer compliance with treatment. If intervention with heavy drinkers is attempted, the involvement of mothers and the baby's father could facilitate lasting behavior change.

Since this is not a random sample of pregnant teenagers, the generalizability of these findings is limited to similar clinical populations. It is likely that findings obtained from samples from public health clinics or other clinics where cost of care is based on ability to pay would differ from these findings. In addition, the number of women at risk could differ greatly in different geographic areas and in samples obtained from private physicians.

The validity of the alcohol consumption scores used for drinker

status classification in this study has not been established. The criteria used in this study were similar to those used by Streissguth, Martin, and Martin (1977), and reflect the additional findings of Harlap and Shiono (1980) and Kline et al. (1980). These criteria were modified somewhat to meet the demands of the RMH Clinic, and to provide a group of drinkers large enough for comparison with nondrinkers. Alcohol consumption levels and patterns, infant birth weights, APGAR scores and behavior from a much broader sample are needed in order to establish the validity of these measures of alcohol consumption. Validation requires the administration of uniform instruments to a larger and random sample. Computerization of the data base could facilitate access to client files while still protecting confidentiality.

Collection of data related to infant outcomes was not possible in this study. Validity of subject consent was uncertain because subjects were minors (although parental permission is not required for prenatal care). Therefore the promise of anonymity was required in order to obtain approval for the study. This precluded collection of follow-up data due to record keeping methods of the hospital and clinic.

Use of a structured instrument by a trainer interviewer did yield specific reports of alcohol use. Routine use of this or a similar instrument during prenatal care in the RMH and other clinics would yield valuable data which could be used in the validation process and to further understand the effects of moderate and binge drinking on fetal development. It would also provide a basis for comparison of teenage and older patients.

In conclusion, a structured questionnaire was used to evaluate

pregnant teenagers' prepregnancy and pregnancy alcohol consumption amounts and patterns and to obtain information about related variables. Subjects who drank were more likely to indicate no religious preference and little religious participation, which is consistent with the Jessors' problem behavior theory. Subjects who drank were binge drinkers, rather than moderate or heavy daily consumers of alcohol, which is consistent with national surveys of adolescent alcohol use. Reported consumption of alcohol decreased during pregnancy, reflecting knowledge of risks to the fetus, concern for fetal welfare, an overreaction to educational messages stressing abstinence during pregnancy, or expressions of social desirability. Findings related to reasons for drinking and for abstaining, and setting of drinking were also consistent with the Jessors' problem behavior theory (refer to Chapter II). Alcohol consumption of peers and boyfriends/husbands was related to subjects' drinker status, but parental drinking was not. This is consistent with problem behavior theory and Huba, Wingar, and Bentler's findings related to the DOMAIN model.

Use of a structured questionnaire and a trained interviewer provided specific data about alcohol consumption before and during pregnancy. The format used was concise, easily understood, and easily administered in the clinical setting. Validation of drinker status criteria is necessary but requires data about infant outcomes which could not be collected in this study.

Support of significant others and wantedness of the pregnancy were related, indicating the importance of significant others' involvement (particularly mothers and boyfriends/husbands) in prenatal care,

education, and intervention when needed. Since mothers and boyfriends/husbands were key sources of information, it is essential that they possess accurate information about fetal growth and development. This may include the development of materials and media messages specifically directed to them.

Present educational efforts at the RMH Clinic seem to be effective in communicating information and facilitating desired behavior changes. In these educational efforts, it is important to emphasize the importance of minimal levels of drinking during pregnancy without using scare tactics which may backfire, inducing guilt and hindering accurate communication.

Pregnant adolescents appear to be concerned about their babies' welfare and responsive to educational messages after pregnancy is confirmed. Ideally, alcohol consumption should be decreased or eliminated before becoming pregnant. However, given the unplanned nature of most of these pregnancies, desired behavior changes may not occur until the end of the first trimester or into the second trimester of pregnancy, exposing the fetus to risk during critical periods of development. It is unlikely that this situation will change given the nature of teenage sexual relations and contraceptive use. Prevention of unplanned teenage pregnancy is therefore vital in order to reduce this risk to fetal development. Research related to the effects of binge drinking on fetal development is needed and would be facilitated by routine structured evaluation of alcohol consumption and related infant outcomes.

Based on this study, it is recommended that:

1. a structured questionnaire be routinely administered in the RMH

clinic and other clinics during the initial prenatal visit, a third trimester visit, and following delivery; in order to obtain data related to volume of alcohol consumption and binge drinking before and during pregnancy.

2. alcohol consumption scores be compared with infant outcomes in order to validate screening criteria for patients at risk.
3. clinic personnel at Roanoke Memorial Hospitals High-Risk Ob/Gyn Clinic continue their educational programs for pregnant teenagers.
4. clinic personnel at the RMH High-Risk Ob/Gyn Clinic continue to support the involvement of patients' parents and boyfriends/husbands in treatment and educational programs.
5. special educational materials and media messages be developed and disseminated in order to provide patients' mothers and boyfriends/husbands with accurate information.
6. methods for follow-up of heavy drinkers be developed in order to facilitate the provision of needed support, services, and intervention for mother, father, and child during pregnancy and following delivery.
7. programs which prevent teenage pregnancy be developed and supported in order to reduce risk of Fetal Alcohol Effects in early pregnancy.
8. health education programs, particularly those dealing with parenting education, include material about toxic drug effects, including alcohol, on fetal development.

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VII. APPENDICES

APPENDIX A

Computational Details--Volume Scores

COMPUTATION OF VOLUME SCORE

(Based on Cahalan et al.'s (1969:213-14) Volume Variability Index)

The average daily aggregate volume of alcohol consumed by each subject was calculated in the following way:

1. Frequency of consumption: converted "reported frequency into the number of times in an average month the person drank ..., using the following values:"

Three or more times a day	90
Two times a day	60
Once a day	30
Three or four times a week	15
One of two times a week	7
Two or three times a month	2.5
About once a month	1
Less than once a month	0.8
Never	0

2. Conversion of quantity-variability data to an estimate of the average number of drinks consumed per occasion: each drinking level (5 or more drinks per occasion, 3-4 drinks per occasion, 1-2 drinks per occasion) was assigned a fraction of the respondent's total drinking occasions for the beverage, as follows:

Nearly every time	0.80
More than half the time	0.60
Less than half the time	0.40
Once in awhile	0.20
Never	0.00

(If subject indicated consumption of 5 or more drinks per occasion more than half the time, responses related to remaining 2 levels were disregarded. If subject indicated consumption of 3-4 drinks per occasion more than half the time, her response to the item relating to the remaining level was disregarded.)

"The fraction is then multiplied by the average number of drinks at that level (6.0 for 5 or more, 3.5 for 3 or 4, 1.5 for 1 or 2), and the products are summed."

3. "The average drinks per occasion were multiplied by the number of occasions per month, and divided by 30 to yield an average daily volume for each beverage."

EXAMPLE:

Respondent drinks 3-4 times a week; 5 or more drinks once in awhile; 3-4 drinks less than half the time, and 1-2 drinks nearly every time.

Computation of Volume Score, continued

1. No. of drinking occasions/month: 15
2. No. drinks/occasion: $(6 \times .20) + (3.5 \times .40) + (1.5 \times .80) = 3.8$
3. $\frac{3.8 \times 15}{30} = 1.9$ drinks/day

APPENDIX B

Computational Details--Binge Scores

COMPUTATION OF THE BINGE DRINKING SCORE

(Based on Little et al.'s (1977:559) QP variability index)

- A -- never had 5 or more drinks on an occasion before or during pregnancy
- B -- had 5 or more drinks per occasion at least once before or during pregnancy, but less than once a month
- C -- had 5 or more drinks on an occasion once a month, but less than once a week before or during pregnancy
- D -- had 5 or more drinks on one or more occasions at least once a week before or during pregnancy

Pregnant Teen -- The binge drinking score for each subject was computed as follows:

1. Weight frequency items as for volume score (#1).
2. Weight responses to the question "What part of the time (did) do you have 5 or more drinks of wine, beer, and/or liquor? as follows:

Nearly every time	1.00
More than half the time	.80
Less than half the time	.40
Once in awhile	.30
Never	0.00
3. Multiply frequency weight times the "5 or more" weight. This yielded the average number of times each month that the respondent had 5 or more drinks.
4. Classified responses as follows:

A = 0
B = 0 - 0.99
C = 1.0 - 4.2
D = 4.2+

APPENDIX C

Research Triangle Institute Classification
of Adolescent Drinking

<u>Drinking Level (DL)</u> *	<u>Definition</u>
Abstainers	Don't drink or drink less than once a year.
Infrequent Drinkers	Drink once a month at most, and drink small amounts per typical drinking occasion.
Light Drinkers	Drink once a month at most, and drink medium amounts per typical drinking occasion <u>or</u> drink no more than 3-4 times a month and drink small amounts per typical drinking occasion.
Moderate Drinkers	Drink at least once a week and small amounts per typical drinking occasion <u>or</u> 3-4 times a month and medium amounts per typical drinking occasion <u>or</u> no more than once a month and large amounts per typical drinking occasion.
Moderate/Heavy Drinkers	Drink at least once a week and medium amounts per typical drinking occasion <u>or</u> 3-4 times a month and large amounts per typical drinking occasion.
Heavy Drinkers	Drink at least once a week and large amounts per typical drinking occasion.

* The designations small, medium, and large amounts used in these definitions are defined, respectively, as one drink or less (.68 ounces or less of absolute alcohol), 2-4 drinks (.68 - 2.70 ounces of absolute alcohol), and 5-12 drinks (more than 2.70 ounces of absolute alcohol).

APPENDIX D

Roanoke Memorial Hospital Clinic Contract

ROANOKE MEMORIAL HOSPITALS

O. B. CLINIC

Special Rate Agreement

Patient _____

Address _____

Anticipated Delivery Date _____

I hereby agree to pay \$1,200.00 to Roanoke Memorial Hospitals which will cover the following:

1. Patient's Prenatal Care
2. Patient's Hospital Care--Normal Delivery and Normal Stay.
3. Baby's Hospital Care--Normal Stay.

This \$1,200.00 will be paid as follows:

1. \$600.00 at least five days before the admission for delivery.
2. \$600.00 balance paid in six equal monthly payments following discharge.

I certify that I am not covered by any third party payor or insurance.

I understand that should there be a complicated delivery and/or a longer-than-normal stay by the patient or baby, then the \$600.00 preadmission deposit will be applied toward the total bill, which will then be discounted by 20%, and the balance must be paid in twelve equal monthly installments following discharge.

I will be responsible for all prenatal charges should I not be delivered at Roanoke Memorial Hospital.

O. B. Clinic
Special Rate Agreement

I will be responsible for the total charge for all prenatal and hospital care should I not follow the terms of the agreement.

I acknowledge that this agreement has been fully explained to me and I understand and accept all responsibilities included herein. I understand that this agreement is void should I later qualify for free care.

_____ Patient	Signed--Responsible Party	Relationship
_____ Witness	_____ Address--Responsible Party	_____
_____ Date	_____ Employer--Responsible Party	_____

TO BE COMPLETED BY FINANCIAL COUNSELOR

Status of Account at Discharge: (Check one)

- Patient is not eligible for special rate since \$600.00 deposit not paid before admission.
- Patient is eligible for \$1,200.00 all-inclusive rate if account is paid as required.
- Patient is eligible for 20% discount if account is paid as required.

Signed

Date

APPENDIX E
Questionnaire

Directions

Read these directions silently while the interviewer reads them aloud. Read each question carefully and answer it as well as you can. Please read the special instructions for each section carefully. Write your answer in the blank provided or circle the answer, depending on the question. If you have any questions about what a word or question means, please ask the interviewer. Your answers will be kept confidential. The information collected from these questionnaires will be presented only in summary form, without names.

Thank you for helping us in this study.

	<u>Frequency</u>	<u>Percent</u>
1. In what month were you born?		
2. In what year were you born?		
	<u>Age</u>	
	14	6 7.3
	15	8 9.8
	16	23 28.0
	17	21 25.6
	18	15 18.3
	19	8 9.8
3. What is your racial/ethnic background?		
	Black	35 44.3
	White	44 55.7
	Missing	3 --
4. Are you attending school now?		
	Yes	31 37.8
	No	51 62.2
5. What is the highest grade in school that you have completed?		
1. 8th or below	18	22.2
2. 9th	15	18.5
3. 10th	17	21.0
4. 11th	19	23.5
5. 12th	12	14.8
6. Missing	1	--
6. At the present time, are you:		
1. married, and living in your own place	8	9.8
2. married and living with the baby's father's parents	6	7.3
3. married and living with your parents	8	9.8
4. married and living with other relatives or friends	1	1.2
5. single and living outside your parents' home	3	3.7
6. single and living with your parents	49	59.8
7. single and living with the baby's father	4	4.9
8. single and living with other relatives or friends	3	3.7

	<u>Frequency</u>	<u>Percent</u>
7. Is this your first pregnancy? (Include pregnancies which did not result in a live birth.)		
Yes	65	80.2
No	16	19.6
Missing	1	--
If no, how many times have you been pregnant? _____		
How many miscarriages or stillbirths have you had? _____		
How many children do you have? _____		
8. When is your baby due? (Please give the earliest date if the doctors have given you more than one.)		
Patient is in _____		
month of pregnancy		
4th	7	9.1
5th	10	13.0
6th	9	11.7
7th	11	14.3
8th	18	23.4
9th	22	28.6
Missing	5	--
9. What is your religious preference?		
1. Catholic	4	5.3
2. Protestant (Please write denomination:)	28	37.3
3. Jewish	0	0
4. Other (Please write: _____)	15	20.0
5. Don't have a religious preference	28	37.3
6. Missing	7	--
10. What is your <u>father's</u> religious preference?		
1. Catholic	5	6.9
2. Protestant (Please write denomination:)	26	36.1
3. Jewish	0	0
4. Other (Please write: _____)	6	8.4
5. Doesn't have a religious preference	24	33.3
6. Doesn't apply--I don't have a father	11	15.3
7. Missing	10	--
11. What is your <u>mother's</u> religious preference?		
1. Catholic	6	8.5
2. Protestant (Please write denomination:)	30	42.2
3. Jewish	0	0
4. Other (Please write: _____)	10	14.1

	<u>Frequency</u>	<u>Percent</u>
11. Mother's religious preference (con't.)		
5. Doesn't have a religious preference	23	32.4
6. Doesn't apply--I don't have a mother	2	2.8
7. Missing	11	--
12. How often have you attended religious services during the last year?		
1. once a week or more	13	16.7
2. about once or twice a month	16	20.5
3. a few times during the year	19	24.4
4. only rarely	9	11.5
5. never	21	26.9
6. Missing	4	--

Questions 13 and 14 ask how much and how often you drank coffee, tea, or soft drinks containing caffeine before you became pregnant. Soft drinks which contain caffeine include Coke, Pepsi, Tab, Dr. Pepper, Mr. Pibb, Sunkist Orange, and Mountain Dew. One drink of coffee or tea equals one 6-ounce cup. One drink of soft drink is equal to 12 ounces (one can).

13. During the month <u>before</u> you were pregnant, how often did you drink tea, coffee, and/or soft drinks?		
1. not at all	1	1.2
2. less than once a <u>month</u>	1	1.2
3. about once a <u>month</u>	1	1.2
4. 2 or 3 times a <u>month</u>	8	9.8
5. 1 or 2 times a <u>week</u>	13	15.9
6. 3 or 4 times a <u>week</u>	19	23.2
7. daily	39	47.6
14. During the month <u>before</u> you were pregnant, about how many drinks of coffee, tea, and/or soft drinks did you have each day?		
1. none	1	1.2
2. less than one	13	15.9
3. 1-2	39	47.6
4. 3-4	20	24.4
5. 5 or more	9	11.0

Questions 15 and 16 ask how much and how often you drink coffee, tea, and/or soft drinks which contain caffeine during your pregnancy.

	<u>Frequency</u>	<u>Percent</u>
15. <u>Since you've been pregnant</u> , how often do you drink tea, coffee, and/or soft drinks?		
1. not at all	5	6.1
2. less than once a <u>month</u>	2	2.4
3. about once a <u>month</u>	5	6.1
4. 2 or 3 times a <u>month</u>	12	14.6
5. 1 or 2 times a <u>week</u>	21	25.6
6. 3 or 4 times a <u>week</u>	12	14.6
7. daily	25	30.5
16. <u>Since you've been pregnant</u> , about how many drinks of coffee, tea, and/or soft drinks do you have each day?		
1. none	7	8.5
2. less than one	22	26.8
3. 1-2	35	42.7
4. 3-4	13	15.9
5. 5 or more	5	6.1
Questions 17 to 20 ask about your use of cigarettes before and during your pregnancy.		
17. Have you ever smoked cigarettes?		
Yes	60	73.2
No	22	26.8
18. Do you smoke now?		
Yes	31	37.8
No	51	62.2
19. About how many cigarettes do you now smoke each day?		<u>number</u>
1. None	49	59.8
2. Less than 1 pack per day	22	26.8
3. A pack or more	11	13.4
20. Has this number changed during your pregnancy?		
1. increased	4	5.3
2. stayed the same	16	21.1
3. decreased	14	18.4
4. doesn't apply	42	55.3
5. Missing	6	--

Frequency Percent

Questions 21 to 25 ask how much and how often you drank beer, wine, liquor, and/or mixed drinks before you were pregnant. In questions 22 to 25, one drink means:

- 5 ounces of wine (a small glass)
- 12 ounces of beer (one can)
- 1½ ounces of 80 proof liquor (a shot of liquor)
- 1 mixed drink

(If you have any questions, see the display.)

21. During the month before you were pregnant, how often did you usually drink beer, wine, and/or liquor?

1. never	41	50.6
2. less than once a <u>month</u>	11	13.6
3. about once a <u>month</u>	12	14.8
4. 2 or 3 times a <u>month</u>	3	3.7
5. 1 or 2 times a <u>week</u>	11	13.6
6. 3 or 4 times a <u>week</u>	1	1.2
7. once a day	1	1.2
8. twice a day	0	0
9. three or more times a day	1	1.2
10. Missing	1	--

22. When you drank, how often did you have 5 or more drinks of wine, beer, and/or liquor?

1. nearly every time	0	0
2. more than half the time	5	6.2
3. less than half the time	3	3.7
4. once in awhile	16	19.8
5. never	57	70.4
6. Missing	1	--

23. When you drank, how often did you have 3-4 drinks of wine, beer, and/or liquor?

1. nearly every time	3	3.7
2. more than half the time	5	6.2
3. less than half the time	4	4.9
4. once in awhile	17	21.0
5. never	52	64.2
6. Missing	1	--

Frequency Percent

24. When you drank, how often did you have 1-2 drinks of wine, beer, and/or liquor?

1. nearly every time	7	8.6
2. more than half the time	9	11.1
3. less than half the time	5	6.2
4. once in awhile	17	21.0
5. never	43	53.1
6. Missing	1	--

25. During the month before you were pregnant, on how many occasions did you have 5 or more drinks? _____

number

No. of Occasions

1	2	2.8
2	5	6.9
3	2	2.8
4	2	2.8
5	2	2.8
8	1	1.4
None	58	80.6
Missing	10	--

Questions 26 to 30 ask how much and how often you drink beer, wine, liquor, and/or mixed drinks during your pregnancy. In questions 27 to 30, one drink means:

- 5 ounces of wine (a small glass)
- 12 ounces of beer (one can)
- 1½ ounces of 80 proof liquor (a shot of liquor)
- 1 mixed drink

26. Since you've been pregnant, how often do you usually drink beer, wine, and/or liquor?

1. never	66	80.5
2. less than once a <u>month</u>	8	9.8
3. about once a <u>month</u>	5	6.1
4. 2 or 3 times a <u>month</u>	1	1.2
5. 1 or 2 times a <u>week</u>	1	1.2
6. 3 or 4 times a <u>week</u>	0	0
7. once a day	0	0
8. 2 times a day	0	0
9. 3 or more times a day	1	1.2

	<u>Frequency</u>	<u>Percent</u>
27. When you drink, how often do you have 5 or more drinks of wine, beer, and/or liquor?		
1. nearly every time	0	0
2. more than half the time	0	0
3. less than half the time	1	1.2
4. once in awhile	6	7.3
5. never	75	91.5
28. When you drink, how often do you have 3-4 drinks of wine, beer, and/or liquor?		
1. nearly every time	1	1.2
2. more than half the time	0	0
3. less than half the time	1	1.2
4. once in awhile	7	8.5
5. never	73	89.0
29. When you drink, how often do you have 1-2 drinks of wine, beer, and/or liquor?		
1. nearly every time	4	4.9
2. more than half the time	1	1.2
3. less than half the time	2	2.5
4. once in awhile	12	14.8
5. never	62	76.5
6. Missing	1	--
30. Since you've been pregnant, on how many occasions have you had 5 or more drinks?		
	<u>number</u>	
	No. of Occasions	
	1	3
	2	1
	3	1
	5	1
	None	74
	Missing	2
		3.7
		1.3
		1.3
		1.3
		92.5
		--

Questions 31 to 46 ask about your drinking before you became pregnant, during your pregnancy, or both.

31. When you drink, what do you usually drink?

1. beer	23	29.8
2. wine	2	2.6
3. mixed drinks	12	15.6
4. straight liquor	0	0

	<u>Frequency</u>	<u>Percent</u>
31. When you drink, what do you usually drink? (con't.)		
5. substitute for alcohol	0	0
6. I don't drink	38	49.3
7. combination of answers	2	2.6
8. Missing	5	--
32. When you drink alcoholic beverages, do you ever switch from beer to wine, wine to beer, or some other combination, on the same drinking occasion?		
Yes	11	13.9
No, or don't drink	68	86.1
Missing	3	--

Listed below are some reasons other people have given for drinking beer, wine, or liquor. Please circle all of the reasons which are true for you for any of these beverages.

	<u>Affirmative Response</u>	
	<u>Frequency</u>	<u>Percent</u>
33. Feeling under pressure, tense	17	20.7
34. Feeling lonely	5	6.1
35. Feeling mad	12	14.6
36. Feeling sad	7	8.5
37. Makes me less shy	5	6.1
38. Is something people do on special occasions	26	31.7
39. Makes get-togethers more fun	14	17.1
40. It's part of becoming an adult.	3	3.7
41. So I won't be different from the rest of my friends	4	4.9
42. Helps to get my mind off my problems	14	17.1
43. It's a good way to celebrate.	23	28.0
44. It's one way of being part of the group.	6	7.3
45. I like the taste.	16	19.5

	<u>Frequency</u>	<u>Percent</u>
46. I like getting high.	16	19.5
47. Have you decreased or stopped drinking since you got pregnant?		
1. Yes. If so, why? (open-ended question)		
Concern for fetal welfare	35	55.6
Distaste, sickness	3	4.8
Other reasons	7	11.1
2. No	18	28.6
3. Missing	19	--
48. How often does your <u>father</u> (or the person who served as your father in raising you) take a drink of beer, wine, and/or liquor?		
1. 5-7 days a <u>week</u>	12	15.4
2. once or twice a <u>week</u>	17	21.8
3. 1-3 times a <u>month</u>	4	5.1
4. less than once a <u>month</u>	1	1.3
5. rarely drinks or <u>doesn't</u> drink	29	37.2
6. doesn't apply--I don't have a father or father substitute	15	19.2
7. Missing	4	--
49. How often does your <u>father</u> (or the person who served as your father in raising you) have 5 or more drinks of beer, wine, and/or liquor?		
1. nearly every time	8	10.1
2. more than half the time	5	6.3
3. less than half the time	7	8.9
4. once in awhile	18	22.8
5. never	27	34.2
6. doesn't apply--I don't have a father or father substitute	14	17.7
7. Missing	3	--
50. How often does your <u>mother</u> (or the person who served as your mother in raising you) take a drink of beer, wine, and/or liquor?		
1. 5-7 days a <u>week</u>	2	2.6
2. about once a <u>week</u>	5	6.5
3. 1-3 times a <u>month</u>	6	7.8
4. less than once a <u>month</u>	5	6.5
5. rarely drinks or <u>doesn't</u> drink	56	72.7
6. doesn't apply--I don't have a mother or mother substitute	3	3.9
7. Missing	5	--

	<u>Frequency</u>	<u>Percent</u>
51. How often does your <u>mother</u> (or the person who served as your mother in raising you) have 5 or more drinks of beer, wine, and/or liquor?		
1. nearly every time	1	1.2
2. more than half the time	2	2.5
3. less than half the time	6	7.5
4. once in awhile	9	11.2
5. never	59	73.7
6. doesn't apply--I don't have a mother or mother substitute	3	3.7
7. Missing	2	--
52. About how many of your close friends drink more than once a week?		
1. none of them	22	27.5
2. 1 or 2	26	32.5
3. several	18	22.5
4. most	12	15.0
5. all	0	0
6. don't know	1	1.2
7. no close friends	1	1.2
8. Missing	2	--
53. Does your boyfriend (or husband) drink more than once a month?		
1. Yes, frequency not specified	7	8.6
2. Yes, 5-7 times/week	3	3.7
3. Yes, 3-4 times/week	3	3.7
4. Yes, 1-2 times/week or 4 times/month or on weekends	14	17.3
5. Yes, 1-3 times/month	8	9.9
6. No	32	39.5
7. don't know	1	1.2
8. Missing	1	--
How often do you drink beer, wine, or liquor in each of the following settings, places, or occasions? (For each setting or occasion, mark X on one of the blank lines.)		
54. At friends' parties or activities when others are drinking and adults are not present		
1. never or not in this setting	44	56.4
2. once in awhile	22	28.2
3. less than half the time	3	3.8
4. more than half the time	4	5.1
5. nearly every time	5	6.4

^aFour subjects did not respond to items 54-61.

	<u>Frequency</u>	<u>Percent</u>
55. At home on special occasions such as birthdays, Thanksgiving, etc.		
1. never or not in this setting	48	61.6
2. once in awhile	25	32.1
3. less than half the time	1	1.3
4. more than half the time	2	2.6
5. nearly every time	2	2.6
56. Driving around or sitting in a car with friends		
1. never or not in this setting	54	69.2
2. once in awhile	14	17.9
3. less than half the time	4	5.1
4. more than half the time	4	5.1
5. nearly every time	2	2.6
57. At dinner at home with my family		
1. never or not in this setting	72	92.3
2. once in awhile	5	6.1
3. less than half the time	0	0
4. more than half the time	1	1.3
5. nearly every time	0	0
58. With my boyfriend or husband at a party or other social activity		
1. never or not in this setting	39	50.0
2. once in awhile	24	30.8
3. less than half the time	3	3.8
4. more than half the time	6	7.7
5. nearly every time	6	7.7
59. At friends' parties or activities when others are drinking and adults are present		
1. never or not in this setting	47	60.3
2. once in awhile	21	26.9
3. less than half the time	2	2.6
4. more than half the time	3	3.8
5. nearly every time	5	6.4
60. With my boyfriend or husband on a date or at home		
1. never or not in this setting	47	60.3
2. once in awhile	20	25.6
3. less than half the time	2	2.6

	<u>Frequency</u>	<u>Percent</u>
60. With my boyfriend or husband on a date or at home (con't.)		
4. more than half the time	7	9.0
5. nearly every time	2	2.6
61. Alone, with no one else around		
1. never or not in this setting	65	83.4
2. once in awhile	8	10.3
3. less than half the time	3	3.8
4. more than half the time	2	2.6
5. nearly every time	0	0
62. Was this pregnancy planned?		
1. Yes	22	27.5
2. No	58	72.5
3. Missing	2	--
63. Listed below are some statements other women made when they found out they were pregnant. Please circle the <u>one</u> statement which comes closest to what you felt like when you found out you were pregnant.		
1. was thrilled about the whole idea	15	18.5
2. was very happy	5	6.2
3. was glad I was having a baby	4	4.9
4. thought it would be nice to have a baby	5	6.2
5. didn't care much one way or another	0	0
6. had very mixed feelings	9	11.1
7. felt it was God's will	7	8.6
8. didn't want a child, but felt stuck with it	0	0
9. was very depressed	1	1.2
10. felt it was a disaster	1	1.2
11. was scared	14	17.3
12. thought about getting an abortion	4	4.9
13. felt like killing myself	1	1.2
14. Gave more than one answer	15	18.5
15. Missing	1	--
64. Do you feel the same way now about being pregnant?		
1. Yes	42	51.9
2. No	39	48.1
3. Missing	1	--

	<u>Frequency</u>	<u>Percent</u>
65. If no, which <u>one</u> statement listed below comes closest to your feelings now?		
1. thrilled about the whole idea	22	27.5
2. am very happy about it	11	13.7
3. am glad I'm having a baby	7	8.7
4. think it will be nice to have a baby	10	12.5
5. don't care much one way or another	0	0
6. have very mixed feelings	2	2.5
7. feel it is God's will	8	10.0
8. don't really want a child, but feel stuck with it	0	0
9. am very depressed	0	0
10. feel it is a disaster	0	0
11. am scared	6	7.5
12. wish I could have gotten an abortion	2	2.5
13. Gave more than one answer	12	15.0
14. Missing	2	--
66. Since you've become pregnant, has your relationship with your close girlfriends changed? If so, how has it changed?		
1. gotten closer	18	22.5
2. no change	33	41.2
3. not as close	12	15.0
4. don't have any close girlfriends	17	21.2
5. Missing	2	--
67. How much time do you <u>now</u> spend with your close girlfriends, as compared with before your pregnancy?		
1. more time	6	7.5
2. same amount of time	32	40.0
3. less time	23	28.7
4. don't have any close girlfriends	19	23.7
5. Missing	2	--
68. Do any of your close friends have babies?		
1. Yes	47	58.7
2. No	26	32.5
3. Doesn't apply	7	8.7
4. Missing	2	--

	<u>Frequency</u>	<u>Percent</u>
69. Since you've gotten pregnant, has your relationship with the baby's father changed? If it has, how has it changed?		
1. gotten closer	41	54.7
2. no change	19	25.3
3. not as close	15	20.0
4. Missing	7	--
70. How often do you see the baby's father?		
1. don't see him at all	9	11.4
2. see him occasionally	7	8.9
3. see him steadily	17	21.6
4. planning to marry him	25	31.7
5. we're married	21	26.6
6. Missing	3	--
71. Is the baby's father providing financial support for you during your pregnancy?		
1. Yes	49	63.6
2. No	28	36.4
3. Missing	5	--
72. Is the baby's father employed?		
1. Yes	43	55.1
2. No	28	35.9
3. Don't know	5	6.4
4. Laid off	2	2.6
5. Missing	4	--
73. Since you've been pregnant, has your relationship with your mother changed? If it has, how has it changed?		
1. gotten closer	43	53.7
2. no change	26	32.5
3. not as close	9	11.2
4. doesn't apply	2	2.5
5. Missing	2	--
74. Since you've been pregnant, has your relationship with your father changed? If it has, how has it changed?		
1. gotten closer	22	27.5
2. no change	28	35.0
3. not as close	11	13.7
4. doesn't apply	19	23.7
5. Missing	2	--

	<u>Frequency</u>	<u>Percent</u>
75. Money-wise, how are your parents helping you during your pregnancy?		
1. They aren't. I'm entirely on my own.	23	29.5
2. They're providing for some of my financial needs.	32	41.0
3. They're taking care of all of my financial needs.	23	29.5
4. Missing	4	--
76. Could any of the following drinks harm your baby if you drank them while pregnant? (Circle any or all that apply.)		
1. beer	1	1.2
2. wine	0	0
3. liquor	7	8.6
4. mixed drinks	3	3.7
5. a combination of 1-4	12	14.7
6. 1, 2, 3, and 4	58	71.6
7. Missing	1	--
77. If you circled any of the beverages listed above, how many drinks a day could a pregnant woman drink without harming her baby?		
1. 0	49	64.5
2. 1-2	23	30.3
3. 3-4	1	1.3
4. 5 or more	2	2.6
5. Multiple answer	1	1.3
6. Missing	6	--
78. How many drinks could a pregnant woman drink on a special occasion (like a birthday or a holiday) without harming her baby?		
1. 0	36	46.8
2. 1-2	39	50.6
3. 3-4	2	2.6
4. 5 or more	0	0
5. Missing	5	--
79. If you think that drinking alcoholic beverages while you're pregnant could harm your baby, what is the most likely way that you first learned this information?		
	<u>Affirmative Responses</u>	
	<u>Frequency</u>	<u>Percent</u>
1. T.V.	22	26.8
2. radio	5	6.1
3. newspaper	10	12.2
4. pamphlets or books	31	37.8

	<u>Affirmative Responses</u>	
	<u>Frequency</u>	<u>Percent</u>
79. Source of information about risk levels (con't.)		
5. magazines	12	14.6
6. my mother	34	41.5
7. my girlfriends	11	13.4
8. my boyfriend	12	14.6
9. school, in health class	31	37.8
10. school, other class	11	13.4
11. this clinic (Roanoke Memorial Hospital High-Risk Maternity Clinic)	24	29.3
12. other clinic	4	4.9
13. doctor's office	13	15.9
14. other (please explain _____)	4	4.9

APPENDIX F

Pretest Questionnaire

INSTRUCTIONS

Some of the items on this questionnaire will be used in a study of pregnant teenagers. Your assistance in testing these questions is appreciated.

Please answer all questions as accurately as you can. If you have any questions, please ask! Your answers will be kept confidential. The information collected from these questionnaires will be presented only in summary form. Thank you again for your participation.

Please place your answers on the opscan answer sheet, with the exception of your age, sex, academic level, and your answer to #17.

Please write your age in the blank at the right.

_____ Age

Please indicate your sex and academic level by checking the appropriate blanks:

_____ Male _____ Female
 _____ Freshman
 _____ Sophomore
 _____ Junior
 _____ Senior
 _____ Other

The following questions ask about your use of beer in the past 6 months.

1. During the last 6 months, how often did you drink beer?
 1. never
 2. less than once a month
 3. about once a month
 4. 2 or 3 times a month
 5. once or twice a week
 6. 3 or 4 times a week
 7. about once a day
 8. two times a day
 9. three or more times a day

2. When you drank beer, what part of the time did you have at least 5 cans (12 oz.)?
 1. nearly every time
 2. more than half the time
 3. less than half the time
 4. once in awhile
 5. never

3. What part of the time did you have 3 or 4 cans (12 oz.)?
 1. nearly every time
 2. more than half the time
 3. less than half the time
 4. once in awhile
 5. never

4. What part of the time did you have only 1 or 2 cans (12 oz.)?
 1. nearly every time
 2. more than half the time
 3. less than half the time
 4. once in awhile
 5. never

The next questions ask about your use of wine in the past 6 months.

5. During the last 6 months, how often did you drink wine?
 1. never
 2. less than once a month
 3. about once a month
 4. 2 or 3 times a month
 5. once or twice a week
 6. 3 or 4 times a week
 7. about once a day
 8. two times a day
 9. three or more times a day

6. When you drank wine, what part of the time did you have at least 5 glasses (5 oz.)?
 1. nearly every time
 2. more than half the time
 3. less than half the time
 4. once in awhile
 5. never

7. What part of the time did you have 3 or 4 glasses (5 oz.)?
 1. nearly every time
 2. more than half the time
 3. less than half the time
 4. once in awhile
 5. never

8. What part of the time did you have only 1 or 2 glasses (5 oz.)?
 1. nearly every time
 2. more than half the time
 3. less than half the time
 4. once in awhile
 5. never

The following questions ask about your use of liquor in the past 6 months. (Liquor includes whiskey, vodka, gin, mixed drinks, etc.)

9. During the last 6 months, how often did you drink liquor?
 1. never
 2. less than once a month
 3. about once a month
 4. 2 or 3 times a month
 5. once or twice a week
 6. 3 or 4 times a week
 7. about once a day
 8. two times a day
 9. three or more times a day

10. When you drank liquor, what part of the time did you have at least 5 drinks (1 to 1-1/2 oz. liquor per drink)?
1. nearly every time
 2. more than half the time
 3. less than half the time
 4. once in awhile
 5. never
11. What part of the time did you have 3 or 4 drinks?
1. nearly every time
 2. more than half the time
 3. less than half the time
 4. once in awhile
 5. never
12. What part of the time did you have only 1 or 2 drinks?
1. nearly every time
 2. more than half the time
 3. less than half the time
 4. once in awhile
 5. never

These final questions ask about your overall use of alcohol.

13. During the past 6 months, how often did you drink beer, wine, and/or liquor?
1. never
 2. less than once a month
 3. about once a month
 4. 2 or 3 times a month
 5. 1 or 2 times a week
 6. 3 or 4 times a week
 7. once a day
 8. 2 times a day
 9. 3 or more times a day
14. During the past 6 months, what part of the time did you have 5 or more drinks of wine, beer, and/or liquor?
1. nearly every time
 2. more than half the time
 3. less than half the time
 4. once in awhile
 5. never
15. What part of the time did you have 3 or 4 drinks of wine, beer, and/or liquor?
1. nearly every time
 2. more than half the time
 3. less than half the time
 4. once in awhile
 5. never

16. What part of the time did you have 1 or 2 drinks of wine, beer, and/or liquor?
1. nearly every time
 2. more than half the time
 3. less than half the time
 4. once in awhile
 5. never
17. In the last 6 months, on how many occasions did you have 5 or more drinks? (Write the number in the blank at the right) _____
18. When you drink, what do you usually drink?
1. beer
 2. wine
 3. mixed drinks--like rum and Coke, orange juice and vodka, etc.
 4. liquor--like bourbon, gin, whiskey, vodka, etc.
 5. substitute for alcohol--paint thinner, sterno, cough medicine, mouthwash, hair tonic, etc.
19. When you drink alcoholic beverages, do you ever switch from beer to wine, wine to beer, or some other combination, on the same drinking occasion?
1. most of the time
 2. more than half of the time
 3. less than half of the time
 4. once in awhile
 5. never

Thank you for answering these questions. Please put your opscan answer sheet inside the questionnaire.

APPENDIX G

Draft Questionnaire

HEALTH EDUCATION AREA
College of Education, HPER Division
Virginia Polytechnic Institute and State University

INFORMED CONSENT

I, _____, do hereby voluntarily agree and consent to participate in a screening program conducted by the personnel of the Health Education Area of the College of Education of Virginia Polytechnic Institute and State University.

Title of the Study: Pregnant Teenagers' Use of Caffeine, Alcohol, and Nicotine Before and During Pregnancy

The purposes of this study include:

1. gathering information about pregnant teenagers' use of caffeine, alcohol, and nicotine before and during pregnancy.
2. exploring the social context of pregnant teenagers' use of alcohol.

I voluntarily to participate in this program. I understand that my participation will include answering questions about:

1. my use of caffeine, alcohol, and nicotine before and during pregnancy,
2. my parents' and friends' use of alcohol
3. my feelings about being pregnant
4. my parents' and friends' responses to my being pregnant

I understand that my responses to this questionnaire will be anonymous.

The primary benefit which may be expected from my participation in this study is helping the clinic improve present and future prenatal care of myself and other patients.

I have read the above statements and have had the opportunity to ask questions. I understand that the researchers will, at any time, answer my questions concerning the procedures of this research. I understand that my involvement in this study is voluntary and that I may withdraw as a participant at any time.

Date _____ Time _____ a.m./p.m.

Patient Signature _____

Witness _____

Project Director: Sandra S. Shortt Telephone: 1-382-8073
 HPER Human Subjects Chairman: Dr. Richard Stratton Telephone: 1-961-7230
 Chairman, Institutional Review Board for Research Involving Human Subjects:
 Dr. Milton Stomler Telephone: 1-961-8283

INSTRUCTIONS

Please read each question to yourself as the interviewer reads it aloud. If you have any questions about what a word or question means, please ask! After the question is read, please write your answer in the space provided, or circle the answer, depending on the question.

Your answers will be kept confidential. The information collected from these questionnaires will be presented only in summary form, without names. Answer the questions as honestly and as accurately as you can. Thank you for helping us.

TODAY'S DATE _____

1. In what month were you born? _____
2. In what year were you born? _____
3. What is your racial/ethnic background?
 1. Black, not of Hispanic origin
 2. White, not of Hispanic origin
 3. Hispanic
 4. American Indian or Alaskan Native
 5. Asian or Pacific Islander
 6. Other, please explain _____
4. Are you presently attending school?
 1. yes
 2. no
5. What is the highest grade in school that you have completed?
 1. 8th or below
 2. 9th
 3. 10th
 4. 11th
 5. 12th
6. At the present time, are you:
 1. married, and living in your own place
 2. married and living with the baby's father's parents
 3. married and living with your parents
 4. married and living with other relatives or friends
 5. single and living outside your parents' home
 6. single and living with your parents
 7. single and living with the baby's father
 8. single and living with other relatives or friends
7. Is this your first pregnancy?
 1. yes
 2. no. If no, how many times have you been pregnant? _____
 (include pregnancies which did not result in a live birth)
 How many miscarriages or stillbirths have you had? _____
 How many children do you have? _____
8. When is your baby due? _____

9. What is your religious preference?
1. Catholic
 2. Protestant (Please write denomination: _____)
 3. Jewish
 4. Other (Please write: _____)
 5. Don't have a religious preference
10. What is your father's religious preference?
1. Catholic
 2. Protestant (Please write denomination: _____)
 3. Jewish
 4. Other (Please write: _____)
 5. Doesn't have a religious preference
 6. Doesn't apply
11. What is your mother's religious preference?
1. Catholic
 2. Protestant (Please write denomination: _____)
 3. Jewish
 4. Other (Please write: _____)
 5. Doesn't have a religious preference
 6. Doesn't apply
12. How often have you attended religious services during the last year?
1. once a week or more
 2. about once or twice a month
 3. a few times during the year
 4. only rarely
 5. never

13. During the month before you were pregnant, how often did you drink tea, coffee, and/or cola drinks?
1. not at all
 2. less than once a month
 3. about once a month
 4. 2 or 3 times a month
 5. 1 or 2 times a week
 6. 3 or 4 times a week
 7. daily
14. During the month before you were pregnant, about how many drinks of coffee, tea, and/or cola did you have each day?
1. none
 2. less than one
 3. 1-2
 4. 3-4
 5. 5 or more
15. Since you've been pregnant, how often do you drink tea, coffee, and/or cola drinks?
1. not at all
 2. less than once a month
 3. about once a month
 4. 2 or 3 times a month
 5. 1 or 2 times a week
 6. 3 or 4 times a week
 7. daily
16. Since you've been pregnant, about how many drinks of coffee, tea, and/or cola do you have each day?
1. none
 2. less than one
 3. 1-2
 4. 3-4
 5. 5 or more

17. Have you ever smoked cigarettes?
1. yes
 2. no
18. Do you smoke now?
1. yes
 2. no
19. About how many cigarettes do you smoke each day? _____
number
20. Has this figure changed during your pregnancy?
1. increased
 2. stayed the same
 3. decreased
 4. doesn't apply

Questions 21-25 ask you about your alcohol consumption before you became pregnant.

21. During the month before you were pregnant, how often did you usually drink beer, wine, and/or liquor?
1. never
 2. less than once a month
 3. about once a month
 4. 2 or 3 times a month
 5. 1 or 2 times a week
 6. 3 or 4 times a week
 7. once a day
 8. 2 times a day
 9. 3 or more times a day
22. When you drank, what part of the time did you have 5 or more drinks of wine, beer, and/or liquor?
1. nearly every time
 2. more than half the time
 3. less than half the time
 4. once in awhile
 5. never

28. When you drink, what part of the time do you have 3-4 drinks of wine, beer, and/or liquor?
1. nearly every time
 2. more than half the time
 3. less than half the time
 4. once in awhile
 5. never
29. When you drink, what part of the time do you have 1-2 drinks of wine, beer, and/or liquor?
1. nearly every time
 2. more than half the time
 3. less than half the time
 4. once in awhile
 5. never
30. Since you've been pregnant, on how many occasions have you had 5 or more drinks?
-

number

Questions 31 and 32 ask about your drinking patterns in general.

31. When you drink, what do you usually drink?
1. beer
 2. wine
 3. mixed drinks--like rum and Coke, orange juice and vodka, etc.
 4. liquor--like bourbon, gin, whiskey, vodka, etc.
 5. substitute for alcohol--paint thinner, sterno, cough medicine, mouthwash, hair tonic, etc.
32. When you drink alcoholic beverages, do you ever switch from beer to wine, wine to beer, or some other combination, on the same drinking occasion?
1. nearly every time
 2. more than half the time
 3. less than half the time
 4. once in awhile
 5. never

33 to 44. Listed below are some reasons other people have given for drinking beer, wine, or liquor. Please circle the reasons which are true for you for any of these beverages.

- 33. Feeling under pressure, tense
- 34. Feeling lonely
- 35. Feeling mad
- 36. Feeling sad
- 37. Makes me less shy
- 38. Is something people do on special occasions
- 39. Makes get-togethers more fun
- 40. It's part of becoming an adult
- 41. So I won't be different from the rest of the kids
- 42. Helps to get my mind off my problems
- 43. It's a good way to celebrate
- 44. It's one way of being part of the group

45. How often does your father (or the person who served as your father in raising you) take a drink of beer, wine, and/or liquor?

- 1. 5-7 days a week
- 2. once or twice a week
- 3. 1-3 times a month
- 4. less than once a month
- 5. rarely drinks or doesn't drink
- 6. doesn't apply

46. How often does your father (or the person who served as your father in raising you) have 5 or more drinks of beer, wine, and/or liquor?

- 1. nearly every time
- 2. more than half the time
- 3. less than half the time
- 4. once in awhile
- 5. never
- 6. doesn't apply

47. How often does your mother (or the person who served as your mother in raising you) take a drink of beer, wine, and/or liquor?
1. 5-7 days a week
 2. about once a week
 3. 1-3 times a month
 4. less than once a month
 5. rarely drinks or doesn't drink
 6. doesn't apply
48. How often does your mother (or the person who served as your mother in raising you) have 5 or more drinks of beer, wine, and/or liquor?
1. nearly every time
 2. more than half the time
 3. less than half the time
 4. once in awhile
 5. never
 6. doesn't apply
49. About how many of your close friends drink more than once a week?
1. none of them
 2. 1 or 2
 3. several
 4. most
 5. all
50. Does your boyfriend (or husband) drink more than once a month?
1. yes
 2. no
 3. doesn't apply

How often do you drink beer, wine, or liquor in each of the following settings, places, or occasions? (For each number, mark X on one of the blank lines.)

	Never or not in this <u>setting</u>	Once in awhile	Less than half the the time	More than half the the time	Nearly every time
51. At friends' parties or activities when others are drinking and adults are not present	_____	_____	_____	_____	_____
52. At home on special occasions such as birthdays, Thanksgiving, etc.	_____	_____	_____	_____	_____
53. Driving around or sitting in a car with friends	_____	_____	_____	_____	_____
54. At dinner at home with my family	_____	_____	_____	_____	_____
55. With my boyfriend or husband at a party or other social activity	_____	_____	_____	_____	_____
56. At friends' parties or activities when others are drinking and adults are present	_____	_____	_____	_____	_____
57. With my boyfriend or husband on a date or at home	_____	_____	_____	_____	_____
58. Alone, with no one else around	_____	_____	_____	_____	_____

59. Was this pregnancy planned?

1. yes
2. no

60. Listed below are some statements other women made when they found out they were pregnant. Please circle the number next to the one statement which comes closest to what you felt like when you found out you were pregnant.

1. thrilled about the whole idea
2. was very happy
3. glad to learn I was having a baby
4. it would be nice to have a baby
5. didn't care much one way or another
6. had very mixed feelings
7. felt it was God's will
8. didn't want a child, but felt stuck with it
9. was very depressed
10. felt it was a disaster
11. thought about getting an abortion
12. felt like killing myself

61. Do you feel the same way now about being pregnant?

1. yes
2. no

62. If no, which one statement listed below comes closest to your feelings now?

1. thrilled about the whole idea
2. I'm very happy about it
3. glad that I'm having a baby
4. it will be nice to have a baby
5. don't care much one way or another
6. have very mixed feelings
7. feel it is God's will
8. don't really want a child, but feel stuck with it
9. I'm very depressed
10. feel it is a disaster
11. wish I could have gotten an abortion
12. feel like killing myself

63. Since you've gotten pregnant, has your relationship with your close girlfriends changed? If so, how has it changed?
1. gotten more supportive
 2. no change
 3. not as supportive
 4. don't have any close girlfriends
64. How much time do you now spend with your close girlfriends, as compared with before your pregnancy?
1. more time
 2. same amount of time
 3. less time
 4. don't have any close girlfriends
65. Do any of your close friends have babies?
1. yes
 2. no
 3. doesn't apply
66. Since you've gotten pregnant, has your relationship with the baby's father changed? If it has, how has it changed?
1. gotten more supportive
 2. no change
 3. not as supportive
67. How often do you see the baby's father?
1. don't see him at all
 2. see him occasionally
 3. see him steadily
 4. planning to marry him
 5. we're married
68. Is the baby's father providing financial assistance for the baby?
1. yes
 2. no
69. Is the baby's father employed?
1. yes
 2. no
 3. don't know

70. Since you've been pregnant, has your relationship with your mother changed? If it has, how has it changed?
1. gotten more supportive
 2. no change
 3. not as supportive
 4. doesn't apply
71. Since you've been pregnant, has your relationship with your father changed? If it has, how has it changed?
1. gotten more supportive
 2. no change
 3. not as close
 4. doesn't apply
72. Money-wise, how are your parents helping you during your pregnancy?
1. They aren't. I'm entirely on my own.
 2. They're giving me money, but I've got my own place.
 3. They're providing for some of my financial needs while I'm living at home.
 4. They're taking care of all of my financial needs.

APPENDIX H

Human Subjects Documents

HEALTH EDUCATION AREA
College of Education, HPER Division
Virginia Polytechnic Institute and State University

INFORMED CONSENT

I, _____, do hereby voluntarily agree and consent to participate in a screening program conducted by the personnel of the Health Education Area of the College of Education of Virginia Polytechnic Institute and State University.

Title of the Study: Pregnant Teenagers' Use of Caffeine, Alcohol, and Nicotine Before and During Pregnancy

The purposes of this study include:

1. gathering information about pregnant teenagers' use of caffeine, alcohol, and nicotine before and during pregnancy.
2. exploring the social context of pregnant teenagers' use of alcohol.

I agree to participate in this project of my own free will. I understand that my participation will include answering questions about:

1. my use of caffeine, alcohol, and nicotine before and during pregnancy
2. my parents' and friends' use of alcohol
3. my feelings about being pregnant
4. my parents' and friends' responses to my being pregnant

The primary benefit which may be expected from my participation in this project is helping the clinic improve present and future prenatal care of myself and other patients.

I have fully read and understand the above statements, and I have had the opportunity to ask questions. I understand that:

- the researchers will, at any time, answer my questions concerning this project.
- my involvement in this project is voluntary--of my own free will.
- my name will not be connected with my responses to the questionnaire in any way.
- no other clinic personnel will see my responses, except in summary form, with no names or identifying numbers.
- I am free at any time to stop filling out the questionnaire or to leave any items blank.
- I may withdraw as a participant at any time, and that if I withdraw, it will in no way hinder or affect my treatment at the clinic.

Date _____ Time _____ a.m./p.m.

Patient Signature _____

Witness _____

Project Director: Sandra S. Shortt Telephone: 1-382-8073
 HPER Human Subjects Chairman: Dr. Don Sebolt Telephone: 1-961-5104
 Associate Dean and Chairman, Institutional Review Board for Research
 Involving Human Subjects: Dr. Milton Stomblor Telephone: 961-5283

CERTIFICATE
OF
APPROVAL FOR RESEARCH
INVOLVING HUMAN SUBJECTS

Division of HPER

The Human Subjects Committee of the Division of Health,
Physical Education and Recreation has reviewed the research
proposal of SANDY SHORT

entitled _____

ALCOHOL CONSUMPTION OF

PREGNANT ADOLESCENTS

on _____ . The members have
judged the subjects participating in the related experiment
(not to be at risk) (~~to be at risk~~) as a result of their parti-
cipation.

(If a risk proposal) Procedures have been adopted to
control the risks at acceptably low levels. The potential
scientific benefits justify the level of risk to be imposed.

Members of Divisional Human
Subjects Committee:

Chairman

Roanoke Memorial Hospitals

Belleview at Jefferson Street
Roanoke, Virginia 24013

December 10, 1981

Mrs. Sandy Shortt
295 Lucas Street
Christiansburg, Virginia 24073

Dear Mrs. Shortt:

I am pleased to inform you that, after review of your proposed Doctoral thesis on the use of alcohol during pregnancy in adolescent patients, permission is hereby granted for you to proceed with the study and coordinate closely with Sue Mundy, R.N., High Risk Coordinator, and Robert W. Irvin, Jr., M.D., Director of Obstetrical Education, all aspects of this study and pertinent information relating to the commencement and termination of same.

Dr. Irvin has been most supportive of your study request in hopes that significant findings at the conclusion of the study may perhaps be useful as part of the overall teaching program in Obstetrical Education at Roanoke Memorial Hospitals.

I have emphasized to Mrs. Bruce and Mrs. Mundy the importance of retaining in the patient chart the signed authorization of the patient to participate in this study, and I recognize that all study responses will be identified by number and not by patient name.

Good luck on your study progress and we share with you our optimism that study findings will be significant both for you and in terms of possible value in the future to our teaching programs.

Sincerely,

W. Andrew Dickinson, Jr.
Vice President

cc: Robert W. Irvin, Jr., M.D.
Director of Obstetrical Education

Mrs. Irene Bruce, R.N.
Head Nurse - Ob/Gyn Clinics

Mrs. Sue Mundy, R.N.
High Risk Nurse Coordinator

APPENDIX I

Letter to Prospective Subjects

Roanoke Memorial Hospitals

Bellevue at Jefferson Street
Roanoke, Virginia 24033

Dear Expectant Mothers:

Mrs. Sandra Shortt will be asking you to fill out a questionnaire which asks about your use of caffeine, alcohol, and tobacco before and during your pregnancy, your parents' and friends' use of alcohol, your feelings about your pregnancy, and your parents' and friends' support during your pregnancy.

It is anticipated this will result in improved care. Your voluntary participation is encouraged, as it is a part of our overall program. However, if you do not wish to give this information, it will in no way hinder or alter your care here.

Sincerely,

Robert W. Irvin, Jr., M.D.
Director of OB/GYN Education
Roanoke Memorial Hospitals

jjs

APPENDIX J

Interview Protocol

Recruiting Subjects

The interviewer will receive a list of teenage patients expected in the clinic that day from the Nurse-Supervisor of the High Risk Clinic. After completion of the prospective subject's laboratory tests, the interviewer will say "Hello" and introduce herself:

Hello, I'm Sandy Shortt, a graduate student at Virginia Tech. I'd like to know if you'd be willing to help me with a project that we're doing here at the clinic. Here's a letter from Dr. Irvin which explains a little about the study. (Hand the letter to the patient, wait for a reply. If not interested, thank her for her time and go on. If the person is interested, continue as given below.) Would you be willing to fill out the questionnaire? (If the patient hesitates, give the following information.) Your name would not be on the questionnaire anywhere, and no one here at the clinic except me will see your paper. There are about 75 questions, and it has taken other patients 15 to 30 minutes to complete. You'd fill it out instead of going to class. (If yes, take her to the study room to administer questionnaire. If no, thank her for her time and go on. Throughout, watch patient's face. Stop if there's a question or a confused look.)

Administering Questionnaire

First, you need to sign this informed consent form, which says that you are doing this of your own free will. It also explains the purpose of the study and your rights as a participant. Let's go through this together. You read it silently while I read it aloud. (Go through the form, reading paragraph by paragraph. In the last section, it is important that the subject understands that 1) her name will not be associated with her responses in any way; 2) the consent form will be retained in the coordinator's desk in order to prevent duplication in recruiting; 3) her responses will not be seen by anyone else; and 4) she may skip any items, stop at any time, or ask that her questionnaire be destroyed following completion.) Is everything clear? If so, then sign the form and I'll sign as witness. (Remove the form from the questionnaire after it is signed.)

(After form is signed:) Before you begin filling out the questionnaire, I'd like to go over some general instructions and then point out some things about the questionnaire. After that, you'll be free to complete it at your own speed. (Read directions, then add, "Be sure to ask questions if you

have them.")

On pages 4 to 6, you'll find questions about how often you drank or drink alcoholic beverages and how much you drank or drink. One drink means a 12-ounce can of beer, this much wine (point to wine glass, juice glass, and marked wine bottles), this much liquor (point to shot glass), or the amount of liquor in a regular mixed drink-- not a double or triple.

Beginning with question 31 on page 6, questions 31 to 46 refer to your drinking before you got pregnant, during your pregnancy, or both.

When you've finished, please leave the questionnaire here and go back to the waiting room. Thank you very much for your help. I'll check back in in a few minutes to see if you have any questions.

APPENDIX K

Subject Information

Subject Information

Case No.	Drinker Status	PPVOL	PVOL	PPBINGE	PBINGE	No. of Binge Occasions		Age	Marital Status	Race
						Prepregnancy	Pregnancy			
84	J	0	0	0	0	0	0	18	2	1
81	J	0	0	0	0	0	0	19	1	2
79	J	0	0	0	0	0	0	17	2	2
78	J	0	0	0	0	0	0	18	2	1
76	J	0	0	0	0	0	0	0	1	2
74	J	0	0	0	0	0	0	18	1	2
71	J	0	0	0	0	0	0	16	2	2
70	J	0	0	0	0	0	0	16	2	2
68	J	0	0	0	0	0	0	16	9	1
67	J	0	0	0	0	0	0	16	1	2
66	J	0	0	0	0	0	0	15	1	2
65	J	0	0	0	0	0	0	15	2	2
64	J	0	0	0	0	0	0	18	1	2
62	J	0	0	0	0	0	0	17	2	2
61	J	0	0	0	0	0	0	16	1	2
58	J	0	0	0	0	0	0	16	1	2
55	J	0	0	0	0	0	0	18	1	2
54	J	0	0	0	0	0	0	15	1	2
52	J	0	0	0	0	0	0	17	1	2
50	J	0	0	0	0	0	0	17	1	2
49	J	0	0	0	0	0	0	18	1	2
48	J	0	0	0	0	0	0	15	2	2
47	J	0	0	0	0	0	0	17	1	2
45	J	0	0	0	0	0	0	16	2	1
44	J	0	0	0	0	0	0	16	1	2
38	J	0	0	0	0	0	0	17	1	2
36	J	0	0	0	0	0	0	19	1	2
35	J	0	0	0	0	0	0	16	2	2
34	J	0	0	0	0	0	0	16	1	2
33	J	0	0	0	0	0	0	17	2	2
30	J	0	0	0	0	0	0	17	1	2
29	J	0	0	0	0	0	0	17	1	2
27	J	0	0	0	0	0	0	18	2	1
26	J	0	0	0	0	0	0	17	1	2
25	J	0	0	0	0	0	0	17	2	2
20	J	0	0	0	0	0	0	14	1	2
18	J	0	0	0	0	0	0	18	2	1
17	J	0	0	0	0	0	0	15	1	2
12	J	0	0	0	0	0	0	18	2	1
9	J	0	0	0	0	0	0	15	2	1
8	J	0	0	0	0	0	0	16	1	2
2	J	0	0	0	0	0	0	16	1	2
1	J	0	0	0	0	0	0	16	1	2
83	4	1	0	0	0	0	0	19	1	2
82	4	3	0	24	0	0	0	17	1	2
80	4	7	0	30	0	0	0	15	2	2
77	4	1	0	0	0	0	0	16	2	2
72	4	6	9	24	24	0	0	14	2	1
59	4	37	2	0	0	0	0	18	1	2
57	4	3	0	0	0	0	0	19	2	1
53	4	1	0	0	0	0	0	19	2	2
46	4	1	0	0	0	0	0	17	1	2
43	4	8	0	0	0	0	0	16	2	1
39	4	1	1	0	0	0	0	18	2	2
32	4	11	5	40	0	0	0	16	2	1
31	4	4	4	0	0	0	0	16	2	1
22	4	3	2	0	0	0	0	15	1	2
21	4	9	0	30	0	0	0	17	2	1
16	4	1	0	0	0	0	0	16	2	1

Appendix K, continued

Subject Information, continued

Case No.	Drinker Status	PPVOL	PVOL	PPBINGE	PBINGE	No. of Binge Occasions		Age	Marital Status	Race
						Prepregnancy	Pregnancy			
7	4	28	4	0	0	0	0	17	9	2
6	4	1	0	0	0	0	0	17	2	1
75	5	0	0	0	0	0	1	19	1	2
73	5	93	17	210	40	2	3	17	1	2
69	5	1080	0	7200	0	8	0	17	2	1
63	5	84	6	560	24	0	2	16	9	2
60	5	10	0	30	0	2	0	19	2	1
56	5	51	0	210	0	0	1	18	2	1
51	5	117	0	260	0	0	0	17	2	1
42	5	21	0	75	0	2	0	18	2	2
41	5	105	0	280	0	3	0	18	2	1
40	5	125	0	450	0	4	0	14	2	2
37	5	10	0	30	0	2	0	16	2	2
28	5	84	0	560	0	0	0	19	1	2
24	5	33	1	75	0	3	0	14	2	2
23	5	51	44	210	210	5	5	16	2	1
19	5	8	1	30	0	1	0	14	2	2
15	5	18	0	75	0	4	1	16	1	2
14	5	84	0	560	0	5	0	16	2	1
13	5	89	4	210	0	0	0	17	2	2
11	5	0	0	0	0	2	0	14	2	2
5	5	310	0	900	0	0	0	18	2	2
4	5	4	0	0	0	1	0	17	2	2

Appendix K

LEGEND

Drinker Status	(3) Abstainer (4) Infrequent Drinker (5) Drinker
Race	(1) Black (2) White
Marital Status	(1) Married (2) Single
PPVOL	Prepregnancy Volume Score
PVOL	Pregnancy Volume Score
PPBINGE	Prepregnancy Binge Score
PBINGE	Pregnancy Binge Score

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ALCOHOL CONSUMPTION, WANTEDNESS, AND SUPPORT
OF PREGNANT ADOLESCENTS

by

Sandra Small Shortt

(ABSTRACT)

The purpose of this study was to explore relationships between pregnant teens' use of alcohol before and during pregnancy and several personal and social variables, including the wantedness of the pregnancy, support of the pregnancy by significant others, pregnant teens' reasons for drinking, the context of their drinking, and the use of alcohol by significant others. This information is needed to plan and evaluate effective prenatal education and intervention programs related to the use of alcohol during pregnancy. Such programs are important in light of increasing numbers of pregnant teens, the number of female adolescent drinkers, and findings about the effects of moderate and binge drinking on fetal development.

Subjects consisted of 14 to 19 year old patients of the High-Risk Ob/Gyn Clinic at Roanoke Memorial Hospitals. These patients were predominantly low income urban and suburban teens, with some referrals from areas outside Roanoke City and County. Subjects responded anonymously to a written questionnaire.

One-fourth of the subjects were classified as drinkers according to their binge drinking before and during pregnancy. Higher percentages of drinkers than abstainers were white, married, had been pregnant at least once in the past, and intended to become pregnant. Proportionately

fewer drinkers indicated religious preferences or attended church services on a regular basis. Drinkers were more likely to smoke and smoked more than abstainers. Personal effects reasons for drinking, consumption in settings where adults were not present, and weekly consumption by peers and boyfriends/husbands were reported by significantly higher percentages of drinkers than nondrinkers. Wantedness and support of significant others were significantly related. Knowledge of the potential harm that all types of alcoholic beverages pose to fetal development was reported by over 70% of the sample. Key sources of knowledge about alcohol and fetal risk were subjects' mothers, pamphlets or books, school health class, the RMH Clinic and television. Boyfriends were also a key source of information for drinkers. Implications of these findings for clinical and educational practice are discussed.