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SUBSTANCE USE DURING PREGNANCY: A SOCIAL COMPETENCY INTERVENTION WITH ADOLESCENTS

by

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Abstract

Substance use during pregnancy is a harmful occurrence that leads to dire consequences for the affected individual as well as society as a whole. Previous research has only considered interventions targeted at already pregnant women. Of these interventions, the multimodal approaches (including the social-competency program) appear to be the most effective, and consequently the social competency program is the intervention of choice in the current study. The current study presented problem-solving materials (the social-competency program) to adolescents (boys and girls) in hopes of changing their intentions, attitudes and knowledge about substance use in general, and during pregnancy in particular, before their behaviours become set. Sixty-nine grade eight students (31 girls and 38 boys) participated in one of three conditions. The intervention group (n = 23) participated in sessions regarding the social competency program, in addition to information about the dangers of substance use in general and during pregnancy. The information-only group (n = 19) participated only in sessions regarding the substance use information, and the control group (n = 27) participated only in data collection. The current findings supported previous research (i.e., Caplan et al., 1992) in that the primary success of the intervention and information-only groups was that they did not increase in their intentions to use (alcohol generally and alcohol and cigarettes during pregnancy) in comparison to the students in the control group. The more important finding was that the social-competency program increased the problem solving skills of the girls in the intervention group, in comparison to the girls in both the information-only and control groups. This increase in problem solving skills was the main goal of the current study, as adequate problem solving skills are what will allow the participants to deal with the pressure to use substances. .

Consequently, the increase in problem solving skills shows that the social-competency program used in this study may be effective as a method of increasing adolescent girls' problem solving skills regarding substance use during pregnancy.

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Acknowledgments

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Substance Use During Pregnancy: A Social Competency Program with Adolescents

> *Until 1973 the scientific community believed the placenta filtered out many of the toxins consumed by a pregnant woman. It is now known that the placenta performs more like a sponge than filter, and the infant whose mother has been abusing drugs or alcohol during pregnancy is placed in considerable jeopardy by her behavior (Butler, Saunders, & Saunders, 1993, p. 158).*

Substance use by pregnant women is an extremely harmful act, and yet, it has been estimated to occur at a rate of 1 in 3 pregnant women (Gomby & Shiono, 1991). The danger to the fetus can be considerable when the use of alcohol, cigarettes or drugs occurs during pregnancy. Attempts at intervention for this problem have been considered and are continuing to be investigated; however, as yet, no program has been very successful in stopping substance use during pregnancy (Hawk, 1994; Andrews & Patterson, 1995; Lex, 1994; Nelson-Zlupko, Kauffman, & Dore, 1995).

There are several demographic characterisitics (as described below) that indicate those individuals who are at risk for using or abusing substances during pregnancy (Higgins, Clough, Frank, & Wallerstedt, 1995). The individuals with these characteristics comprise a target group that has been subjected to several types of interventions, including educational campaigns, social policy, pharmacotherapy, and social competency programs. The purpose of this thesis was to determine the effects of a social competency intervention program on potential substance users prior to pregnancy.

The use of substances during pregnancy appears to occur among individuals from all socioeconomic groups. However, like most conditions, there is a group of

women with specific characteristics who are considered to be at high risk for using substances during pregnancy. The demographic characteristics of pregnant substance users are similar to those of substance users in general. These women tend to be of low socioeconomic and educational standing, and often they have lower IQ scores. Furthermore, they tend to be unmarried, in their early twenties, unemployed, and the mothers of previous children (Higgins et al., 1995). Finally, pregnant substance users are often involved in legal issues such as drug possession, child neglect, theft, and prostitution (Haller, Knisly, Dawson, & Schnoll, 1993). In addition to their current negative life circumstances, these women also report a history of maladaptive family relations, such as high rates of familial breakdown, physical abuse, sexual abuse, verbal or emotional abuse, and parental substance use (Haller et al., 1993; Marcenko & Spence, 1995).

The type of substance use during pregnancy that has received the most attention from researchers and practitioners is the use of alcohol; likely because alcohol use is so prevalent in Western society. Women who continue to consume alcohol during pregnancy are not committing an illegal offense. Therefore, these women may be less afraid than women using illegal substances to admit their consumption to health care professionals. Consequently, use of alcohol during pregnancy may be easier to address than use of illicit substances during pregnancy.

Alcohol consumption during pregnancy often results in Fetal Alcohol Syndrome (FAS) or Fetal Alcohol Effects (FAE). These two syndromes occur on a continuum from the most devastating effects of FAS to simple learning disorders evident in slight FAE cases. FAS children exhibit severe physical, mental, and emotional abnormalities in development. They are difficult and irritable infants who may have severe physical deformities such as heart defects, curvature of the spine, speech and language difficulties, social difficulties, and Attention Deficit Hyperactivity Disorder (Iosub, Fuchs,

Bingol & Gromisch, 1981; Niccols, 1994). Moreover, FAS is currently recognized as the primary contributor to Down's syndrome, even more so than it is to cerebral palsy or spina bifida (Luke, 1990; Streissguth, Aase, Clarren, Randels, LaDue, & Smith, 1991; Williams, Howard, & McLaughlin, 1991). Findings regarding the prevalence of FAS include estimates ranging from 1 to 3 FAS infants in 1000 live births, and about 3 to 4 Times as many FAE infants (Abel, 1995; Larsson, Bohlin, & Tunnel, 1995; Niccols, 1994; Williams et al. 1991). Moreover, in women who have previously given birth to an FAS infant, the rate increases to an astounding 771 FAS infants in 1000 live births (Abel, 1988).

There is no argument that chronic alcoholics are at the greatest risk for bearing an FAS infant; however, the precise amount of alcohol intake necessary for FAS to occur is currently unknown. Several researchers have concluded that the intake of alcohol necessary throughout pregnancy to produce FAS is approximately five to ten drinks per day (Abel, 1983; Brent & Beckman, 1990; Streissguth & Little, 1985). Nevertheless, others have found that women who consumed as little as one or two drinks a day gave birth to infants having low birth weights, and cognitive, behavioural, and physical deficits (Little, 1977; Niccols, 1994). Eisenberg, Murkoff, and Hathaway (1996) suggest that possible damage to the fetus, due to alcohol or other drug use, is minimal during the six to eight days after conception and greatest from implantation (day nine) through the second and third trimesters. Phillipson (1988) clearly states that the safest principle for pregnant women is to abstain completely until the safe level of alcohol intake during pregnancy is known.

Cigarette smoking during pregnancy is also a legally acceptable use of a substance. Cigarette smoking is not clearly associated with birth defects as evident as FAS, and consequently, the act of smoking during pregnancy is even more accepted than the consumption of alcohol. Nevertheless, researchers have stated that the effect

of smoking during pregnancy is significant, including increased risk of miscarriage, reduction in birth weight, and premature delivery (Higgins et al.. 1995; Miller & Hyatt, 1992). Fortunately, decreasing the use of any substance during pregnancy increases the potential of a healthy infant (Aaronson & McNee, 1989).

Illicit drug use is probably the most complicated form of substance use during pregnancy. This complication comes with the pregnant woman's knowledge that the drugs she is using are illegal. Consequently, women who abuse illicit substances may be more likely to avoid seeking prenatal care, an essential aspect of prenatal health (Miller & Hyatt, 1992). In fact, Marcenko and Spence (1995) indicated that women who abused illicit substances waited an average of one month longer before they sought treatment than did non-abusing women. The results of illicit drug use during pregnancy are many, and can be extremely devastating depending on the type of drug. For example, obstetrical complications due to cocaine use fall into two major categories: infection and vasospasm or contraction of the blood vessels (potentially leading to reduced oxygen levels to the fetus). Other obstetrical complications include such things as higher fetal wastage and higher perinatal morbidity. Specifically, possible outcomes include premature membrane rupture, toxemia, abruptio placenta, stillbirth, premature labor, premature delivery, and intrauterine growth retardation (Miller & Hyatt).

The negative outcomes of illicit substance use during pregnancy also include neonatal complications (Miller & Hyatt, 1992). The first of three major neonatal complications are congenital anomalies. Possibly as a result of an obstetrical vasospastic etiology, infants exposed to illicit drugs in utero have higher rates of genitourinary, central nervous system, cardiovascular, and gastrointestinal anomalies. The second category of neonatal difficulties includes the following medical complications: Neonatal Abstinence Syndrome, Sudden Infant Death Syndrome, and neurobehavioural effects. NAS is often present in substance exposed infants, resulting

in such symptoms as irritability, tremors, tachypnea, vomiting, convulsions, and hypertoxicity. The prevalence of SIDS is also increased by four to five percent in infants of heroin users and by 15 percent in infants of cocaine users. In addition, neurobehavioural effects may be evident in the higher levels of irritability and inconsolability found in substance exposed infants, the reduction in environmental interaction, and decreased motor reflex response. Furthermore, exposed infants are at approximately 40 times greater risk than normal infants for developmental difficulties in the domains of social interaction, coordination, balance, and cognition (Miller & Hyatt, 1992).

After considering the possible outcomes of prenatal substance use, no matter which substance is used, interventions regarding prenatal substance use appear to be imperative. However, the most appropriate intervention strategy currently remains unknown. The lack of information regarding the most effective methods of intervention is due to the continued need for research in this area (Finkelstein, 1993; Yaffe, Jensen, & Howard, 1995). Fortunately, research can be guided by indications from a few previous interventions that suggest basic effects of interventions regarding substance use during pregnancy.

A framework for drug and alcohol interventions is provided by the Medical Services Branch of Health Canada (1993). This framework provides a paradigm for evaluating the levels at which early interventions promote change. The framework outlines three targets for early intervention: person, community, and substances. The framework also outlines four strategies for intervention: influence, control, skills development, and community design. Ideally, an intervention would be designed to have influence at the level of each target in combination with each strategy. However, because meeting all of the possible influence points is an immense task, an intervention

should be evaluated based upon the proportion of target/strategy combinations it targets.

Interventions with pregnant women who use drugs and alcohol are often in the form of primary prevention. Primary prevention is the use of an intervention before a problem exists in order to prevent that problem from emerging. For example, to help decrease prenatal substance use, adolescents may be provided with information about the dangers of substance use during pregnancy before they reach childbearing age. The most common primary prevention programs are public educational campaigns. These campaigns are evident in all areas of society, including the use of labeling on cigarette packages and liquor bottles. In addition, there are billboards, television commercials, and magazine ads that inform women of the dangers of substance use during pregnancy. These informational campaigns are initiated with the best intentions; however, their rate of effectiveness appears to be relatively low. For example, *Healthy Mothers, Healthy Babies* (1986) report that informational campaigns seem to increase women's awareness and knowledge about FAS but do not seem to decrease their risky substance use behaviour. Weiner and Morse (1989) also support this position on educational campaigns, stating that "women who are at the greatest risk of having children with alcohol related birth defects have been observed to be the least responsive to broad informational campaigns" (p. 388). The observation of Weiner and Morse is substantiated by the demographic features of prenatal substance users. These women tend to be of lower IQ leading to less registration of the information about substance use. In addition, the pregnant substance users tend to be of lower socioeconomic status, and consequently, may not have the opportunity for exposure to the messages presented through media advertising (e.g. magazines, etc.) (Higgins, Clough, Frank, & Wallerstedt, 1995). Finally, the most serious factor limiting the effectiveness of broad informational campaigns is an optimistic bias (Alcock, Carment,

& Sadava, 1994). That is, most individuals are biased to believe that whatever the negative scenario, it is unlikely to happen to them. Therefore, reduction of risky behaviours may be seen as necessary for others, but not for oneself.

Windsor et al. (1985) and O'Connor et al. (1992) evaluated the effects of informational programs on cigarette smoking. In both interventions, an experimental group that received population-specific information and counselling was compared to a usual care group that received only generic information. The experimental group had higher cessation and/or reduced smoking rates in both studies. Windsor et al. (1985) concluded that informational campaigns are much more effective if they provide information directly applicable to the particular population being targeted. For example, in Windsor et al.'s (1985) study, pregnant women quit smoking at higher rates when using *A Pregnant Woman's Self-Help Guide to Quit Smoking* than they did when exposed to the generic material provided by the American Lung Association. Similarly, O'Connor et al. (1992) found that the women in their study quit smoking at higher rates if they were able to make decisions regarding their treatment (such as amount of treatment Time, type of interaction etc.), even if the decision was to receive the usual care. Consequently, it appears as if public educational campaigns may be most effective when they are population specific, and when they allow the recipient to have some control over the intervention.

Although educational campaigns are certainly not the most effective type of intervention for pregnant substance users, they are a viable alternative because they provide moderate results for small costs. Public educational campaigns are also credible based upon their degree of influence in the target/strategy paradigm. Such interventions provide an effect at three levels: community/influence, person/influence, and alcohol and other drugs/control. Community/influence is effected because the educational campaigns attempt to influence the cultural values of a community in order

to make substance use during pregnancy an unacceptable practice. These interventions also attempt to influence the person, in that the campaigns increase an individual's knowledge and hope to increase their abstinence-related attitudes and intentions. Finally, educational campaigns intervene at the level of control of alcohol and other drugs. This level of intervention is accomplished through labeling and packaging that indicates the dangers associated with substance use.

Secondary prevention includes any intervention that helps reduce current levels of potential harm. In this situation, substance use during pregnancy is already occurring, and the intervention is put in place in order to reduce or eliminate the harms associated with drug use. Probably the most controversial intervention considered with pregnant substance users is social control (e.g. mandatory treatment, loss of child custody, incarceration). This method of secondary prevention relies on community control to provide laws, policies, and regulations that punish the substance user. Hawk (1994) states that the use of social control does not rectify the problem of prenatal substance use and, in fact, may exacerbate the problem. The primary negative result of incarceration of substance abusing pregnant women is that when the women are afraid of punishment for their actions, prenatal care is delayed or avoided. If these women do not receive prenatal care, the results are two-fold: the infant is exposed to harmful substances in addition to not receiving appropriate care. Barry (1989) indicates that the facilities in jails and prisons are inadequate for the care of a pregnant woman, and consequently, the prenatal care level would also be inadequate and potentially more harmful to the infant. In addition, Hawk (1994) states that the attainment of substances is often not deterred by prison sentences. Further, Andrews and Patterson (1995) add that most treatment programs offered during incarceration have been developed for men, not women, and especially not pregnant women (see also Lex, 1994; Nelson-Zlupko, Kauffman, & Dore, 1995). Considering all of the negative

consequences associated with incarceration of pregnant substance users, Hawk suggests that in place of indictments and incarcerations, an increase in availability of effective drug and alcohol treatments is necessary.

Another secondary intervention method used with addicted pregnant women is pharmacotherapy. Pharmacotherapy includes the use of products such as disulfiram (Antabuse), naltrexone (a long-acting opioid antagonist) and methadone (an opiate replacement). This type of treatment is also controversial, as the effects of pharmacotherapies on the fetus are not yet known (Yaffe et al., 1995). Methadone treatment has been the pharmacotherapy most studied, and so far, even with the accompanying complications, the outcomes seem promising. Women who were administered methadone received more prenatal care, had fewer obstetrical problems, and gave birth to larger babies with longer gestation periods (Jarvis & Schnoll, 1994). Although there appeared to be healthier outcomes with methadone-administered births than with continued drug usage, the outcomes were still not equivalent to those mothers who did not use substances. The use of methadone in place of opiates, at dosages higher than 20 mg per day, has been linked with difficulties such as moderately severe Neonatal Abstinence Syndrome. However, evidence regarding the effects of methadone treatment on the cognitive functioning of exposed infants is inconclusive (Jarvis & Schnoll, 1994). Jarvis and Schnoll (1994) indicate that although there are problems with the use of methadone, any intervention which decreases opiate use during pregnancy, to any extent, is an intervention which should be employed. These authors indicate that methadone certainly appears to be a viable means of controlling opiate use in pregnant substance users; however, they also suggest that methadone treatment is most effective if used within the context of a strong, healthy social and psychological support network, adequate medical care, and education about nutrition and parenting (i.e. within the context of a multimodal treatment).

Pharmacotherapies influence the target/strategy paradigm at two levels. These therapies alter an individual's intention to use substances by replacing the used substance with one that is theoretically less harmful. Therefore, the composition of the drug is the initial intervention, however, the individual must desire to change their usage habits (intentions) in order for pharmacotherapies to be effective.

The final, and arguably most effective, secondary intervention strategy for use with pregnant substance users is to provide training in social competency (i.e. social problem solving skills) (Caplan, Weissberg, Grober, & Sibo, 1992). This type of intervention incorporates not only education about substance use during pregnancy, but also direct skills training for avoiding substance use and increasing confidence. Several programs following this general model are discussed in the literature. The *Center for Perinatal Addiction* (CPA) and the Perinatal Center for Chemical Dependency are multimodal programs set up to address the drug and alcohol addictions of women who are currently pregnant or have delivered within the last 6 months (Haller et al., 1993). The goals of CPA are to provide obstetrical, medical and pediatric care, psychological assessment, group and family therapy, addictions and vocational counseling, and numerous didactic courses (i.e., women's health care, nutrition, prenatal education, parenting, household management, spirituality, and continued usage). These goals are met through the use of group skills training, on-site support services (i.e. child care), and an interdisciplinary team of care givers (i.e. psychologists, social workers, nurses, child care workers etc.). In Canada a similar format is currently being used in the Pregnancy Outreach Program. The Pregnancy Outreach Program incorporates coalition building, education/awareness, indicated prevention, diagnosis, community services, community services and treatment, in order to decrease the occurrence an/or severity of FAS (Prince George FAS Community Collaborative Network, 1998).

Although more outcome-based research is required in this area, a small number of outcome studies provide evidence that the multimodal approach to substance use is effective with women. Windsor, Lowe, and Perkins (1993) compared a control group that received the usual information pamphlet package with an experimental group that received information in the form of a one-on-one risk counselling session, patient reinforcement methods, and social support methods for smoking cessation. These authors found that the experimental group had smoking cessation rates nearly twice as high as the control group. Moreover, using meta-analytic techniques, Walsh and Redman (1993) found that cognitive behavioural (i.e. using behaviour modication and thought process modification in combination) treatment methods were the only type that showed reduced smoking rates in pregnant women. Similarly, Mayer, Hawkins, and Todd (1990) were able to demonstrate the effectiveness of the multimodal approach for smoking cessation. In that study, the control group received usual care that consisted of an information package about the dangers of smoking during pregnancy. The experimental group, on the other hand, received one-to-one counselling with both risk information and behavioural components. The behavioural component included a self-help manual that the women could work through on their own. The results of the study indicated that the experimental group had a higher quit rate than the control group (11% vs. 3%) during the last month of pregnancy, and the significant difference continued postpartum (7% vs. 0%). Similar results have been found by other authors (i.e. Dunkley, 1997; Lilley & Forster, 1986) supporting Finkelstein (1994) who stated that "comprehensive, coordinated and family-centered approaches to drug and alcohol abuse are more successful than other approaches at both drawing women into care and providing more effective treatment".

Multimodal programs appear in various forms including comprehensive programs such as the ones described above which provide such things as counselling and family

care. This compares to less comprehensive, but effective, programs which include behavioural and other training but do not incorporate family care or other aspects which do not apply to the target population (such as in the current study). However, the key component is the fact that the participant is offered increased knowledge, emotional support, social support, problem-solving skills, or whatever else may be required in order to help avoid using substances. Social competency programs (information combined with problem-solving skills training) fit the agenda of a multimodal program (as defined as above) and as such are influential when considering the target/strategy paradigm. These interventions seem to influence six levels of the paradigm from Health and Welfare Canada, indicating that they are meeting the goal of influencing as many levels of the alcohol or drug use pattern as possible. Social competency programs alter an individual's knowledge and attitudes about substance use during pregnancy. Moreover, these interventions appear to meet the ultimate challenge for treating substance users in that they appear to alter the individual's intention to use by providing necessary skills. Social competency programs also influence drug and alcohol use at the level of the community. The successful women in these programs provide role models for each other, and for others in their own, probably high risk, populations. Once a woman has attained the skills, beliefs, and attitudes necessary to avoid substance use during pregnancy, she can share her knowledge with others. Finally, programs like these influence the community design in that they provide a safe place where treatment is available without incarceration and special needs of the population (e.g., child care) are met. Ideally, as the success of multimodal programs becomes known, more communities will create treatment centers for women in need. One argument against such involved treatment programs is the cost of the program itself. However, when compared with the social costs of caring for substance-exposed infants,

who grow into substance-exposed adults, the cost of multimodal programs becomes insignificant.

Future research regarding effective interventions about the use of substances during pregnancy is extremely desirable, but unfortunately, such research is extremely difficult to conduct. Often, the women who are abusing substances during pregnancy will not agree to prenatal care, so the idea of participating in a research-based treatment program is often out of the question. In addition, ethical concerns with developing interventions are numerous. For example, if an intervention program is expected to reduce substance use, is it ethical to maintain a control group whose infants are continuing to be exposed? Finally, current interventions appear to have neglected the importance of the addictive strength of substances like alcohol, cigarettes, and other drugs. Pharmacotherapies are the only intervention currently discussed which seem to address this issue. The women who use substances during pregnancy are as addicted as they were before pregnancy, and consequently, an effective intervention must seriously consider this addiction in combination with the other important factors like education and skills. In future research, an intervention that may be useful to consider would be a combination of a social competency program with the use of pharmacotherapies. This combination would allow the substance-using women to deal with their addictions while they learned the skills and attitudes necessary to overcome them. Another method of intervening effectively would be to have adolescents who are not yet pregnant complete a prenatal substance use social competency program. In this way, the expected benefits of a social competency program could be combined with the expected benefits of a primary versus a secondary prevention effort.

Until recently, with the exception of broad informational campaigns, intervention attempts have traditionally been targeted at only high risk populations. Previous

research suggests that a more beneficial method of providing the necessary skills and information to avoid substance use during pregnancy is to intervene with individuals who are currently at low risk, but potentially may someday join the higher risk category. This "low risk" intervention approach is currently targeted at adolescents who may become "high risk" for various health problems (e.g., substance use, sexual promiscuity) in the future. For example, Lewis, Battistich, and Schaps (1990) suggest that in order for an intervention to be effective it must take place "prior to the emergence of the problem behavior" (p. 43). Other authors have supported this position and further propose that in order to maximize the effectiveness of an intervention the timing must be ideal (Barone, Weissberg, Kasprow, Voyce, Arthur, & Shriver, 1995; Dryfoos, 1990; Weissberg, Caplan & Harwood, 1991).

Early intervention is imperative for effectiveness in regards to substance avoidance during pregnancy. As discussed earlier, the effectiveness of the primary and secondary prevention efforts currently used is limited. This ineffectiveness may be the result of the poor timing that has been guiding these interventions. Currently, attempts to reduce substance use during pregnancy are being focussed on women who are already pregnant. As the literature indicates, in order to be advantageous, the intervention must target individuals who are at risk for substance use behaviours, but do not yet exhibit those behaviours (e.g., those who are not currently pregnant substance users). In the case of using substances during pregnancy, this technique could lead to targeting groups of adolescents who have not yet completely established their sexual and substance use patterns. Ideally, adolescents would receive the information and skills necessary to avoid substance use during pregnancy before they become pregnant. The consequence of such an intervention would be well prepared and informed individuals who would, hopefully, choose the healthiest options for themselves and their future children.

Interventions to help adolescents avoid substance use during pregnancy are not evident in the current literature. However, indications regarding the pattern of such an intervention can be suggested by previous programs that have dealt with risk behaviours in adolescents. Results of these previous interventions indicate a pattern of effectiveness similar to interventions attempted with pregnant substance users. For example, information-only campaigns, the most extensively used method of intervening with adolescents in school, community and health care settings, increase knowledge but do not appear to alter risk-taking behaviour (Baldwin, Whitley, & Baldwin, 1990; Bellingham & Gillies, 1993; Kirby, Barth, Leland, & Fetro, 1991). St. Lawrence et al. (1995) suggest that information alone should not be expected to be a motivating factor in behaviour change, but rather that information must be accompanied by the training of skills necessary to act upon the newly attained knowledge. Adolescent high risk behaviours do not occur in a vacuum. Peer pressure to use substances or have sexual relations occurs within a social context, wherein the individual at risk is expected to use their current problem solving skills to make decisions regarding whether to participate or not. Therefore, adolescents must be provided information surrounding these issues, also, they must be given problem solving skills that are adequate to make calm and informed decisions about their own behaviour.

St. Lawrence et al. (1995) were able to demonstrate the effectiveness of a skills based intervention versus an education-based intervention in reducing adolescents' risk of HIV infection. These authors found that the participants who were introduced to effective problem-solving skills "exhibited improved behavioral and social skills for handling pressures to engage in unprotected sex and for peer education" (p. 226). Moreover, the participants in the education-based intervention did not exhibit these same improvements. As the ineffectiveness of information-only campaigns and the effectiveness of skills training campaigns become clear, the argument for a social

competency type of approach to adolescent issues is gaining support. The social competency type of intervention has, therefore, shown promise as an effective approach with both prenatal substance users and with adolescents. Consequently, the evidence suggests that an effective method of preventing substance use during pregnancy would be to combine a skills-based intervention with intervention at an early age.

Regardless of the type of intervention occurring with adolescents, special concerns exist which must be addressed when considering this population. Adolescents have a number of unique cognitive characteristics which must realized in any target intervention. Elkind (1978, 1988) clearly outlines the cognitive differences that are evident when comparing an adult with an adolescent. Elkind proposed that adolescents believe that their behaviour is constantly being scrutinized by an "imaginary audience". As a result, adolescents are often preoccupied with themselves and are consumed with thoughts of social embarrassment. Therefore, an intervention dealing with adolescents must acknowledge this self-absorption and incorporate it effectively into the program. This incorporation may take the form of using the self-absorption as a method of social pressure to influence the individual towards healthy choices. If an adolescent is convinced that avoiding substance use during pregnancy is socially desirable, and that everyone is watching him/her to see if he/she uses, then the individual may not use substances in order to meet the expectation of their imaginary audience.

The second cognitive difference seen between adolescents and adults is the adolescent belief in the "personal fable" (Elkind, 1978; 1988). That is, according to Elkind, the adolescent sees himself or herself as unique and believes that what is common for everyone else is not so for him or her. This aspect of the personal fable is an important concept when providing primary prevention to adolescents. At this developmental stage, individuals tend to believe that they are not susceptible to illness

and injury like everyone else. This aspect of cognitive development is a compelling argument in favor of social competency programs as opposed to information-only campaigns for adolescents. Adolescents may receive information about the risks that they take, but they may believe that, due to their imagined immortality, they are not vulnerable to those risks. Therefore, the skills required in order to avoid risk behaviours must be taught and practiced by the adolescents, so that the skills are readily available for use in high-risk situations.

The current study used the information available from the literature to create a prenatal substance use intervention that is effective at reducing the rate of intention to use substances during pregnancy. Traditionally, research regarding prenatal substance use has been targeted solely at women. The present study also included male adolescents, as it is equally important for the partners of the pregnant women to realize the potential hazards of substance use on the developing fetus. The research employed a basic pretest-posttest design with three intervention groups, all of which were targeted at adolescents. Group 1 acted as a **control group** and participated only in the pre-, post-, and follow-up data collections. Group 2 was an **information-only group**, in which the participants were provided with information regarding the dangers of substance use, combined with information regarding the teratogenic effects of substances on unborn children. Finally, Group 3 was the **intervention group**, and they received a social competency program, in which the participants were provided substance-use and teratogenic information in addition to lessons on problem-solving techniques and peer pressure avoidance. Although the true outcome of interest was level of substance use during pregnancy, the intervention took place with participants who were not pregnant in order to try to alter their intentions about substance use prior to pregnancy. Consequently, the measurement of actual level of use during pregnancy was not available, and the current measures instead considered such variables as

intentions to use during pregnancy and level of problem-solving ability, which may be used to avoid future substance use during pregnancy. In the case of male participants, the measures reflected their desire to aid their partner in avoiding substance use during pregnancy. The expected outcomes for this research were based upon those found by Caplan et al. 1992. It was hypothesized that the adolescents in the social competency and information-only groups would report that they intended to use substances during pregnancy less than the adolescents in the control group. In addition, the intervention and information-only groups were expected to have less intentions to use alcohol in general that the control group, It was also hypothesized that the adolescents in the social competency group would show more advanced levels of problem-solving (in relation to social pressure to drink alcohol during pregnancy) than the adolescents in the control and information-only groups. No outcomes were expected for current use of substances, attitudes about substances, or knowledge about substances. These variables were included in order to ensure that the current findings would support those of Caplan et al.

Method

Participants and Design

The participants included Grade 8 students (31 girls and 38 boys). Most of the participants identified themselves as Caucasian (63/69). All participants attended junior high school in Prince George, British Columbia, Canada. The classroom teachers requested informed consent from both the student and the parents in the form of a consent letter. Only those students who received parental consent, and who themselves agreed to participate, were included in the study. The rate of consent to participate was 100%, although classroom absences did not allow for complete data collection for all participants. One participant in the intervention group was away during the post-test and follow-up, and two in the information-only group were away during the pre-test and follow-up, consequently, these participants were excluded from the analysis. None of the participants made the decision to leave the study, but rather they simply were not in attendance the day of data collection.

Demographic information indicated that the majority of the students lived with both of their biological parents (57.3%), their mother only (20%), or their mother and step-father (9.3%). The remainder lived with their father only (2.7%), their father and step-mother (4.0%), adoptive or foster parents (2.7%), other (2.7%), or were missing data (1.3%).

Parents' levels of education were reported as well. The participants indicated that the majority of fathers had some high school (26.7%), or graduated from high school (26.7%), with fewer fathers having some college or university education (8.0%), or a college diploma or university degree (17.3%). A large number of participants were not sure about their father's educational attainment (20.0%) and the remainder did not report (1.3%). The participants also indicated that many of their mothers had some

high school (16.0%) or graduated from high school (34.7%), with fewer having some college or university education (10.7%) or college diploma or university degree (16.0%). Finally, some of the participants indicated that they were unsure of their mothers' educational attainment (20.0%), and the remainder did not report (2.6%) (see Appendix C for demographic questionnaire). Demographic responses were analysed using a chi-squared analysis and no differences were evident in the characterisitics of the three groups.

This study employed a 3 (group) x 3 (Time) quasi-experimental design with group (control, information-only, intervention) as a between-subjects factor and time (pre-intervention, post-intervention, 6–week follow-up) as a within-subjects factors. The participants in this study were divided into one of three conditions depending upon the school attended. One school acted as a control group, the second school acted as an information-only group, and the third school acted as the intervention group. Evaluations included a series of measures that considered current level of substance use, intentions to use substances, knowledge about substances, attitudes about substance use, and problem-solving skills. This evaluation took place at three time intervals (pre-intervention, post-intervention, and six week follow-up).

Procedure

The students were informed of the study by their teachers. The first step in data collection was to receive informed consent from the participants (see Appendix A) and their parents (see Appendix B), provide them with a subject number (for confidentiality), and have them complete the demographic questionnaire and the pre-intervention questionnaires. The participants were then assigned to one of the three conditions (as agreed by the teacher with respect to amount of class Time allowed to the researcher). After condition assignment was completed, the control condition remained with regular classroom instruction, the information-only condition participated in a class that covered

the dangers of substance use and its teratogenic effects, and the intervention condition participated in the social competency program class (a modified version of the social competency program designed by Caplan & Weissberg, 1989-90). Each condition took place in one of the three junior high schools in order to control for cross contamination of information within the student populations. After all conditions were complete (on the school day immediately following completion of the social competency program), all participants completed the post-intervention surveys. The final survey completion occurred six weeks following the post-intervention evaluation.

Intervention Condition. There were 15 girls and 12 boys in the social competency intervention. This intervention consisted of six 60-minute sessions that were presented by the researcher in a group format. The sessions were based on the "Social-Competence Promotion Program: Training Manuals and Articles" with alterations suited to cover the dangers of substance use during pregnancy. The program includes three modules; two of which were used in this study. The modules used included: The Social Competence Promotion Program for Young Adolescents: Social Problem-Solving Module (SPS), by Weissberg, Caplan, Bennetto, and Jackson (1990) and the Substance Use Prevention: A 6th Grade Curriculum Module of the New Haven Public Schools Social Development Program (SUP) by Caplan and Weissberg (1989-90). The SPS Module introduced eight primary components including: (a) introducing social problem solving; (b) stop, calm down, and think before you act; (c) say the problem and how you feel; (d) set a positive goal; (e) think of lots of solutions; (f) think ahead to the consequences; (g) go ahead and try the best plan; and, (h) mastering problem solving. This module of the program employed: (a) direct instruction; (b) class discussions of real-life problems; (c) role plays; (d) cooperative and competitive games; and, (e) extensive visual aids and visual material. The SPS program was chosen to be used because it has shown beneficial effects on adolescent

problem solving ability, social relations, delinquent behaviour and behavioural adjustment (Weissberg, Gesten, Carnrike, Toro, Rapkin, Davidson, & Cowen, 1981; Weissberg, Gesten, Rapkin, Cowen, Davidson, Flores de Apodaca, & McKim, 1981). Moreover, students who have completed the program showed higher quantity and quality of problem solving alternatives, and higher rates of peer involvement than did control students.

The SUP module is intended to follow the SPS module, and employs many similar learning techniques. This module introduced four primary concepts including: (a) transition to the module on substance use; (b) substance and health information; (c) applying social problem-solving skills to peer pressure situations; and, (d) family, school, and community supports to prevent substance use. For use in this study, additions were made to the SUP module in order to make it directly applicable to the topic of substance use during pregnancy.

Information-only Condition. There were 8 girls and 11 boys in the information-only condition. This condition received the substance and health information available in section two of the SUP. This information was presented without the problem-solving integration practice sessions included in the skills-based intervention group, and was presented as a single class session.

Control Condition. There were 8 girls and 15 boys in the control condition. This condition did not receive any intervention. They simply continued with normal classroom activities and participated in completion of the pre-, post- and follow-up surveys.

Self-Report Measures. There were five measures used in this study. These measures were used because they were based upon similar measures that had been employed with other adolescent populations (Caplan et al., 1992).

(1) The first measure was intended to assess the participant's level of current use of cigarettes or chewing tobacco, beer/wine, hard liquor, marijuana, donovites (only at pre-test), and hard drugs (see Appendix D). It was scored on a scale ranging from *never smoked (1)* to *smoke more than a pack a day (7)* for cigarettes, and *never (1)* to *every day (7)* for the remaining substances. The item asking about the use of donovites was included as a validity check (Caplan et al., 1992). Any participant who reported the use of donovites was excluded from the analysis. The current-use measure was an adaptation of a measure described by Kandel, Kessler and Margulies (1978).

(2) The second measure examined, using true/false questions, the knowledge that the student had about the effects of smoking cigarettes, using marijuana, drinking alcohol, and using crack and/or cocaine (see Appendix E). This measure was an adaptation of the Cornell University Medical College- Health Survey (Botvin, Baker, Renick, Filazzola, & Botvin, 1984).

(3) The third measure was also an adaptation of the Cornell Survey. This measure considered the participant's attitudes towards the use of tobacco, marijuana, alcohol, and hard drugs (see Appendix F). The student's attitudes were reported on a scale from *strongly disagree(1)* to *strongly agree(5)* (smoking attitudes, Cronbach's alpha = .74; drinking attitudes, Cronbach's alpha = .80 (Caplan et al, 1992)).

(4) The fourth measure was a questionnaire asking the participant to indicate their intention to use cigarettes, beer, wine, hard liquor, marijuana, cocaine, crack, depressants, and/or stimulants, now or, for the female participants, during future/hypothetical pregnancies (see Appendix G). There was also a version of this measure for the male participants; however, the second item asked whether he would want his girlfriend to use these same substances

during pregnancy (see Appendix H). The intention-to-use measure was reported on a scale ranging from *definitely no (1)* to *definitely yes (5)*.

(5) The final measure was an adaptation of the *Alternative Solutions Test* (Caplan, Weissberg, Bersoff, Ezekowitz, & Wells, 1988). This measure assessed the quality of the student's problem-solving skills by comparing the number of problem-focused responses that the student used in place of less effective emotion-focused responses. It provided a hypothetical peer pressure situation and then asked the student to record what they would try to do (rather than could try to do) in order to solve the problem. There were two sets of problems, one for the girls (see Appendix I) and another for the boys (see Appendix J). The boy and girl forms of this adapted questionnaire were as parallel as possible while remaining gender specific.

Coding

The coding scheme used to code the problem solving data was based upon a scheme by Lazarus and Folkman (1984). These researchers suggested that when faced with a specific problem, problem-focused coping (e.g., planned problem solving, confrontation) is superior to emotion-focused coping (e.g., avoidance, verbal or physical threats). Emotion-focused coping, according to these authors, includes self-controlling (e.g., "I tried to keep my feelings to myself"), distancing (e.g., "I didn't let it get to me"), accepting responsibility (e.g., "I realized I brought the problem on myself"), escape/avoidance (e.g., "I wished that the situation would somehow go away"), verbal/physical threats, and nonviolent threats. Problem-focused coping includes confrontation (e.g., "I tried to get the person responsible to change his or her mind"), seeking social support (e.g., "I talked to someone who could do something concrete about the problem"), and planned problem solving (e.g., "I made a plan of action and I followed it"). The current study included the primary categories from this coding

scheme, including problem-focused coping, emotion-focused coping and no response. Twenty percent of the participants' responses were coded by an independent rater using this coding scheme, and a Cohen's kappa of 0.82 was attained. Percent agreement was 100% for no response, 73.7% for confrontation, 80.6% for planned problem solving, and 91.5% for emotion-focused coping. Emotion-focused coping was coded as a single category as the responses given in this category seemed very similar to one another and very difficult to separate. On the other hand, for problem-focused coping the differentiation between the confrontation and the planned problem solving became very clear and easy to distinguish. As well, it became clear that seeking social support was simply a form of planned problem-solving, and subsequently the two coding categories were combined into a single category. Consequently, in the end the coded responses were placed into one of four primary categories as above: planned problem solving, confrontation, emotion-focused coping, or no-response (including redundant responses).

Data Reduction

Each dependent variable was considered individually because they were too theoretically distinct to consider as a unit. **Current use** was scored as a sum of reported usage for four scales: alcohol, cigarettes, marijuana, and hard drugs. The greater the amount of usage reported, the higher the score on the four scales. **Intention to use substances** was scored separately on four sub-scales for general substance use (alcohol, cigarettes, marijuana and hard drugs), as well as four sub-scales for substance use *during pregnancy* (alcohol, cigarettes, marijuana and hard drugs). As with current use, the scores for intention to use were simply a sum (for the series of items) of the responses for each category. The greater the reported intention to use, the higher the score on the sub-scales for that participant.

Knowledge was split into four sub-scales for knowledge about general substance use (alcohol, cigarettes, marijuana, and hard drugs), as well as four sub-scales for knowledge about substance use *during pregnancy* (alcohol, cigarettes, marijuana, and hard drugs). The knowledge measure was scored simply as a sum (for the series of items) of the correct responses to a series of true or false statements for each sub-scale.

The measure of the participant's **attitudes towards substance use** was reverse scored (with the exception of a few items which were inverted as required) so that the higher scores reflected more positive attitudes about substance avoidance. As was the case with the knowledge measure, the reversed scores were summed (for the series of items) for each of four sub-scales for attitudes about general substance use (alcohol, cigarettes, marijuana, and hard drugs), and for each of four sub-scales for attitudes about substance use *during pregnancy* (alcohol, cigarettes, marijuana, and hard drugs).

In the case of the problem solving scenarios, scoring was simply a matter of summing the total number of times the participant was coded as using "planned problem solving", "confrontation", "emotion-focused coping", or "no-response" for each of the three scenarios (shop-lifting, marijuana-smoking, and alcohol use during pregnancy).

RESULTS

Overview of Analysis

Before primary analyses were conducted, preliminary analyses were completed to ensure that the three groups (control, information-only, intervention) did not differ on any of the dependent variables at Time 1. If there were no differences between the groups at Time 1, the data for each dependent variable were subsequently analysed by a series of repeated measures analyses of variance (ANOVA) with Time as the within-subject variable (pre-intervention, post-intervention and 6-week follow -up), and group (intervention, information-only and control) and gender as the between-subjects variables. The dependent variables were: intention to use, current use, knowledge, attitudes, and problem solving surrounding substance use, now and during future hypothetical pregnancy. ANOVA was chosen instead of a multivariate analysis of variance (MANOVA) for these analyses because the dependent variables were considered to be theoretically distinct, and therefore, MANOVA should not be considered a preliminary step to multiple ANOVAs (Huberty & Morris, 1989).

If differences between the groups at Time 1 were found, the data for each dependent variable were subsequently analyzed using difference scores in place of the three levels of time analyses completed if no Time 1 differences were evident. The difference scores were computed by subtracting the pre-test scores from the post-test scores and the follow-up scores separately (Zumbo, in press; Kazdin, 1994). The test for the homogeneity of the homogeneity of variance was examined for each analysis and significant values and subsequent (Huynh-Feldt) corrections will be reported if required (Schutz & Gessaroli, 1987). The critical alpha level for all significance tests was .01, in order to control alpha inflation due to multiple tests. All significant F-tests were followed by simple effects analyses. ANOVAs for the first four variables are presented in Table 1. Only effects involving time were considered as without

Table 1

Degrees of Freedom and F Values for Group x Time Interactions

Dependent Variable	df	F
Current Use		
Marijuana	124	3.75**
Intentions to Use		
General Use:		
Alcohol	122	3.82**
Use During Pregnancy:		
Prenatal Alcohol	124	3.69*
Prenatal Cigarettes	124	4.28**
Prenatal Marijuana	124	4.99**

*$p < 0.01$
**$p < 0.001$

time the interpretation was meaningless (i.e. main effects of group) (See Appendix K).

Current Use

Current use of substances was measured by four separate sub-scales assessing the use of alcohol, cigarettes, marijuana, and hard drugs. Possible scores for each sub-scale ranged from 1 (never used) to 7 (used every day) (with the exception of cigarettes which only ranged from 1 (never used) to 6 (more than a pack a day)). Means and standard deviations for current use of substances as a function of group and time are presented in Table 2. It was expected that there would be no differences between the groups on self-reported frequency of substance use (Caplan et al., 1992). Preliminary analyses revealed no significant differences between groups at Time 1. Subsequent group by time by gender ANOVAs for each of the four current use scales revealed only a significant group by time interaction for marijuana, $F(4, 124) = 3.75$, MSE = 1.02, $p = .006$, eta squared = .11. The significant group by Time interaction for the **current use of marijuana** was examined by conducting one-way ANOVAs for each Time. The analyses revealed that there were significant differences between groups at Time 2 ($F(2, 66) = 9.12$, MSE = 17.293, $p < .001$, eta squared = ,231) and Time 3 ($F(2, 65) = 8.75$, MSE = 15.07, $p < .001$, eta squared = .178). Specifically, at Time 2 and Time 3, both the intervention and the information-only groups reported less use of marijuana than did the control group.

Intention to Use

The intention to use substances was assessed using four separate sub-scales measuring the intention to use alcohol, cigarettes, marijuana and hard drugs. In addition, the intention to use substances *during pregnancy* was assessed using four separate sub-scales measuring the intention to use alcohol, cigarettes, marijuana and

Table 2

Means and Standard Deviations for Current Substance Use as a Function of Group and Time

	Time					
	1		2		3	
Dependent Variable	M	SD	M	SD	M	SD
Alcohol						
Control	4.20	2.84	4.44	3.16	5.39	3.60
Information-only	3.86	2.01	3.84	1.92	3.82	1.82
Intervention	2.59	1.12	2.75	1.21	3.04	1.63
Cigarettes						
Control	2.24	1.36	2.52	1.45	2.83	1.70
Information-only	2.23	1.51	2.26	1.10	2.45	1.60
Intervention	1.85	1.35	1.79	1.32	1.89	1.40
Marijuana						
Control	2.08	1.89	2.64	2.02	2.68	1.98
Information-only	1.36	0.90	1.11	0.46	1.27	0.94
Intervention	1.26	0.66	1.25	0.80	1.33	0.78
Hard Drugs						
Control	1.04	0.20	1.32	1.06	1.34	1.30
Information-only	1.00	0.00	1.00	0.00	1.00	0.00
Intervention	1.00	0.00	1.00	0.00	1.00	0.00

hard drugs during a future, hypothetical pregnancy. Possible scores for each sub-scale ranged from 1 (definitely no) to 5 (definitely yes). Means and standard deviations for intentions to use substances as a function of group and time are presented in Table 3. Hunyh-Felt corrected results are reported for intention to use alcohol and intentions to use alcohol during pregnancy because of significant tests [$F(30, 4538) = 1.728$, $p = .008$, and $F(12, 290) = 4.41$, $p = .000$) respectively] of the variance-covariance matrices.

It was expected that the intervention and information-only groups would report less intentions to use alcohol, in general, and all substances during pregnancy, in particular, as compared to the control group at post-test (Time 2) and to a lesser degree at follow-up (Time 3). However, the groups were expected to be the same on the measures of intentions to use cigarettes and marijuana (Caplan et al., 1992). These expectations were supported for the intervention and information-only groups general measures of intentions to use alcohol, and the intention to use alcohol, cigarettes and marijuana during pregnancy as compared to the control group at post-test (Time 2) and to a lesser degree at follow-up (Time 3).

With respect to intentions to the general use of alcohol, the ANOVA results revealed a significant group by time interaction [$F(3.79, 122) = 3.82$, MSE = 7.92, $p = .007$, eta squared = .11]. For intentions to use alcohol during pregnancy, a significant group by Time interaction [$F(3.64, 124) = 3.69$, MSE = 10.21, $p = .009$, eta squared = .11] was evident. Finally, group by time interactions were evident for intentions to use cigarettes during pregnancy [$F(4, 124) = 4.28$, MSE = 1.28, $p = .003$, eta squared = .12] and intentions to use marijuana during pregnancy [$F(4, 124) = 4.09$, MSE = .767, $p = .004$, eta squared = .12].

The significant group by time interaction for the general **intention to use alcohol** was examined by conducting one-way ANOVAs for each time. The analyses revealed that

Table 3

Means and Standard Deviations for Intention to Use Substance Group x Time Interactions

	Time					
	1		2		3	
Dependent Variable	M	SD	M	SD	M	SD
General Use						
Alcohol:						
Control	8.80	4.22	9.40	3.86	10.95	4.23
Information-only	7.86	3.75	8.00	3.84	7.68	3.17
Intervention	5.96	3.71	6.12	3.23	6.52	3.76
Cigarettes:						
Control	2.40	1.35	2.64	1.58	3.13	1.63
Information-only	2.23	1.55	2.68	1.49	2.59	1.47
Intervention	1.93	1.41	1.96	1.40	1.89	1.31
Marijuana:						
Control	2.92	1.58	2.92	1.66	3.39	1.64
Information-only	1.72	1.38	1.58	1.01	1.36	0.90
Intervention	1.78	1.25	1.81	1.30	1.85	1.35

(table cont'd)

Table 3 cont'd

Means and Standard Deviations for Intention to Use Substances Group x Time Interactions

	Time					
	1		2		3	
Dependent Variable	M	SD	M	SD	M	SD
Hard Drugs:						
Control	5.64	3.59	5.50	3.65	7.13	5.42
Information-only	4.41	0.91	4.94	2.18	4.18	0.85
Intervention	4.00	0.00	4.37	1.57	4.11	0.42
Use During Pregnancy						
Alcohol:						
Control	3.44	1.04	4.04	2.46	5.43	4.15
Information-only	3.32	0.84	3.00	0.00	3.10	0.44
Intervention	3.30	1.03	3.15	0.53	3.26	0.66
Cigarettes:						
Control	1.04	0.20	1.24	0.83	1.70	1.26
Information-only	1.18	0.66	1.11	0.46	1.10	0.30
Intervention	1.26	0.81	1.07	0.27	1.07	0.27

(table cont'd)

Table 3 cont'd

Means and Standard Deviations for Intention to Use Substances Group x Time Interactions

	Time					
	1		2		3	
Dependent Variable	M	SD	M	SD	M	SD
Marijuana:						
Control	1.16	0.80	1.32	1.11	1.74	1.42
Information-only	1.00	0.00	1.00	0.00	1.00	0.00
Intervention	1.11	0.58	1.07	0.38	1.07	0.38
Hard Drugs:						
Control	4.16	0.80	4.00	0.00	5.64	4.03
Information-only	4.04	0.21	4.00	0.00	4.00	0.00
Intervention	4.00	0.00	4.00	0.00	4.00	0.00

there were significant differences between group at Time 2 [$F(2, 67) = 5,25$, $p = .008$, eta squared = .135] and Time 3 [$F(2, 68) = 8.89$, $p < .001$, eta squared = .207]. Specifically, at Time 2, the intervention group reported lesser intentions to use alcohol than the control group. Similarly, at Time 3, both the intervention and the information-only groups reported lesser intentions to use alcohol than did the control group.

The significant group by time interaction for the **intention to use alcohol during pregnancy** was explored by doing separate one-way ANOVAs for each time. The analyses revealed significant differences between groups at Time 3 [$F(2, 68) = 6.79$, $p = .002$, eta squared = .167]. Subsequent analyses showed that at Time 3, the intervention and information-only groups had lesser intentions to use alcohol during pregnancy than did the control group.

The significant group by time interaction for the **intention to use cigarettes during pregnancy** was also explored by doing separate one-way ANOVAs for each Time. The analyses revealed significant differences between groups at Time 3 [$F(2, 68) = 5.15$, $p = .008$, eta squared = .132]. Specifically, the intervention and information-only groups were found to have lesser intentions to use cigarettes than did the control group.

Finally, the significant group by time interaction for the **intention to use marijuana during pregnancy** was explored by doing separate one-way ANOVAs for each Time. The analyses revealed a significant difference at Time 3, $F(2, 65) = 4.99$, MSE = 3.68, $p = .01$, eta squared = .133. Subsequent post-hoc anlyses revealed no significant differences.

Knowledge

Knowledge about substances was assessed using four separate sub-scales measuring student's knowledge about alcohol, marijuana, smoking, and hard drugs. In addition, knowledge about the use of substances *during pregnancy* was assessed using four separate sub-scales measuring student's knowledge about alcohol, marijuana, smoking, and hard drugs during a future, hypothetical pregnancy. The measure consisted of true/false items which were tallied for each subscale. Higher scores reflected greater knowledge in each category. Means and standard deviations for knowledge about substances as a function of group and time are presented in Table 4. It was expected that the intervention and information-only groups would report greater knowledge about substances as compared to the control group at post-test (Time 2) and to a lesser degree at follow-up (Time 3), as was found by Caplan et al, 1992.

Preliminary analyses revealed significant differences between the groups at Time 1 for knowledge about marijuana, $F(2, 68) = 10.25$, $MSE = 2.36$, $p < .001$, eta squared = .211. The intervention group had more knowledge about marijuana at time 1 than did the control group. However, the subsequent difference score analyses revealed no significant effects and no significant effects were found for the group by time by gender analyses for all other dependent variables related to knowledge.

Attitudes

Attitudes about substance use were assessed using four separate sub-scales measuring attitudes about alcohol, cigarettes, marijuana, and hard drugs. In addition, attitudes about substance use *during pregnancy* were assessed using four separate sub-scales assessing attitudes about use of alcohol, cigarettes, marijuana, and hard drugs during a future, hypothetical pregnancy. Possible scores for each sub-scale ranged from 1 (strongly disagree) to 5 (strongly agree). Means and standard deviations

Table 4

Means and Standard Deviations for Knowledge about Substances Group x Time Interactions

	Time					
	1		2		3	
Dependent Variable	M	SD	M	SD	M	SD
General Use						
Alcohol:						
Control	5.12	1.54	5.20	1.41	5.48	1.20
Information-only	5.41	1.56	5.32	1.11	6.05	0.95
Intervention	5.52	1.42	5.93	1.27	5.70	1.32
Cigarettes:						
Control	3.16	1.49	4.12	1.48	3.83	1.50
Information-only	4.32	1.49	4.26	1.56	4.86	1.42
Intervention	3.85	1.35	4.85	1.41	4.70	1.30
Marijuana:						
Control	3.40	1.80	4.16	1.18	3.43	1.44
Information-only	5.36	1.50	5.32	1.34	5.32	1.25
Intervention	4.59	1.45	4.96	1.29	5.22	1.69

(table cont'd)

Table 4 cont'd

Means and Standard Deviations for Knowledge about Substances Group x Time Interactions

	Time					
	1		2		3	
Dependent Variable	M	SD	M	SD	M	SD
Hard Drugs:						
Control	5.80	1.15	5.88	1.15	5.26	1.51
Information-only	6.18	1.26	6.16	0.90	6.18	1.26
Intervention	6.00	1.21	6.74	0.98	6.30	1.20
Use During Pregnancy						
Alcohol:						
Control	1.00	0.65	1.17	0.56	1.00	0.43
Information-only	1.32	0.72	1.37	0.60	1.36	0.66
Intervention	1.11	0.51	1.67	0.55	1.48	0.64
Cigarettes:						
Control	1.16	0.62	1.32	0.75	1.26	0.75
Information-only	1.36	0.58	1.26	0.65	1.45	0.67
Intervention	1.26	0.53	1.41	0.50	1.59	0.84

(table cont'd)

Table 4 cont'd

Means and Standard Deviations for Knowledge about Substances as a function of Group and Time

	Time					
	1		2		3	
Dependent Variable	M	SD	M	SD	M	SD
Marijuana:						
Control	1.72	0.61	1.72	0.61	1.43	0.84
Information-only	1.91	0.29	1.84	0.50	1.91	0.29
Intervention	1.78	0.58	1.96	0.19	1.85	0.46
Hard Drugs:						
Control	1.28	0.68	1.44	0.58	1.52	0.59
Information-only	1.55	0.60	1.79	0.54	1.86	0.35
Intervention	1.56	0.51	1.93	0.27	1.93	0.27

for attitudes about substance use as a function of group and time are presented in Table 5.

It was expected that there would be no differences between the groups on this dependent variable because issues regarding attitudes were not addressed specifically in the intervention. The assessment of attitudes was included in order to evaluate if a change in attitudes would be a byproduct of the social competency program. However, as expected, none of the subsequent analyses revealed any significant effects.

Problem Solving

Problem solving ability was measured using a qualitative scenario-based measure which required the adolescents to provide five things which they "would" do (as opposed to "could" do) if they found themselves in each of three situations depicted (shoplifting, marijuana use, and alcohol use during pregnancy). The responses to each scenario were then coded as confrontation or planned problem solving (both were considered types of problem-focused coping), as emotion-focused coping, or as no response (including redundant responses). Therefore, for each problem, the data consisted of the number of responses (out of five) that fell into four categories: confrontation, planned problem solving, emotion-focused coping, and no-response. It was expected that the intervention group would report greater use of problem-focused coping techniques and fewer emotion-focused coping techniques and no-response, than would either the information-only or the control groups. Once coded, the data were found to be skewed; therefore, they were subjected to a square-root transformation in order to normalize the distributions. The transformed data were used in the subsequent ANOVAs. The F-values, and degrees of freedom are presented in Table 6.

Table 5

Means and Standard Deviations for Attitudes Group x Time Interactions

	Time					
	1		2		3	
Dependent Variable	M	SD	M	SD	M	SD
General Use						
Alcohol:						
Control	28.92	3.86	27.21	4.85	25.41	4.66
Information-only	30.14	5.28	29.47	4.79	28.71	5.19
Intervention	30.50	4.58	33.70	16.65	30.68	5.04
Cigarettes:						
Control	29.63	3.82	28.04	5.35	27.19	6.82
Information-only	31.14	3.98	27.17	5.04	28.24	4.55
Intervention	31.19	4.47	31.30	4.98	31.00	4.91
Marijuana:						
Control	25.92	5.11	25.42	6.32	25.04	5.48
Information-only	28.67	5.63	30.56	3.38	30.76	4.16
Intervention	30.30	6.34	31.33	8.02	31.00	5.16

(table cont'd)

Table 5 cont'd

Means and Standard Deviations for Attitudes Group x Time Interactions

	Time					
	1		2		3	
Dependent Variable	M	SD	M	SD	M	SD
Hard Drugs:						
Control	30.16	4.42	31.68	7.52	27.61	5.94
Information-only	31.55	5.12	32.44	2.97	31.43	3.25
Intervention	32.85	4.05	32.15	4.64	32.52	3.93
Use During Pregnancy						
Alcohol:						
Control	7.32	1.49	6.56	1.78	6.83	1.75
Information-only	7.86	1.91	8.53	1.65	8.67	1.62
Intervention	7.26	1.38	7.48	1.22	7.59	1.34
Cigarettes:						
Control	6.64	2.00	6.72	2.01	6.65	1.80
Information-only	7.73	1.42	8.25	1.59	8.10	1.76
Intervention	7.11	1.83	7.11	1.45	7.11	1.63

(table cont'd)

Table 5 cont'd

Means and Standard Deviations for Attitudes Group x Time Interactions

	Time					
	1		2		3	
Dependent Variable	M	SD	M	SD	M	SD
Marijuana:						
Control	7.08	1.68	6.64	1.93	7.04	1.52
Information-only	8.09	2.00	8.74	1.41	8.57	1.69
Intervention	7.19	1.66	7.22	1.45	7.52	1.50
Hard Drugs:						
Control	7.80	1.76	6.80	2.04	7.43	1.90
Information-only	8.27	2.21	8.53	1.65	8.33	2.24
Intervention	7.89	1.42	7.37	1.62	7.81	1.49

Table 6

Degrees of Freedom and F Values for Interactions for Problem Solving

Dependent Variable	df	F
Problem 2 (Marijuana Use):		
Group x Time		
Planned Problem Solving	126	4.43*
Problem 3 (Alcohol Use During Pregnancy):		
Group x Time x Gender		
Emotion-focused Coping	126	4.72*

*$p < .01$

Problem 1 – Shoplifting. The ANOVA results revealed no significant differences for Problem 1. Means and standard deviations of raw scores for problem 1 are presented in Table 7.

Problem 2 – Marijuana use. The expected results were partially supported for problem 2 (see table 8). Specifically, the ANOVA results revealed a significant group by time interaction for **planned problem solving** [$F(4, 126) = 4.43$, $p = .002$, eta squared = .166]. Subsequent one-way ANOVAs for each time indicated that there were significant differences between groups at Time 2 [$F(2, 68) = 6.61$, $p = .002$, eta squared = .140]. Specifically, participants in the intervention and information-only groups used more planned problem solving than did the control group.

Problem 3 – Alcohol use during pregnancy. The expected finding was supported for the **emotion-focused coping** category with the addition of the component gender. The ANOVA results revealed a significant gender by group by time interaction for **emotion focused coping** [$F(4, 126) = 4.72$, $p = .001$, eta squared = .233]. This three-way interaction was explored by conducting separate two-way ANOVAs (group by Time) for each gender (see Tables 9 and 10) (means and standard deviations presented in Tables 9 and 10). Those analyses indicated that there were significant group by time interactions for the girls [$F(4, 56) = 2.60$, $p = .045$, eta squared = .171] and boys [$F(4, 70) = 2.86$, $p = .029$, eta squared = .164]. These two-way interactions were explored by conducting subsequent one-way ANOVAs examining differences between groups at each of the three times.

The one-way ANOVAs examining **girls' emotion-focused coping** revealed that significant differences existed between groups at Time 3 [$F(2, 31) = 10.35$, $p < .001$, eta squared = .376]. Specifically, participants in the intervention group used less emotion-focused coping than did either the control group or the information-only group.

The one-way ANOVAs examining **boys' emotion-focused coping** did not reveal any significant differences.

Table 7

Untransformed Means and Standard Deviations for Problem Solving Strategies for Problem 1 (Shoplifting) as a Function of Group and Time

	Time					
	1		2		3	
Dependent Variable	M	SD	M	SD	M	SD
Confrontation						
Control	1.24	1.05	0.92	1.44	0.72	0.98
Information-only	1.05	0.79	1.27	1.12	1.18	0.91
Intervention	1.30	0.95	1.37	0.97	1.41	0.97
Planned Problem Solving						
Control	1.12	1.66	0.88	1.01	1.12	1.27
Information-only	1.27	1.12	1.36	1.29	1.36	0.95
Intervention	1.41	1.05	1.85	1.13	1.59	1.08
Emotion-focused Copin						
Control	1.68	1.28	1.84	1.57	1.68	1.49
Information-only	1.95	1.39	1.27	1.28	2.00	1.07
Intervention	1.19	1.11	0.78	0.80	1.00	0.96

Table 8

Untransformed Means and Standard Deviations for Problem Solving Strategies for Problem 2 (Marijuana Use) as a Function of Group and Time

	Time					
	1		2		3	
Dependent Variable	M	SD	M	SD	M	SD
Confrontation						
Control	0.02	0.28	0.20	0.50	0.12	0.33
Information-only	0.68	0.84	0.59	0.80	0.45	0.51
Intervention	0.52	0 94	0.52	0.70	0.67	0.73
Planned Problem Solving						
Control	1.60	1.29	1.32	1.31	1.24	0.93
Information-only	1.82	1.14	1.77	1.34	1.82	1.18
Intervention	1.30	1.03	2.56	1.25	2.11	1.28
Emotion-focused Coping						
Control	2.16	1.37	2.12	1.39	2.16	1.43
Information-only	1.77	1.34	1.55	1.37	2.18	1.40
Intervention	1.93	1.21	0.96	0.76	1.37	0.88

Table 9

Untransformed Means and Standard Deviations for Girls' Problem Solving Strategies for Problem 3 (Alcohol Use During Pregnancy) as a Function of Group and Time

	Time					
	1		2		3	
Dependent Variable	M	SD	M	SD	M	SD
Confrontation						
Control	1.50	1.84	0.70	1.06	0.60	1.07
Information-only	1.73	1.10	1.45	1.29	1.18	0.98
Intervention	2.20	1.21	1.80	0.86	1.67	0.82
Planned Problem Solving						
Control	0.70	1.06	0.70	0.95	0.70	0.82
Information-only	0.82	0.98	0.91	1.04	0.91	0.83
Intervention	0.67	0.72	1.13	0.92	1.53	1.06
Emotion-focused Coping						
Control	1.10	1.20	1.30	1.05	1.80	1.40
Information-only	1.45	1.51	1.00	1.18	1.36	1.43
Intervention	0.73	0.70	0.73	0.96	0.40	0.74

Table 10

Untransformed Means and Standard Deviations for Boys' Problem Solving Strategies for Problem 3 (Alcohol Use During Pregnancy) as a Function of Group and Time

	Time					
	1		2		3	
Dependent Variable	M	SD	M	SD	M	SD
Confrontation						
Control	1.00	1.13	0.60	0.83	0.60	0.83
Information-only	1.27	1.10	1.18	0.87	1.00	0.45
Intervention	0.75	0.87	1.58	1.44	0.67	0.78
Planned Problem Solving						
Control	1.20	1.08	1.27	1.10	1.47	0.92
Information-only	1.27	1.35	1.91	1.30	1.45	1.04
Intervention	0.83	0.72	1.50	1.00	1.58	0.79
Emotion-focused Coping						
Control	1.53	1.30	2.00	1.56	1.53	1.68
Information-only	0.63	0.81	0.82	0.60	1.55	1.04
Intervention	0.92	0.90	0.75	0.97	1.17	0.58

DISCUSSION

The current study evaluated the effects of a problem solving intervention (social competency) program on adolescents' current use, intention to use, knowledge, attitudes, and problem solving skills surrounding avoidance of substance use, now and during a future hypothetical pregnancy. The intervention condition was compared to a control condition in order to evaluate its overall efficacy, and to an information-only condition in order to evaluate its efficacy compared to the type of intervention that is currently used most often for adolescent substance use education. The three groups were tested to ensure that they were similar at Time 1. A single difference was evident, in that knowledge about marijuana differed at the pre-test data collection. The three groups were similar at Time 1 for all other dependent variables.

Current use of substances

Current use of substances was not expected to show any differences between the three groups (Caplan et al., 1992). However, both the intervention and information-only groups had lower reported use of marijuana at both Time 2 and Time 3. This unexpected finding may have been the result of the dangers of substance use information these groups were provided. Perhaps the students in the non-control groups realized from the information that marijuana is not a harmless substance (as they may have thought) and consequently, chose not to increase their marijuana use as often as the control group.

Intention to use substances

It was expected that the intervention and information-only groups would report less intentions to use alcohol and all substances during pregnancy as compared to the control group at post-test (Time 2) and to a less degree at follow-up (Time 3). However,

the groups were expected to be the same on the measures of intentions to use cigarettes and marijuana (Caplan et al., 1992). The results supported these expectations for intentions to use alcohol, and the intention to use alcohol, cigarettes, and marijuana during pregnancy. Specifically, the intervention group showed a lesser **intention to use alcohol** than did the control group at post-test and follow-up. The information-only group also had the intention of using alcohol less than the control group, but this difference was evident only at follow-up. These differences between the three groups were due to an increase in the control group participants' intentions to use. Therefore, it is evident that although the information the students received did not decrease their intention to drink, it evidently prevented their intentions to drink from increasing across Time.

The expected results were found for **intention to use alcohol *during pregnancy***. In this analysis, the intervention and information-only groups reported that they intended to use alcohol during future hypothetical pregnancy (or support their partner in doing so) at lower rates than did the control group. This difference was only significant at follow-up and was due to an increase in the intentions of the control group participants to use alcohol during pregnancy. The results for intention to use alcohol during pregnancy again indicated that the information the students received did not decrease their intention to use but simply prevented it from increasing. Previous research has not considered the effectiveness of a social competency intervention regarding substance abuse during pregnancy with an adolescent population; consequently, none of the results regarding substance use during pregnancy can be compared with those of previous research.

Intentions to use cigarettes *during pregnancy* showed a similar pattern to the intentions to use alcohol during pregnancy. The intervention and information-only group participants reported significantly lower intentions to smoke during pregnancy (or

support their partner in doing so) at follow-up than did the control group. As was found with the intentions to use alcohol during pregnancy, this difference was due to an increase in the control group participants' intentions to smoke during pregnancy from pre-test to post-test and from pre-test to follow-up. The results of the intentions to use cigarettes during pregnancy also indicates that the information the students received did not decrease their intention to use cigarettes during pregnancy but simply prevented it from increasing.

Knowledge regarding substance use

With respect to the measure of substance use knowledge, the social-competency and information-only groups were expected to show significant increases after they were presented with the substance use information. This expectation was based on the fact that both the intervention and information-only groups received a knowledge session between pre-test and post-test and the control group did not. The other expected finding was a slight decrease in the knowledge of the intervention group and the information-only group from post-test to follow-up. This expectation is based on the fact that with time the knowledge the adolescents retain should diminish slightly.

These expectations were not met as no significant differences were found between the groups for the dependent variable knowledge. The fact that no differences between the groups were evident for their knowledge about substances is probably due to the large amount of knowledge that students already have regarding substances. Information about substances is presented regularly in the media and within the schools. Therefore, the students were probably already aware of much of the material that was presented to them during the information sessions.

Attitudes regarding substance use

In regard to attitudes about substance use, the three groups were not expected to differ. This expectation is based on the knowledge that the current program did not target attitudes about substances but rather the problem solving skills required to avoid substances. However, a change in attitudes (for the better) as an effect of the social competency program would have been a pleasant surprise. Unfortunately, as expected no significant differences were evident between the three groups

Problem solving regarding substance use

Problem solving was the final dependent variable considered in the current study. The social competency intervention was expected to show efficacy versus either the control condition or the information-only condition. Problem solving ability was measured using a qualitative scenario based measure that requested the adolescents to provide five things which they "would" do (as opposed to "could" do) if they found themselves in each of three situations (shoplifting avoidance, marijuana avoidance, alcohol avoidance during pregnancy). The responses to each scenario were then coded as problem-focused coping styles (divided into confrontation or planned problem solving), as emotion-focused coping, or as no response (including redundant responses). Students in the intervention condition were expected to use more problem-focused coping, less emotion-focused coping, and have fewer no responses than were students in either the control condition or the information-only condition.

Problem 1-shoplifting. What asked what they would do if they were faced with a friend shoplifting, no significant differences between the groups emerged. The lack of significant results for this situation may have been due to the fact that in the shoplifting scenario, the students were not faced with the situation themselves, but rather with the idea of a friend in that situation. Consequently, because the SCP focuses on problem-

solving for the individual the students may have been more likely to just ignore the situation than if it affected them directly.

Problem 2- marijuana-smoking. When asked what they would do if they were offered marijuana at a party, the intervention and information-only groups reported that they would use more planned problem solving than did the control group at post-test. Therefore, it would seem that the social competency program was not more effective than the information condition at increasing planned problem solving. However, the intervention group used more planned problem solving at post-test, and to a lesser degree at follow-up, than they did at pre-test, whereas the information-only group did not show this pattern. Consequently, it seems evident that the social competency program was effective at increasing the student's usage of planned problem solving as a coping skill.

Problem 3- alcohol use during pregnancy. When asked what they would do if they (or for the boys, their partner) were pregnant and were offered a drink, the girls in the intervention group were less likely, at post-test, to use **emotion-focused coping** than were the girls in either the control group or the information-only group. Therefore, it appears that, for girls, the social competency program is more effective than either no program or an information-only program, when levels of emotion-focused coping are considered.

Evaluation of the social competency program

Overall, the results indicated that the social competency program was successful at preventing intentions to use substance use from increasing. In addition, the social competency program was successful at increasing the amount of reported problem-focused vs. emotion-focused coping (for girls). Unfortunately, in these areas the primary success was that the students did not become more negative on these scales

after receiving the program. However, the fact that the students in the intervention and information-only groups did not become more negative is a very important finding as it agrees with previous research in supporting the use of such programs (i.e., Caplan et al., 1992). Caplan et al. found that the intentions of students in the intervention group remained steady, whereas the intentions of students in the control group increased for the use of some substances, also the intentions of students increased for the use of other substances, irrespective of condition. In addition, as was found in the present study, Caplan et al. found that, in general, the current use patterns of the students did not change. The previous research, similar to the current research, also neglected to find results regarding knowledge or attitudes about substance use.

The current intervention appeared to help students improve their problem solving skills. Caplan et al (1992) showed that their social competency program improved the quality, effectiveness, quantity and adaptiveness of student's problem solving skills. The current study also showed an increase in productive coping skills (problem focused) and a decrease in unproductive coping skills (emotion focused) depending on the situation, indicating that the social competency program is effective in increasing adolescents' problem solving skills.

Overall, the current research found support for the hypothesis that a social competency program with adolescents would be beneficial in the attempt to prevent the rate of prenatal substance use from increasing. The intervention students showed more positive responses in relation to their intentions to use substances than did the control students, as well as showing more positive problem solving skills than either the control group or the information-only group. Therefore, it is apparent that although information alone appears to be enough to alter the students intentions, it takes the addition of the social competency component in order to improve the problem solving skills necessary for behaviour change. The follow-up data collection which was

completed in this research also seems to indicate that the students do not immediately forget everything that is introduced to them during an intervention. Many of the differences found between the intervention and information-only groups versus the control group were evident at follow-up. Hopefully, this maintenance of information until follow-up indicates that students who complete a social competency intervention in adolescence will continue to maintain the information and skills that they have learned until they are in their child-bearing years and required to make decisions about substance use during pregnancy.

Limitations of the current research

The current study did not meet the ideal expectations for experimental procedures. Ideally, the numbers of participants would have been about three Times that obtained (to increase statistical power). In addition, the participants would have been randomly assigned to one of the three conditions instead of simply participating as a consequence of the classroom they attended (ideally this would allow for equal numbers of girls and boys, as well). The teachers chose which condition that they would allow their classroom to participate in based upon the amount of curriculum Time that they were willing to share with us, therefore I was not able to randomly assign the conditions to the classrooms. However, the researcher led the research at all three schools; therefore, reactivity due to teacher interference should have been minimal. Finally, in an ideal situation attention-controls would have been used for the control and information-only conditions. However, as was stated earlier, the instructors in these classrooms agreed to a minimum of required sessions that would interfere with regular instruction, and consequently attention-controls were not possible. In future studies, more joint work with the school board may allow for the program to be considered part of classroom curriculum, and therefore would eliminate many of the difficulties inherent

in this study. Keeping the limitations in mind, the availability of this sort of research is essential. Consequently, continued study, even under conditions that were not exactly as desired, warranted completion of the study.

Conclusion

Overall, the current study was successful in its attempt to show the efficacy of a social competency intervention. There is adequate justification for continuing to promote the social competency program with adolescents as a viable method of preventing an increase in substance use during pregnancy. This justification is based on the fact that the intervention was equivalent to an information-only program in its ability to prevent students' substance use intentions from increasing, and the fact that the social competency program was more effective than either an information-only program or no program at all for improving the girls' problem solving (in the form of reducing emotion-focused coping). These problem solving skills remain the key factor in behaviour change as opposed to simply increasing the knowledge of the participants. The positive outcome of the current research certainly supports continued investigation into the efficacy of the social competency program as a means of primary prevention. Further research should continue to consider the different levels of usefulness of such a program for boys versus girls. The social competency intervention could also potentially be used with the higher risk group of women who are already using substances during pregnancy; it could be used for other adolescent issues such as high risk sexual behaviours; or it could be used with rural students who may be at higher risk for substance use behaviours. The present research helped to confirm the efficacy of the social competency type intervention program. Therefore, when we are considering important topics like the health and safety of our current and future children, it is obvious that studies such as this must continue in order to improve upon the prevention

methods that are currently in place, and evidently are not working as well as they could be.

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UNBC

Dear Student and Parent(s):

We are writing to tell you about a very exciting research project that will take place at your school in the coming weeks and to ask if you'd like to participate. This project will try to change students' attitudes about using cigarettes, drugs and alcohol by teaching them about the effects of these substances and by teaching them skills that will help them deal with peer pressure. This is the first study of this kind to be done in Prince George, and it is being fully supported by officials of the University of Northern British Columbia and School District 57.

We are asking all grade 8 and 9 students at your school to participate. All students who participate will be randomly assigned to one of three groups. Group 1 will receive class instruction about the effects of cigarettes, alcohol and drugs; including information about what happens if a woman uses these substances during pregnancy. Information about using substances during pregnancy will be included because this is such an important health concern in today's society, and researchers suggest that the only way to alert people about this danger is to teach teenagers about them before they start experimenting with drugs and alcohol. Group 2 will receive the same information, but will also receive training for dealing with peer pressure to smoke, drink or use drugs. Both Group 1 and Group 2 will be taught by psychology researchers from UNBC. Group 3 will receive their regular CAP instruction by their teachers. All students who participate also will complete questionnaires about their current smoking, alcohol and drug use, their general attitudes and knowledge about smoking, drinking alcohol, and using drugs, as well as their attitudes and knowledge about smoking and using drugs and alcohol during pregnancy. Students will be asked to complete the questionnaires on three different occasions: before assignment to groups, after the programs are taught, and 2 months later. All of these events will take place at the school during school time. Please be assured that no one else will look at completed questionnaires, which will be kept in a locked and secure place at the university. All names will be removed from the questionnaires and replaced with code numbers. Also, once you volunteer to participate, you can still withdraw from the study at any time, if you wish.

You can let us know on the attached form whether you (the student) would like to participate and whether you have the permission of your parent(s). The form can be returned to your homeroom teacher or the school office. Please return the form even if you do not want to participate, so that we can be sure everyone has received this request.

Thank you very much for your time and consideration. We look forward to hearing from you.

Sincerely,

Dr. Sherry Beaumont,
Professor of Psychology

Ms. Shannon Wagner,
M.Sc. Psychology (candidate)

Appendix B

I have read the letter about the research project on adolescent smoking and drug use to be conducted by Dr. Sherry Beaumont and Ms. Shannon Wagner, of the Psychology Department at the University of Northern British Columbia. I understand that all information gathered for this project is to be used for research purposes only and will be considered confidential. I also understand that permission to participate may be withdrawn at any time.

I (student) will participate: _____ Yes _____No

Student's signature: _____

I (parent) will allow my son/daughter to participate: _____ Yes _____No

Signature of parent/guardian: _____

Student's Name: _____

Parent's Name: _____

Address: _____

Telephone number: _____ Best time to call: _____

School: _____

Class and grade: _____

If you would like more information about this project to help in making your decision, please give your phone number and a researcher will contact you as soon as possible.

Name: _____ Phone number: _____

Best times to call: _____

Please answer the following questions about yourself:

Appendix C

Student number: _____

School: _____

Home room class: _____

Grade: _____

Sex: ____ male ____ female

Date of birth (including year): _____

Choose the category that best describes you:

____ Black
____ White
____ Hispanic
____ Asian
____ East Indian
____ Native or First Nations
____ Other _____

Whom do you live with most of the time:

____ mother and father
____ mother and step-father
____ father and step-mother
____ mother only
____ father only
____ adoptive or foster parents
____ other _____

How far did your father go in school:

____ did not finish high school
____ graduated from high school
____ some college or university
____ graduated from college or university
____ not sure

How far did your mother go in school:

____ did not finish high school
____ graduated from high school
____ some college or university
____ graduated from college or university
____ not sure

What is your mother's occupation (job)? _____

What is your father's occupation (job)? _____

Appendix D

Choose the option that best describes you.

1. How often do you smoke cigarettes?

____ never smoked
____ only smoked once or twice ever
____ used to smoke but stopped
____ smoke occasionally
____ smoke less than a pack a day
____ smoke a pack a day or more

2. How often do you drink beer or wine?

____ never
____ less than once a month
____ about once a month
____ 2 or 3 times a month
____ about once a week
____ several times a week
____ every day

3. How often do you drink hard liquor (e.g. vodka)?

____ never
____ less than once a month
____ about once a month
____ 2 or 3 times a month
____ about once a week
____ several times a week
____ every day

4. How often do you use marijuana?

____ never
____ less than once a month
____ about once a month
____ 2 or 3 times a month
____ about once a week
____ several times a week
____ every day

5. How often do you use donovites? (used only at pre-test)

____ never
____ less than once a month
____ about once a month
____ 2 or 3 times a month
____ about once a week
____ several times a week
____ every day

6. How often do you use hard drugs (e.g., crack, cocaine, amphetamines)?

____ never
____ less than once a month
____ about once a month
____ 2 or 3 times a month
____ about once a week
____ several times a week
____ every day

Read the statements below and indicate whether you think they are true or false.

Appendix E

		True	False
1.	Most people my age smoke cigarettes.	T	F
2.	Fewer people smoke now than 5 years ago.	T	F
3.	Cigarette smoking is becoming less socially acceptable than it once was.	T	F
4.	Smoking a cigarette causes your heart to beat slower.	T	F
5.	Smoking a cigarette will make a person more physically relaxed.	T	F
6.	Smoking a cigarette increases a person's blood level of carbon monoxide within a few minutes.	T	F
7.	Regular smokers have higher levels of carbon monoxide in their blood and lungs than nonsmokers.	T	F
8.	Smoking a cigarette decreases your hand steadiness almost immediately.	T	F
9.	Smoking cigarettes during pregnancy can cause the baby to be born premature.	T	F
10.	Smoking cigarettes does not affect your ability to become pregnant.	T	F
11.	Switching drinks will make you drunker than staying with the same kind of alcoholic beverage.	T	F
12.	A can of beer and a glass of wine both contain the same amount of alcohol.	T	F
13.	Alcohol is a widely abused drug.	T	F
14.	Alcohol is the cause of the majority of fatal car accidents.	T	F
15.	After the effects of alcohol wear off, you are likely to be more nervous than before drinking.	T	F
16.	Drinking helps people get a more restful night's sleep.	T	F
17.	Most adults drink alcohol everyday.	T	F
18.	People who drink the same amount of alcohol will feel and act the same.	T	F
19.	Women who are addicted to alcohol before they become pregnant will stop drinking as soon as they become pregnant.	T	F

20. The placenta of a pregnant women acts more like a filter than a sponge. T F

Appendix E Cont'd

21. Most adults do not smoke marijuana. T F

22. More teenagers smoke marijuana than smoke cigarettes. T F

23. Very few junior high school students smoke marijuana. T F

24. Peer pressure is not a factor in teenagers' decision to use marijuana. T F

25. Smoking marijuana can cause your heart to beat faster. T F

26. There is no evidence that marijuana use produces any long-term effects on the body. T F

27. Smoking marijuana can cause a decrease in body temperature. T F

28. Smoking marijuana can help increase reaction time. T F

29. Smoking marijuana during pregnancy is not harmful. T F

30. Smoking marijuana during pregnancy may cause the baby to have learning problems. T F

31. Most people who use crack and cocaine are "bums". T F

32. Cocaine can make you crazy. T F

33. A person can only become addicted to crack after they use it several times. T F

34. Crack use can cause undernourishment and sickness. T F

35. Many crimes are committed because a person is dependent on crack or cocaine. T F

36. Cocaine is a depressant. T F

37. A lot of people who use cocaine have died of heart attacks. T F

38. Using crack does not cause damage to the heart and brain. T F

39. If a mother uses cocaine during her pregnancy the baby is more likely to be mentally retarded. T F

40. Babies born to mothers who are addicted to cocaine are also addicted to cocaine. T F

Indicate on a scale from 1 to 5 how much you agree or disagree with each statement.

Appendix F

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. Smoking cigarettes makes you look cool.	1	2	3	4	5
2. Kids who smoke have more friends.	1	2	3	4	5
3. People who smoke cigarettes are more uptight than people who don't.	1	2	3	4	5
4. Kids who smoke cigarette look stupid.	1	2	3	4	5
5. If kids smoke, it proves they're tough.	1	2	3	4	5
6. Smoking cigarettes lets you have more fun.	1	2	3	4	5
7. Kids who smoke are show-offs.	1	2	3	4	5
8. Kids who smoke cigarettes are more grown-up.	1	2	3	4	5
9. It is okay for a pregnant women to smoke.	1	2	3	4	5
10. The choice to smoke during pregnancy is a woman's own business.	1	2	3	4	5
11. If kids drink alcohol, it proves they're tough.	1	2	3	4	5
12. Drinking alcohol lets you have more fun.	1	2	3	4	5
13. Kids who drink alcohol have more friends.	1	2	3	4	5
14. People who drink alcohol are more uptight than people who don't.	1	2	3	4	5
15. Drinking alcohol makes people act stupid.	1	2	3	4	5
16. Drinking alcohol makes you look cool.	1	2	3	4	5
17. Kids who drink are more grown-up.	1	2	3	4	5
18. Kids who drink are show-offs.	1	2	3	4	5
19. It is okay for a pregnant woman to drink alcohol.	1	2	3	4	5

Appendix F Cont'd

20. The choice to drink alcohol during pregnancy is a woman's own business.	1	2	3	4	5
21. There is nothing wrong with smoking marijuana.	1	2	3	4	5
22. Smoking marijuana makes you look cool.	1	2	3	4	5
23. Kids who smoke marijuana have more friends.	1	2	3	4	5
24. Smoking marijuana lets you have more fun.	1	2	3	4	5
25. Kids who smoke marijuana look stupid.	1	2	3	4	5
26. People who smoke marijuana are more uptight than those who don't.	1	2	3	4	5
27. Kids who smoke marijuana are more grown-up.	1	2	3	4	5
28. Kids who smoke marijuana are show-offs.	1	2	3	4	5
29. It is okay for a pregnant woman to smoke marijuana.	1	2	3	4	5
30. The choice to smoke marijuana during pregnancy is a woman's own business.	1	2	3	4	5
31. There is nothing wrong with using hard drugs.	1	2	3	4	5
32. Using hard drugs makes you look cool.	1	2	3	4	5
33. Kids who use hard drugs have more friends.	1	2	3	4	5
34. Using hard drugs lets you have more fun.	1	2	3	4	5
35. Kids who use hard drugs look stupid.	1	2	3	4	5
36. People who use hard drugs are more uptight than those who don't.	1	2	3	4	5
37. Kids who use hard drugs are more grown-up.	1	2	3	4	5
38. Kids who use hard drugs are show-offs.	1	2	3	4	5
39. It is okay for a pregnant woman to use hard drugs.	1	2	3	4	5
40. The choice to use hard drugs during pregnancy is a woman's own business.	1	2	3	4	5

Appendix G

(Boy)

What follows are descriptions of 3 situations in which you might find yourself sometime. Read each one and list 5 things that you would try to do if you were in that situation.

1. You are in a clothing store with your friend. He has just shoplifted a B.U.M. sweatshirt and put it under his coat. You know that if the shoplifting is discovered you are just as guilty as your friend, and you don't want to get into trouble. Now write down five different things you would do or say to solve your situation.

2. You are at a party and your friend is pressuring you to smoke marijuana. Your parents have warned you that they do not approve of drug use and that if they find out, the consequences will be severe. You have decided that because you realize the negative effects of smoking marijuana you want to follow your parents wishes, however, your friend is being very pushy. Now write down five different things you would do or say to solve your situation.

3. Imagine that your girlfriend is pregnant and your families know. You are both graduating and your friends and family are having a party in your honour. Her parents have bought a very expensive bottle of champagne to celebrate your accomplishments. Your girlfriend has refused a glass of the champagne because she knows the dangers of drinking while pregnant. Her refusal hurts her father's feelings and he is angry and calling her ungrateful. You want to support your girlfriend in standing by her decision and you do not like her father angry at her. Now write down five different things you would do or say to solve your situation.

(Girl)

Appendix H

What follows are descriptions of 3 situations in which you might find yourself sometime. Read each one and list 5 things that you would try to do if you were in that situation.

1. You are in a clothing store with your friend. She has just shoplifted a B.U.M. sweatshirt and put it under her coat. You know that if the shoplifting is discovered you are just as guilty as your friend, and you don't want to get into trouble. Now write down five different things you would do or say to solve your situation.

2. You are at a party and your friend is pressuring you to smoke marijuana. Your parents have warned you that they do not approve of drug use and that if they find out, the consequences will be severe. You have decided that because you realize the negative effects of smoking marijuana you want to follow your parents wishes, however, your friend is being very pushy. Now write down five different things you would do or say to solve your situation.

3. Imagine that you are pregnant and your family knows. You are graduating and your friends and family are having a party in your honour. Your parents have bought a very expensive bottle of champagne to celebrate your accomplishments. You have refused a glass of the champagne because you know the dangers of drinking while pregnant. Your refusal hurts your father's feelings and he is angry and calling you ungrateful. You want to stand by your decision but you do not like your father angry at you. Now write down five different things you would do or say to solve your situation.

(Boys)

Appendix I

Circle a number that represents what you would do in the following situations.

1. What would you say if a friend offered you:

	definitely no	probably no	undecided	probably yes	definitely yes
cigarettes	1	2	3	4	5
beer	1	2	3	4	5
wine	1	2	3	4	5
hard liquor	1	2	3	4	5
marijuana	1	2	3	4	5
cocaine	1	2	3	4	5
crack	1	2	3	4	5
depressants	1	2	3	4	5
stimulants	1	2	3	4	5

2. If your girlfriend was pregnant, would you want her to use:

	definitely no	probably no	undecided	probably yes	definitely yes
cigarettes	1	2	3	4	5
beer	1	2	3	4	5
wine	1	2	3	4	5
hard liquor	1	2	3	4	5
marijuana	1	2	3	4	5
cocaine	1	2	3	4	5
crack	1	2	3	4	5
depressants	1	2	3	4	5
stimulants	1	2	3	4	5

(Girls)

Appendix J

Circle a number that represents what you would do in the following situations.

1. What would you say if a friend offered you:

	definitely no	probably no	undecided	probably yes	definitely yes
cigarettes	1	2	3	4	5
beer	1	2	3	4	5
wine	1	2	3	4	5
hard liquor	1	2	3	4	5
marijuana	1	2	3	4	5
cocaine	1	2	3	4	5
crack	1	2	3	4	5
depressants	1	2	3	4	5
stimulants	1	2	3	4	5

2. If you were pregnant, what would you say if a friend offered you:

	definitely no	probably no	undecided	probably yes	definitely yes
cigarettes	1	2	3	4	5
beer	1	2	3	4	5
wine	1	2	3	4	5
hard liquor	1	2	3	4	5
marijuana	1	2	3	4	5
cocaine	1	2	3	4	5
crack	1	2	3	4	5
depressants	1	2	3	4	5
stimulants	1	2	3	4	5

Appendix J. ANOVA source tables.

Note: Between subjects variables = sex (boy, girl) and group (intervention, Information-only, control)

Within subjects variables = time (pre-intervention, post-intervention, 6 week follow-up)

ANOVA Source Table for Current Use of Alcohol

Variable	df	MSE	F	p	eta^2
Time	2	1.39	3.27	0.04	0.05
Time x Group	4	0.40	0.94	0.45	0.03
Time x Gender	2	0.46	1.08	0.34	0.02
Time x Group x Gender	4	0.39	0.91	0.46	0.03
Error	126	1.43			
Group	2	15.48	3.59	0.03	0.10
Gender	1	4.02	0.01	0.92	0.00
Group x Gender	2	2.96	0.01	0.99	0.00
Error	63	4.31			

ANOVA Source Table for Current Use of Cigarettes

Variable	df	MSE	F	p	eta^2
Time	2	1.22	3.99	0.02	0.06
Time x Group	4	0.47	1.53	0.20	0.05
Time x Gender	2	0.27	0.89	0.41	0.01
Time x Group x Gender	4	0.47	1.55	0.19	0.05
Error	126	0.31			
Group	2	10.28	1.90	0.16	0.06
Gender	1	0.30	0.06	0.81	0.00
Group x Gender	2	5.38	0.99	0.38	0.03
Error	63	5.43			

ANOVA Source Table for Current Use of Marijuana

Variable	df	MSE	F	p	eta^2
Time	2	0.73	2.89	0.07	0.04
Time x Group	4	1.11	3.75	0.01	0.11
Time x Gender	2	0.19	0.69	0.50	0.01
Time x Group x Gender	4	0.38	1.41	0.24	0.04
Error	124	0.27			
Group	2	41.65	9.81	0.00	0.23
Gender	1	0.35	0.08	0.78	0.00
Group x Gender	2	5.77	1.27	0.29	0.04
Error	62	4.54			

ANOVA Source Table for Current Use of Hard Drugs

Variable	df	MSE	F	p	eta^2
Time	2	3.10	2.89	0.06	0.04
Time x Group	4	1.28	1.19	0.32	0.04
Time x Gender	2	0.95	0.89	0.42	0.01
Time x Group x Gender	4	0.15	1.44	0.97	0.01
Error	124	1.07			
Group	2	2.03	0.71	0.50	0.02
Gender	1	26.79	9.33	0.00	0.13
Group x Gender	2	2.28	0.79	0.46	0.03
Error	62	2.87			

ANOVA Source Table for Intentions to use Alcohol

Variable	df	MSE	F	p	eta^2
Time	1.89	11.90	5.74	0.01	0.09
Time x Group	3.79	7.92	3.82	0.01	0.11
Time x Gender	1.90	0.94	0.45	0.63	0.01
Time x Group x Gender	3.79	1.12	0.54	0.70	0.02
Error	115.65	2.07			
Group	2	212.43	5.42	0.01	0.15
Gender	1	8.99	0.23	0.63	0.01
Group x Gender	2	45.45	1.16	0.32	0.04
Error	61	39.19			

ANOVA Source Table for Intentions to use Cigarettes

Variable	df	MSE	F	p	eta^2
Time	2	1.52	3.14	0.05	0.05
Time x Group	4	0.62	1.27	0.28	0.04
Time x Gender	2	0.23	0.48	0.62	0.01
Time x Group x Gender	4	0.52	1.07	0.37	0.03
Error	126	0.48			
Group	2	15.07	3.00	0.06	0.09
Gender	1	0.15	0.03	0.86	0.00
Group x Gender	2	21.91	4.37	0.02	0.12
Error	63	5.02			

ANOVA Source Table for Intentions to use Marijuana

Variable	df	MSE	F	p	eta^2
Time	2	0.16	0.36	0.70	0.01
Time x Group	4	0.91	1.99	0.10	0.06
Time x Gender	2	9.11	0.20	0.82	0.00
Time x Group x Gender	4	0.10	0.22	0.93	0.01
Error	126	0.46			
Group	2	36.32	7.99	0.00	0.20
Gender	1	9.84	2.16	0.15	0.03
Group x Gender	2	12.81	2.82	0.07	0.08
Error	63	4.55			

ANOVA Source Table for Intentions to use Hard Drugs

Variable	df	MSE	F	p	eta^2
Time	1.57	2.41	0.44	0.61	0.01
Time x Group	3.14	8.67	1.56	0.20	0.05
Time x Gender	1.57	1.79	0.32	0.67	0.01
Time x Group x Gender	3.14	1.86	0.34	0.81	0.01
Error	95.76	5.53			
Group	2	69.71	4.85	0.01	0.14
Gender	1	2.86	0.20	0.66	0.00
Group x Gender	2	1.00	0.07	0.93	0.01
Error	61	4.37			

ANOVA Source Table for Intentions to use Alcohol During Pregnancy

Variable	df	MSE	F	p	eta^2
Time	1.82	6.54	2.36	0.10	0.04
Time x Group	3.64	10.21	3.67	0.01	0.11
Time x Gender	1.82	1.03	0.37	0.67	0.01
Time x Group x Gender	3.64	2.49	0.90	0.46	0.03
Error	112.81	2.77			
Group	2	32.94	7.30	0.00	0.19
Gender	1	3.03	0.67	0.42	0.01
Group x Gender	2	2.87	0.63	0.53	0.02
Error	62	4.53			

ANOVA Source Table for Intentions to use Cigarettes During Pregnancy

Variable	df	MSE	F	p	eta^2
Time	2	0.76	2.54	0.08	0.04
Time x Group	4	1.28	4.28	0.00	0.12
Time x Gender	2	0.17	0.57	0.57	0.01
Time x Group x Gender	4	0.20	0.66	0.62	0.02
Error	124	0.30			
Group	2	1.38	2.18	0.12	0.07
Gender	1	2.81	0.04	0.85	0.00
Group x Gender	2	0.91	1.44	0.25	0.04
Error	62	0.63			

ANOVA Source Table for Intentions to use Marijuana During Pregnancy

Variable	df	MSE	F	p	eta^2
Time	2	0.63	3.37	0.04	0.05
Time x Group	4	0.77	4.09	0.00	0.12
Time x Gender	2	0.20	1.06	0.35	0.02
Time x Group x Gender	4	0.12	0.66	0.62	0.02
Error	124	0.19			
Group	2	3.02	2.33	0.12	0.07
Gender	1	6.63	0.05	0.82	0.00
Group x Gender	2	0.35	0.27	0.77	0.01
Error	62	1.30			

ANOVA Source Table for Intentions to use Hard Drugs During Pregnancy

Variable	df	MSE	F	p	eta^2
Time	1.16	8.08	2.60	0.11	0.04
Time x Group	2.32	7.96	2.57	0.08	0.08
Time x Gender	1.16	0.39	0.13	0.76	0.00
Time x Group x Gender	2.32	0.39	0.12	0.91	0.00
Error	70.64	3.11			
Group	2	5.95	2.70	0.08	0.08
Gender	1	0.55	0.25	0.62	0.00
Group x Gender	2	0.54	0.25	0.78	0.01
Error	61	2.20			

ANOVA Source Table for Knowledge about Alcohol

Variable	df	MSE	F	p	eta^2
Time	2	3.10	2.89	0.06	0.04
Time x Group	4	1.28	1.19	0.32	0.04
Time x Gender	2	0.95	0.89	0.42	0.01
Time x Group x Gender	4	0.15	1.44	0.97	0.01
Error	126	1.07			
Group	2	2.03	0.71	0.50	0.02
Gender	1	26.79	9.33	0.00	0.13
Group x Gender	2	2.28	0.79	0.46	0.03
Error	63	2.87			

ANOVA Source Table for Knowledge about Cigarettes

Variable	df	MSE	F	p	eta^2
Time	2	12.35	11.78	0.00	0.16
Time x Group	4	2.92	2.79	0.03	0.08
Time x Gender	2	3.47	3.31	0.04	0.05
Time x Group x Gender	4	0.43	0.41	0.80	0.01
Error	126	1.05			
Group	2	10.08	2.52	0.09	0.07
Gender	1	7.93	1.98	0.16	0.03
Group x Gender	2	5.48	1.37	0.26	0.04
Error	63	4.00			

ANOVA Source Table for Knowledge about Marijuana

Variable	df	MSE	F	p	eta^2
Time	2	0.98	0.79	0.46	0.01
Time x Group	4	2.12	1.70	0.15	0.05
Time x Gender	2	1.57	1.26	0.29	0.02
Time x Group x Gender	4	0.77	0.62	0.65	0.02
Error	126	1.25			
Group	2	44.17	12.23	0.00	0.28
Gender	1	0.19	0.05	0.82	0.00
Group x Gender	2	11.65	3.23	0.05	0.10
Error	63	3.61			

ANOVA Source Table for Knowledge about Hard Drugs

Variable	df	MSE	F	p	eta^2
Time	2	3.22	3.03	0.05	0.05
Time x Group	4	2.02	1.90	0.11	0.06
Time x Gender	2	1.16	1.09	0.34	0.02
Time x Group x Gender	4	1.33	1.25	0.29	0.04
Error	126	1.06			
Group	2	6.04	2.29	0.11	0.07
Gender	1	5.68	0.02	0.88	0.00
Group x Gender	2	4.67	1.77	0.18	0.05
Error	63	2.64			

ANOVA Source Table for Knowledge about Alcohol Use During Pregnancy

Variable	df	MSE	F	p	eta^2
Time	2	0.89	3.94	0.02	0.06
Time x Group	4	0.52	2.32	0.06	0.07
Time x Gender	2	0.21	0.91	0.41	0.01
Time x Group x Gender	4	0.38	1.70	0.15	0.05
Error	124	0.23			
Group	2	1.91	3.03	0.06	0.09
Gender	1	0.97	1.54	0.22	0.02
Group x Gender	2	7.13	0.17	0.89	0.01
Error	62	0.63			

ANOVA Source Table for Knowledge about Cigarette Use During Pregnancy

Variable	df	MSE	F	p	eta^2
Time	1.84	0.71	1.89	0.16	0.03
Time x Group	3.67	0.21	0.56	0.68	0.02
Time x Gender	1.84	3.28	0.09	0.90	0.00
Time x Group x Gender	3.67	0.69	1.83	0.13	0.06
Error	115.65	0.38			
Group	2	0.35	0.56	0.58	0.02
Gender	1	0.82	1.33	0.25	0.02
Group x Gender	2	1.11	1.79	0.18	0.05
Error	63	0.62			

ANOVA Source Table for Knowledge about Marijuana Use During Pregnancy

Variable	df	MSE	F	p	eta^2
Time	2	0.26	1.16	0.32	0.02
Time x Group	4	0.33	1.46	0.22	0.04
Time x Gender	2	0.18	0.82	0.45	0.01
Time x Group x Gender	4	0.17	0.77	0.55	0.02
Error	126	0.22			
Group	2	0.54	1.63	0.20	0.05
Gender	1	1.90	5.73	0.02	0.08
Group x Gender	2	0.47	1.43	0.26	0.04
Error	63	0.33			

ANOVA Source Table for Knowledge about Hard Drugs Use During Pregnancy

Variable	df	MSE	F	p	eta^2
Time	2	1.46	7.14	0.00	0.10
Time x Group	4	8.10	0.40	0.81	0.01
Time x Gender	2	0.22	1.09	0.34	0.02
Time x Group x Gender	4	0.19	0.93	0.45	0.03
Error	126	0.20			
Group	2	1.80	5.11	0.01	0.14
Gender	1	0.66	1.88	0.18	0.03
Group x Gender	2	0.69	1.96	0.15	0.06
Error	63	0.35			

ANOVA Source Table for Attitudes about Alcohol

Variable	df	MSE	F	p	eta^2
Time	2	47.62	4.23	0.17	0.06
Time x Group	4	18.83	1.67	0.16	0.05
Time x Gender	2	2.10	0.19	0.83	0.00
Time x Group x Gender	4	5.71	0.51	0.73	0.02
Error	126	11.26			
Group	2	168.30	3.52	0.04	0.10
Gender	1	148.85	3.11	0.08	0.05
Group x Gender	2	139.63	2.92	0.06	0.09
Error	63	47.88			

ANOVA Source Table for Attitudes about Smoking

Variable	df	MSE	F	p	eta^2
Time	2	74.33	6.61	0.00	0.10
Time x Group	4	28.11	2.50	0.05	0.07
Time x Gender	2	0.24	0.02	0.98	0.00
Time x Group x Gender	4	10.34	0.92	0.46	0.03
Error	126	11.25			
Group	2	113.79	2.56	0.09	0.08
Gender	1	225.01	5.07	0.03	0.07
Group x Gender	2	186.82	4.21	0.02	0.12
Error	63	44.41			

ANOVA Source Table for Attitudes about Marijuana

Variable	df	MSE	F	p	eta^2
Time	2	18.14	1.19	0.31	0.02
Time x Group	4	8.74	0.57	0.68	0.02
Time x Gender	2	2.47	0.16	0.85	0.00
Time x Group x Gender	4	3.60	0.24	0.98	0.01
Error	126	15.25			
Group	2	388.87	6.81	0.02	0.18
Gender	1	268.34	4.70	0.03	0.07
Group x Gender	2	280.67	4.91	0.01	0.14
Error	63	57.14			

ANOVA Source Table for Attitudes about Hard Drugs

Variable	df	MSE	F	p	eta^2
Time	2	38.02	2.30	0.11	0.04
Time x Group	4	37.78	2.28	0.07	0.07
Time x Gender	2	1.22	0.07	0.93	0.00
Time x Group x Gender	4	10.86	0.66	0.62	0.02
Error	120	16.56			
Group	2	103.88	2.53	0.09	0.08
Gender	1	0.78	0.02	0.89	0.00
Group x Gender	2	47.48	1.16	0.32	0.04
Error	60	41.04			

ANOVA Source Table for Attitudes about Alcohol Use During Pregnancy

Variable	df	MSE	F	p	eta^2
Time	2	1.25	0.77	0.46	0.01
Time x Group	4	3.01	1.86	0.12	0.06
Time x Gender	2	0.18	0.11	0.89	0.00
Time x Group x Gender	4	0.60	0.37	0.83	0.01
Error	126	1.62			
Group	2	16.18	4.01	0.02	0.11
Gender	1	11.22	2.78	0.10	0.04
Group x Gender	2	4.72	1.17	0.32	0.04
Error	63	4.04			

ANOVA Source Table for Attitudes about Cigarette Use During Pregnancy

Variable	df	MSE	F	p	eta^2
Time	2	1.82	1.23	0.30	0.02
Time x Group	4	0.82	0.56	0.70	0.02
Time x Gender	2	0.67	0.45	0.64	0.01
Time x Group x Gender	4	1.19	0.81	0.53	0.03
Error	124	1.48			
Group	2	19.68	3.50	0.04	0.10
Gender	1	1.27	0.23	0.64	0.01
Group x Gender	2	0.83	0.15	0.86	0.01
Error	62	5.63			

ANOVA Source Table for Attitudes about Marijuana Use During Pregnancy

Variable	df	MSE	F	p	eta^2
Time	2	1.68	1.22	0.30	0.02
Time x Group	4	1.32	0.96	0.43	0.03
Time x Gender	2	0.49	0.35	0.70	0.01
Time x Group x Gender	4	0.39	0.29	0.89	0.01
Error	124	1.37			
Group	2	26.33	4.95	0.01	0.14
Gender	1	17.27	3.25	0.08	0.05
Group x Gender	2	0.81	0.15	0.86	0.01
Error	62	5.32			

ANOVA Source Table for Attitudes about Hard Drug Use During Pregnancy

Variable	df	MSE	F	p	eta^2
Time	2	3.56	1.93	0.15	0.03
Time x Group	4	3.77	2.03	0.10	0.06
Time x Gender	2	0.25	0.13	0.88	0.00
Time x Group x Gender	4	0.61	0.33	0.86	0.01
Error	124	1.86			
Group	2	22.43	4.05	0.02	0.12
Gender	1	0.58	0.10	0.75	0.00
Group x Gender	2	0.93	0.17	0.85	0.01
Error	62	5.54			

ANOVA Source Table for Problem 1 - Confrontation

Variable	df	MSE	F	p	eta^2
Time	2	0.03	0.76	0.47	0.01
Time x Group	4	0.09	2.29	0.06	0.07
Time x Gender	2	0.08	2.00	0.14	0.03
Time x Group x Gender	4	0.06	1.60	0.18	0.03
Error	126	0.04			
Group	2	0.32	2.38	0.10	0.04
Gender	1	0.31	2.29	0.14	0.02
Group x Gender	2	0.07	0.53	0.59	0.01
Error	63	0.13			

ANOVA Source Table for Problem 1 – Planned Problem Solving

Variable	df	MSE	F	p	eta^2
Time	2	0.02	0.48	0.62	0.02
Time x Group	4	0.03	0.78	0.54	0.01
Time x Gender	2	0.01	0.19	0.83	0.02
Time x Group x Gender	4	0.03	0.77	0.54	0.01
Error	126	0.04			
Group	2	0.48	3.24	0.05	0.06
Gender	1	0.14	0.94	0.34	0.00
Group x Gender	2	0.79	5.37	0.01	0.11
Error	63	0.15			

ANOVA Source Table for Problem 1 – Emotion Focused

Variable	df	MSE	F	p	eta^2
Time	2	0.06	1.29	0.28	0.01
Time x Group	4	0.04	0.92	0.46	0.00
Time x Gender	2	0.07	1.39	0.25	0.01
Time x Group x Gender	4	0.09	1.80	.013	0.04
Error	126	0.05			
Group	2	0.60	3.84	0.03	0.08
Gender	1	0.07	0.45	0.51	0.01
Group x Gender	2	0.16	1.01	0.37	0.00
Error	63	0.16			

ANOVA Source Table for Problem 2 - Confrontation

Variable	df	MSE	F	p	eta^2
Time	2	0.02	0.42	0.66	0.02
Time x Group	4	0.02	0.57	0.68	0.03
Time x Gender	2	0.01	0.25	0.78	0.02
Time x Group x Gender	4	0.04	0.88	0.78	0.01
Error	126	0.04			
Group	2	0.57	7.69	0.00	0.16
Gender	1	0.38	5.12	0.03	0.06
Group x Gender	2	0.10	1.31	0.28	0.01
Error	63	0.07			

ANOVA Source Table for Problem 2 – Planned Problem Solving

Variable	df	MSE	F	p	eta^2
Time	2	0.08	2.18	0.12	0.03
Time x Group	4	0.17	4.43	0.00	0.17
Time x Gender	2	0.03	0.82	0.44	0.01
Time x Group x Gender	4	0.05	1.31	0.27	0.02
Error	126	0.04			
Group	2	0.40	2.62	0.08	0.04
Gender	1	0.01	0.04	0.85	0.01
Group x Gender	2	0.38	2.54	0.09	0.04
Error	63	0.15			

ANOVA Source Table for Problem 2 – Emotion Focused

Variable	df	MSE	F	p	eta^2
Time	2	0.23	4.66	0.01	0.10
Time x Group	4	0.07	1.45	0.22	0.03
Time x Gender	2	0.12	2.39	0.10	0.04
Time x Group x Gender	4	0.03	0.66	0.62	0.02
Error	126	0.05			
Group	2	0.17	1.28	0.29	0.01
Gender	1	0.01	0.06	0.81	0.01
Group x Gender	2	0.07	0.53	0.59	0.01
Error	63	0.13			

ANOVA Source Table for Problem 3- Confrontation

Variable	df	MSE	F	p	eta^2
Time	2	0.10	2.23	0.11	0.03
Time x Group	4	0.08	1.74	0.15	0.04
Time x Gender	2	0.02	0.54	0.58	0.01
Time x Group x Gender	4	0.05	1.25	0.29	0.01
Error	126	0.04			
Group	2	0.80	6.31	0.00	0.13
Gender	1	0.86	6.80	0.01	0.08
Group x Gender	2	0.23	1.84	0.17	0.02
Error	63	0.13			

ANOVA Source Table for Problem 3- Planned Problem Solving

Variable	df	MSE	F	p	eta^2
Time	2	0.41	10.11	0.00	0.21
Time x Group	4	0.07	1.72	0.15	0.04
Time x Gender	2	0.01	0.22	0.80	0.02
Time x Group x Gender	4	0.00	0.05	0.99	0.06
Error	126	0.04			
Group	2	0.11	0.76	0.47	0.01
Gender	1	0.81	5.48	0.02	0.06
Group x Gender	2	0.08	0.51	0.61	0.01
Error	63	0.15			

ANOVA Source Table for Problem 3- Emotion Focused

Variable	df	MSE	F	p	eta^2
Time	2	0.13	2.83	0.06	0.05
Time x Group	4	0.02	0.50	0.74	0.03
Time x Gender	2	0.00	0.04	0.96	0.03
Time x Group x Gender	4	0.22	4.72	0.00	0.18
Error	126	0.05			
Group	2	0.60	4.10	0.02	0.08
Gender	1	0.14	0.93	0.34	0.00
Group x Gender	2	0.29	1.97	0.15	0.03
Error	63	0.15			