THE ROLE OF PSYCHOLOGICAL DISTRESS AND ATTACHMENT IN ADOLESCENT SUBSTANCE USE

by

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B.Sc. McGill University 1991

THESIS SUBMITTED IN PARTIAL

FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS

in the Department

of

Psychology

SIMON FRASER UNIVERSITY

December 1994

APPROVAL

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Degree:	Master of Arts
Title of Thesis:	The Role of Psychological Distress and Attachment in Adolescent Substance Use.

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Date Approved December 12 1994

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Title of Thesis/Project/Extended Essay

The Role of Psychological Distress and Attachment in Adolescent Substance Use

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Abstract

The literature on adolescent substance use has consistently identified conduct-disordered adolescents as likely to manifest concurrent substance use disorders. However, the nature of the relationship between conduct problems and drug use remains unclear. In this study, the validity of the self-medication hypothesis of drug use was empirically investigated from an attachment perspective in adolescents referred for severe behavioural problems. Sixty-five clinic-referred adolescents were assessed on drug behaviour, severity of behavioural problems, psychological distress, and attachment patterns using various methods of measurement, including structured and semi-structured interviews and self-report questionnaires. As expected, after controlling for the relationship between conduct disorder severity and drug behaviour, elevated psychological distress significantly predicted drug use and impairment. Although the degree of overall security of attachment was unrelated to drug behaviour and distress, patterns of insecure attachment showed predictive potential with respect to drug use and associated symptoms of impairment in females. These findings lend credence to the notion that involvement with substances by conduct-disordered adolescents constitutes a functional behaviour that merits specific attention in the design and implementation of treatment programmes.

Acknowledgements

This thesis would be incomplete without due recognition to all those who helped me. First and foremost, I would like to thank my supervisor, Marlene Moretti, who was active in the planning and implementation of virtually every stage of this project. Her guidance, patience, and encouragement have been invaluable to me on an academic as well as on a personal level. I am also extremely grateful to the adolescents who participated in this study and who taught me a great deal along the way. I truly hope that this work is an accurate reflection of their experience and that it inspires clinical interest in working with such youth. Sincere thanks to Elaine Scharfe and Shanna Trinke who devoted may hours of their time to coding interviews, to Prahtiba Reebye for her help with data collection, and to the staff at the Maples Adolescent Treatment Centre for their cooperation and interest in the project. And last, but certainly not least, I am greatly indebted to my friends and family for supporting and caring for me, for bringing me a new perspective, and for having faith in me when I did not.

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The Role of Psychological Distress and Attachment in Adolescent Substance Use

Substance use is a serious mental health problem among adolescents (Robins, 1984). Research indicates that the transition from early to late adolescence is marked by dramatic increases in drug use (Boyle, Offord, Racine, Szatmari, Fleming, & Links, 1992). A 1987 U.S. survey of high school seniors revealed that 57% of participants had used illicit drugs, 92% had used alcohol, and 40% reported having at least one occasion of heavy drinking during the two weeks prior to the survey (cited in Bukstein, Brent & Kaminer, 1989). The toll imposed on society by substance disorders and the paucity of successful interventions underscores the need for a greater understanding of the factors that contribute to adolescent drug abuse.

While drug experimentation is relatively common in adolescence and not indicative of dysfunction, prolonged and excessive drug use has been shown to be associated with social and psychological impairment (Shedler & Block, 1989). Thus, an important issue for both clinicians and researchers is the identification of youth at risk for the development of substance use disorders. A large overlap between drug use and psychiatric disorder in adolescents has consistently been documented in the literature (Bukstein et al., 1989; Stowell & Estroff, 1992). For example, Deykin, Levy and Wells (1987) found elevated rates of substance use among youth diagnosed with conduct disorder and depression. Greenbaum, Prange, Friedman, and Silver (1991) also studied youth identified by mental health or public school systems as having serious emotional disturbances, and found that drug abuse was significantly associated with conduct disorder and depression. Similarly, in youth undergoing inpatient

treatment for substance abuse, conduct disorder was found to be the most frequently co-occurring DSM-III disorder (42%), followed by depression (35%) (DiMilio, 1989). Conduct disorder and depression were also found to co-exist significantly with substance abuse in a sample of juvenile delinquents (Neighbors, Kempton, & Forehand, 1992). In addition, studies of large scale community samples of adolescents have indicated that conduct disorder is a significant predictor of substance use even after controlling for other psychiatric disorders (Boyle et al., 1992). Taken as a whole, these findings suggest that youth who develop substance disorders are likely to exhibit conduct problems and depressive symptomatology.

Currently, the nature of the relationship between drug abuse and conduct disorder is unclear. Substance taking behaviour is conceived by some clinicians and researchers as inherent to conduct disorder; that is, according to this view, drug use represents one of many forms of antisocial behaviour adopted by conduct-disordered youth. A slightly different perspective holds that the relationship may be additive, such that substance use simply increases as a function of the severity of additional symptoms or problem behaviours. This postulate receives limited support from the finding that in an inpatient adult group of substance abusers, the severity of the co-existing psychiatric condition was the best single predictor of treatment response, regardless of the diagnosis (McLellan, Childress, & Woody, 1985). Alternatively, substance abuse may have specific clinical importance for conduct disordered youth. Substance use may represent a coping mechanism for conduct disordered adolescents who have been found to experience elevated levels of psychological distress, school

failure and familial conflict (Kazdin, 1987; Holland, Moretti, Verlaan, & Peterson, 1993).

The Self-medication Hypothesis

The suggestion that substances may be used by certain individuals as a means of coping with painful affective states such as depression, anxiety, and rage, has been referred to as the "self-medication" hypothesis (Khantzian, 1985). This hypothesis is consistent with findings in adults that depression precedes substance abuse (Deykin et al., 1987), and that it increases the likelihood of future substance abuse by up to 50% (Christie, Burke & Regier, 1988). In addition, Weiss, Griffin, and Mirin (1991) found that drug abusers used drugs in response to negative mood swings, which they reported improved their mood.

This hypothesis also receives support from the adolescent literature. For instance, Johnston and O'Malley (1986) found that in nine national surveys of American high school students, the reasons reported for drug use varied substantially with degree of drug involvement. Frequent users were significantly more likely to report "To relax or relieve tension", "To get away from my problems or troubles" and "Because of anger and frustration" as explanations for their drug use than were occasional users, suggesting attempts at self-medication. Stowell and Estroff (1992) observed that in 68% of adolescents admitted for inpatient treatment of substance abuse, a constellation of depression, anxiety, and conduct disordered behaviour preceded the use of alcohol or illicit drugs. In the Greenbaum et al. study (1991), substance abuse was correlated with level of severity of emotional disturbance.

The Potential Contribution of Attachment in Substance Use

One potentially important piece of this puzzle which has just begun to receive attention by researchers is the role of attachment experiences in adolescence. From an attachment perspective, emotional and behavioural difficulties, including substance use, may be conceived as features of a more general underlying problem related to the development and maintenance of attachment.

One fundamental principle of attachment theory is that parental attunement and responsiveness to the child's emotional signals provides a critical context for the child's organization of affective experience (Sroufe & Waters, 1977). Bowlby's ethological theory of attachment posits that the child's determined goal is to maintain a feeling of security. However, the specific strategies employed towards this end are expected to vary according to the individual's history of managing distress with attachment figures. If the attachment figure is available and responsive to the child's distress signals, then distress will likely be regulated with coping strategies that involve active seeking and comfort from that attachment figure. In conditions where the caregiver tends to be unavailable, rejecting, or inept at comforting the child, distress may come to be associated with negative outcomes, and alternative styles of coping with distress may subsequently evolve. Theoretically, failure to be comforted is expected to lead to anxiety or anger (Bowlby, 1973).

Research on infant behaviour in a laboratory setting referred to as the Strange Situation has provided evidence for the use of different strategies for regulating distress (see Ainsworth, Blehar, Waters & Wall, 1978). From these observed patterns

of behaviours, researchers have inferred different "working models" or internal representations of attachment relationships which serve to provide the individual with guidelines for behaviour and the personal appraisal of experience. These guidelines or rules may organize strategies for regulating affect in a variety of social situations. Securely attached children have demonstrated an ability to tolerate negative affect while remaining engaged with others constructively, as well as an ability to display positive emotions that enhance social interaction and social competence (Waters, Wippman, & Sroufe, 1979). Less optimal styles of affect regulation are demonstrated by insecurely attached children. Findings from research have clearly shown an association between insecure attachment and conduct problems (Bates, Maslin, & Frankel, 1985; Erickson, Sroufe, & Egeland, 1985; Fagot & Kavanagh, 1990; Lewis & Feiring, 1984).

Another basic premise of attachment theory is that attachment relationships continue to be significant throughout the lifespan (Bowlby, 1973). This notion has so far received some empirical support from research on adolescents. For example, although relationships with peers gain importance over the course of adolescence, attachment to parents has been shown to be a significantly more powerful predictor of psychological well-being in adolescence (Armsden & Greenberg, 1987; Greenberg, Siegel & Leitch, 1983). In comparison to youth who are securely attached, adolescents who experience their parents as rejecting and/or punitive and who do not perceive their parents as consistently available or responsive to their needs (insecure, anxious attachment) have a decreased likelihood of successful problem-solving with

their parents and an increased likelihood of depression (Kobak, Sudler & Gamble, 1991). It follows, therefore, that insecurely attached youth may have fewer adaptive mechanisms of coping with their painful affective states, and a greater likelihood of turning to substances as a means of coping with their distress in adolescence.

Investigators have begun to examine the role of the parent-child relationship in the development of adolescent substance disorders. The limited research that exists on the quality of the child-parent relationship in adolescence suggests that they have the potential to predict substance use in this age group. For instance, parental warmth has been found to be a better predictor of adolescent substance use than is parental alcohol use (Johnson & Pandina, 1991). Similarly, Campo and Rohner (1992) found that perceived parental rejection in childhood was significantly higher in substance abusing adolescents than nonabusers. Youths' perceptions of poor parent-child relationships have also been shown to be a significant predictor of age of onset of marijuana use (Bailey & Hubbard, 1990).

However, to date there has been no attempt to systematically investigate the relationship between substance use and attachment styles using established methods of measuring attachment. This partly stems from the fact that measurement approaches have been designed for and validated on young children or adult populations. Whereas infant measures are clearly not appropriate for use with adolescents, adult measures are promising. However, the focus of several of these approaches is attachment to peers or romantic partners (eg., Collins & Read, 1990; Hazan & Shaver, 1987).

The framework employed by Bartholomew (1990) is one approach which has been used to assess attachment styles displayed by young adults based on family relationships as well as peer relationships (see also Bartholomew & Horowitz, 1991). Drawing upon the work of Bowlby (1973, 1980, 1982), who identified perception of the self and others as critical aspects of internal representations of attachment, Bartholomew (1990) developed and validated a model of individual differences in attachment representations in adulthood. She delineated four prototypic patterns of attachment (secure, fearful, preoccupied, and dismissing) based on the intersection of two underlying dimensions of hypothetical internal working models - valence of the self and valence of others (see Figure 1). Based on a semi-structured interview in which participants are asked to describe their experiences and feelings with respect to their family or peers (ie., the Family Attachment Interview and Peer Attachment Interview respectively), individuals are rated according to how closely they correspond to each of the theoretical attachment prototypes. A person who is rated high on the secure style, for example, is one who indicates a positive view of the self (ie., worthy and loveable) and a positive expectation of others (ie., trustworthy and accepting). It follows that the *secure* pattern is typified by a capacity for intimacy while maintaining personal autonomy. In contrast, the *fearful* pattern is characterized by anxiety concerning loss and rejection in close relationships, resulting in withdrawal from intimacy. The *preoccupied* pattern is also characterized by anxiety in close relationships; however, preoccupation is associated with the active pursuit of closeness and reassurance from others. Finally, the *dismissing* pattern is typified by high self-

esteem and a defensive maintenance of autonomy and distance in relationships. In comparison to the secure style of attachment, the three insecure attachment styles have been found to be predictive of greater interpersonal difficulty (Bartholomew & Horowitz, 1991).

Insert Figure 1 about here

Rationale for the Study

Although past research has provided important information on the strength of association and temporal relationship between substance abuse and emotional and behavioural difficulties in adolescents, it has been limited in several ways. First, most studies have employed self-reports to assess substance *use*. Although studies have shown that such data has high validity (eg., Block, Block & Keyes, 1988), it is critical that social and psychological impairment also be assessed by researchers since, as previously mentioned, drug use in itself is not necessarily pathological (Shedler & Block, 1990). This is most reliably achieved through the use of a structured interview that employs numerous specific questions (Belfer, 1993). A second and related criticism is that most investigations have relied solely on one informant and/or one method of measurement to obtain information and thus have been unable to control for the potential confound of shared method variance. Third, few studies have employed a theoretical framework for their causal hypotheses, which may be helpful in

elucidating the relationship between substance abuse, conduct problems, and psychological distress.

The present study was designed to serve as an empirical test of the self-medication hypothesis in a population of youth at risk for the development of substance use disorders. A sample of clinic-referred youth were assessed on their level of substance use, psychological distress, conduct problems, and attachment using different measurement methods. The main goal of this study was to investigate the role of attachment and psychological distress in the prediction of substance use and associated impairment. Two hypotheses were tested: 1) that substance use and impairment in a population of youth displaying conduct problems would be positively related to symptoms of depression and anxiety and 2) that substance use and impairment would be elevated in youth who display less security relative to those who are more secure.

In addition to determining the predictive contribution of level of attachment and psychological distress, this investigation sought to elucidate the nature of the relationship between attachment experiences and adolescent substance use. This potential relationship may be conceptualized in three ways (see Figure 2). First, it is possible that insecure attachment based on the parent-child relationship predicts elevated drug use *independently* from conduct disorder and psychological distress. Second, attachment experiences may *interact* with psychological distress and/or conduct disorder to predict substance use. Such a relationship implies that the predictive power of an individual's attachment depends on, or is moderated by, their

experienced level of psychological distress. Finally, the role of attachment experiences may be *mediated* by psychological distress and/or conduct disorder. The latter suggests that relative insecurity of attachment may lead to psychological distress and conduct disorder which, in turn, may lead to substance taking behaviour. Using multiple regression procedures, an attempt was made to determine which of the above models best represents the relationship between substance use, conduct disorder, psychological distress, and attachment experiences.

Insert Figure 2 about here

Finally, the relative contribution of the different patterns of attachment (ie., security, fearfulness, preoccupation, and dismissingness) to the prediction of adolescent substance taking behaviour was also explored.

Method

Participants

This study was conducted at the Response Program of the Maples Adolescent Treatment Centre, in Burnaby, B.C, between January and August, 1994. This facility receives adolescents between the ages of 10 and 17 years from across the province, primarily because of concerns regarding severe behavioural problems. Results based on admissions in the last several years have indicated that approximately 32% of adolescents resided with their natural parents, 32% were in foster care and 28% were in other care facilities such as group homes (Moretti, Holland, & Peterson, 1994).

Each youth resides in the facility for one month and takes part in a multidisciplinary assessment.

Of the 77 consecutive admissions, 74 agreed to participate in the study. Two youth verbally agreed to take part but failed to attend appointments and one youth was excluded from the study on the basis of her severe intellectual deficits. In addition, nine youth from whom it was not possible to obtain attachment ratings were excluded from the analyses. Reasons for lack of attachment ratings included refusal to have the psychological intake interview taped (n =3), technical difficulties resulting in no audiotape (n =4), and insufficient information for rating (n =2). Thus, the final sample comprised 65 youth.

Procedure and Measures

Within the first few days of admission, youth were informed by either the author or child care staff of the possibility of participating in a study concerning "the different kinds of problems that youth experience" that would include a structured diagnostic interview. Both youth and caregivers were ensured that the decision about whether to participate would not influence the youth's care and were asked to provide written consent for the use of psychological assessment results in this research project. Youth received a $20 remuneration for their participation.

Conduct Disorder and Drug Behaviour: Diagnostic Interview for Children and Adolescents - Revised. Adolescent Version (DICA-R-A; Reich, Shayka, & Taibleson, 1991). The DICA (Herjanic, & Reich, 1982) is a highly structured interview that assesses the presence or absence of symptoms indicative of the DSM-III-R (APA,

1987) disorders of childhood and adolescence. Interrater reliability of the DICA has been shown to be good, and particularly high for externalizing disorder such as conduct disorder and substance use (κ = 1.0). In addition, good concordance was found between DICA-generated and clinician-derived diagnoses (κ = .75; Welner, Reich, Herjanic, Jung, & Amado, 1987). The revised version contains the same items worded more colloquially so as to enhance rapport between the interviewer and youth (Reich et al., 1991).

A subportion of the DICA-R, comprised of the major childhood and adolescent disorders, was administered by either a psychiatrist or the author within the first two weeks of admission. Appendix A displays the disorders assessed in the course of this study in addition to conduct and substance use disorders. Interrater reliability, based on a subset of 15 cases, was high for both conduct disorder and substance use disorder (κ = 1.0 and κ = .81, respectively).

Psychological Distress: Ontario Child Health Study Scales (OCHSS; Offord et al., 1987). These measures, which are modified versions of the Child Behaviour Checklist (Achenbach & Edelbrock, 1981), were constructed to mirror DSM-III-R criteria for six of the common childhood and adolescent disorders, including conduct disorder, oppositional defiant disorder, attention-deficit hyperactivity disorder, overanxious disorder, separation anxiety disorder, and depression. Caregivers, teachers and youth complete different versions of the same questionnaire that estimates the presence and severity of symptoms for the aforementioned disorders. In addition, questions that assess functioning in the areas of social relations, family relations, and

school performance are included in the measure. Respondents are asked to rate on a 0-1-2 scale (from never to very often) how true each item is of the youth.

Norms based on a large community sample of Ontario youth are available for children aged 4 to 12 and adolescents aged 13 to 16. Symptom ratings on the OCHSS were found to show good agreement with child psychiatrists' diagnoses (Boyle et. al., 1987). The OCHSS have been shown to demonstrate adequate homogeneity, internal consistency, and test-retest reliability for both internalizing and externalizing disorders (Boyle et al., 1993).

Of interest to this study were the depression and overanxious subscales of the Youth Self-Report. Internal consistency of these subscales, estimated by the alpha coefficient, was .76 and .73, respectively. Test-retest reliability of $r = .77$ and $r = .73$, for the depression and overanxious scales respectively, was established over a three-month period (Boyle et al., 1993). The scales also successfully identified children using outpatient mental health services.

As part of the psychological assessment of the Response Program, youth were routinely requested to complete a number of self-report measures, including the OCHSS Youth Self-Report. When adolescents had difficulty reading or understanding questions, they were assisted by child care staff.

Attachment Ratings. As part of a multi-disciplinary assessment provided by the Response program, each youth was involved in a semi-structured intake interview with a clinical psychologist and an assistant within the first two weeks of admission. Prior to the study, the standard format of the structured interview was reviewed and

modified in order to incorporate information relevant to the youth's attachment to primary caregivers. Questions addressed several aspects of the youth's childhood and adolescent experience including family and peer relationships and school functioning. Provided that the youth had offered written consent for the information to be used for research purposes, the interview was audiotaped.

Psychological intake interviews were coded using the attachment framework proposed by Bartholomew (1990; Bartholomew & Horowitz, 1991). Each youth's degree of correspondence to each of four prototypic attachment patterns (secure, fearful, preoccupied, and dismissing) were rated on a 9-point scale ranging from 1 (no correspondence with the prototype) to 9 (excellent fit with the prototype). Interviews were coded by two independent expert raters who were blind to the youth's diagnostic status. For the majority of the adolescents, (n = 47), the final attachment ratings were an average of both codings. For the remainder (n = 18), attachment ratings were obtained from one coder only. Interrater reliability, based on alpha co-efficients for the secure, fearful, preoccupied, and dismissing patterns (ie., α = .83, α = .78, α = .88, α = .89, respectively), was acceptable.

Results

Demographic and Psychiatric Characteristics of the Sample

Table 1 summarizes demographic information on participants. Youths ranged in age from 10 to 17 years (M = 13.7 years) and a greater number were male (n = 44) than female (n = 21). The proportion of youth that met DICA-R criteria for disorders relevant to the hypotheses (ie., conduct disorder and substance use disorder) is also

displayed in Table 1. Chi-square analyses revealed that females met DICA-R criteria for at least one substance use disorder significantly more frequently than did males, $\chi^2(1, \underline{n} = 65) = 13.6, \underline{p} < .0003$. There was no significant sex difference in the rate of conduct disorder , $\chi^2(1, \underline{n} = 65) = .25$, ns.

Insert Table 1 about here

Description of Variables

Drug Behaviour. An index of Drug Use was obtained by averaging youths' responses on the 14 questions of the DICA-R that assess alcohol, marijuana and street drug use (eg., "Has there ever been a time when you used ___ every day or nearly every day?" and "What's the most ___ that you've had at one time?"). For those youth who endorsed the use of a substance (i.e., alcohol, marijuana, and/or street drugs), a measure of Impairment associated with use was also obtained by averaging responses on the appropriate questions for that substance. The DICA-R includes between 24 to 27 questions in each of the substance use sections, such as "When you've been using ___, have you ever done anything that might have gotten you hurt?", "Have you ever missed any time from school because you had used ___ and were too sick to go?" and "Have there been times when you found that you were staying away from everyone and just using ___ on your own?". Thus, the final Impairment index reflects an average level of impairment endorsed across only those substances used. Youth ($\underline{n}$ = 8) who reported no substance use of any kind were necessarily excluded from analyses

examining drug impairment. Drug Use and Impairment were found to be strongly and significantly related to the diagnostic status of Substance Disorder ($r = .76$, $p < .001$ and $r = .69$, $p < .001$ respectively).

Conduct Disorder. A measure of conduct disorder severity (C.D. Severity) was obtained by averaging over the number and frequency of the 20 symptoms endorsed on the DICA-R, such as running away, stealing, and skipping school. C.D. Severity was also found to be significantly related to the diagnostic status of Conduct Disorder ($r = .53$, $p < .01$).

Psychological Distress. The index of Distress represents an average of youth responses on the Depression and Overanxious Disorder subscales of the OCHSS. The former contains 16 items assessing both vegetative (e.g., "I don't have much energy" and "I've lost a lot of weight without trying to") and non-vegetative (e.g., "I am cranky" and "I think about killing myself") aspects of depression. The latter subscale is comprised of 8 items assessing generalized anxiety (e.g., "I worry about doing better at things" and "I am nervous or tense"), as well as the frequency of physical problems without known medical cause (e.g., "stomach aches or cramps", and "headaches").

Attachment Measures. The variable Security was derived from youths' ratings on the four attachment patterns using the formula (Secure - [Preoccupied + Fearful + Dismissing]; c.f., Scharfe & Bartholomew, 1994) and served as a quantitative index of overall security of attachment.

Results of t-tests on group means for males and females of the aforementioned symptom measures and attachment ratings are displayed in Table 2. These indicate

that, as a group, females endorsed a significantly greater level of substance use, substance impairment and psychological distress than did their male counterparts. Females were also rated as more preoccupied and less dismissing than were males. There were no group differences in conduct disorder severity, overall level of security, ratings of security, or ratings of fearfulness, however.

Insert Table 2 about here

The Contribution of Level of Security of Attachment and Psychological Distress to Adolescent Substance Taking Behaviour

Pearson zero-order correlations between variables used in hypothesis-testing are presented in Table 3. These indicated that conduct disorder severity was significantly related to drug use ($r = .38$, $p < .002$) but not to impairment. As predicted, the level of psychological distress was positively related to both drug use ($r = .31$, $p < .008$) and impairment ($r = .35$, $p < .006$). However, overall level of security was not significantly associated with reported drug use nor with impairment.

Insert Table 3 about here

Pearson correlation coefficients for males, displayed in Table 4, revealed that conduct disorder severity was significantly related to drug use, ($r = .49$, $p < .001$) but not to impairment, and distress was significantly related to drug impairment ($r = .38$, p

< .02) only. The relationship between overall level of security and drug behaviour was negligible, however.

Insert Table 4 about here

Results for females, shown in Table 5, indicated that only the relationship between conduct disorder severity and drug use was significant ($r = .64$, $p < .002$).

Insert Table 5 about here

The relationship of substance-taking behaviour to psychological distress and level of security of attachment was also investigated using stepwise multiple regression procedures; such analyses allow the variance accounted for by the above correlations to be assessed. Given that substance use and impairment represent different aspects of drug taking behaviour, analyses were conducted on use and impairment separately. In order to assess the relative predictive power of psychological distress and level of security, hierarchical regression analyses were performed twice for each dependent variable. In both analyses, C.D. Severity was entered first in equations predicting use and impairment in order to control for the relationship between conduct disorder and drug use established in the literature. Then, in one case, Psychological Distress was entered as a block followed by Security; in the other case, Security was entered first.

As shown in Table 6, distress was found to be a significant predictor of both use and impairment, accounting for an additional 10% and 12% of the variance, respectively, $\underline{F}$ (2, 64) = 8.30, $\underline{p}$ <.006; $\underline{F}$ (2, 54) = 7.39, $\underline{p}$ < .01. The overall level of security, however, did not significantly add to the prediction of either drug use or impairment over and above conduct disorder and distress.

Insert Table 6 about here

Due to the significant gender differences found in this sample with respect to the dependent variables, regression procedures were repeated for males and females separately (see Tables 7 and 8, respectively). Results indicated that for males, psychological distress was a significant predictor over and above conduct disorder severity of drug impairment only, accounting for approximately 13% of the variance, $\underline{F}$ (2, 34) = 5.25, $\underline{p}$ < .05.

Insert Table 7 about here

In contrast, for females, neither psychological distress nor level of security of attachment contributed significantly over and above conduct disorder severity in the prediction of drug use; the latter accounting for 42% of the variance, $\underline{F}$ (1, 20) = 13.62, $\underline{p}$ < .002. None of the variables in this equation, however, were significant predictors of impairment associated with substance use.

Insert Table 8 about here

Comparisons of Different Models

To test whether the relationship between conduct disorder, psychological distress and attachment is better represented by an interactive model than by an additive one, hierarchical regression procedures were also conducted for use and impairment by entering the additive model described above (ie., conduct disorder, psychological distress, and level of security) in one block, followed by an interactive model (ie., Security X Psychological Distress, and Security X Conduct Disorder). Results indicated that the additional contribution of the different interaction terms in the prediction of drug behaviour was negligible, suggesting, in turn, that the relationship between the variables in question is not likely to be interactive.

Summary of Hypothesis-Testing

Overall, results suggested that conduct disorder severity and psychological distress independently predicted substance use such that those youth who reported relatively more severe conduct disorder and relatively greater psychological distress endorsed relatively greater substance use. Psychological distress was also a significant predictor of impairment, whereas conduct disorder severity was not.

However, analyses examining drug behaviour separately for males versus females indicated that not only did females endorse on average greater use and impairment relative to their male counterparts, but also that females were heavy users

in *general*, and experiencing substantial drug-related impairment in functioning. It was found that, although psychological distress was successful in distinguishing those males who reported relatively greater drug-related impairment, it failed to predict *relative* drug behaviour among females. The extent of drug use in both males and females, however, was significantly predicted by level of conduct disorder severity.

Contrary to predictions, level of overall security of attachment failed to predict drug behaviour either independently, or in combination with psychological distress or conduct disorder severity. Given that the degree of security of attachment was uncorrelated with either psychological distress or conduct disorder severity, results suggest that it is unlikely that the effect of level of security on drug behaviour was mediated by one of the independent variables.

Contribution of the Different Attachment Styles to Drug Behaviour: Exploratory Analyses

As mentioned above, results indicated that youths' overall level of security of attachment was unrelated to drug behaviour. One possible explanation for this null finding was that the composite measure, used to quantify youths' internal attachment representations, was masking a potentially differential predictive power of the individual attachment patterns. In an attempt to address this question, the contribution of the different styles of attachment was also examined in an exploratory manner.

Pearson correlation coefficients for the relationships between the different patterns of attachment, distress, conduct disorder severity, and drug behaviour are displayed separately for males and females in Table 9. Results suggested that elevated

distress scores were significantly positively related to ratings of fearfulness for males (r = .52, p < .001) and approached significance for females (r = .38, p < .09). In addition, elevated distress scores were significantly negatively related to ratings of dismissingness for both males (r = -.36, p < .05) and females (r = -.45, p < .05).

Insert Table 9 about here

There were some notable sex differences in the nature of the relationships between attachment patterns and drug behaviour, however. For example, whereas ratings of preoccupation were somewhat negatively associated with male drug involvement, they were moderately positively related to female drug involvement. Similarly, ratings of dismissingness were moderately related to elevated drug impairment in females, and slightly negatively associated with impairment in their male counterparts.

In terms of statistically significant relationships, none of the patterns of attachment were significantly related to drug behaviour in males, although ratings of dismissingness tended to be positively associated with reported substance use (r = .26, p < .10). In contrast, for females, ratings of fearfulness were significantly negatively associated with both use (r = -.62, p < .004) and impairment (r = -.57, p < .008).

In order to determine the predictive power of the quality of attachment with respect to substance use and impairment, as well as the importance of the aforementioned sex differences, four sets of regression analyses were conducted, one

for each of the four patterns. The hierarchical multiple regression procedure was modified in these analyses in such a way as to allow the role of sex to be examined explicitly. In the first block, Sex was entered along with C.D. Severity, Psychological Distress, and ratings on either the Secure, Fearful, Preoccupied, and Dismissing patterns. In the second block, the Sex X Attachment Pattern term was entered.

Tables 10 through 13 display the results of regression procedures described above that include ratings of the secure, fearful, preoccupied and dismissing patterns respectively. These show that the combination of sex, conduct disorder severity, distress, and attachment pattern significantly predicted both use and impairment. However, closer examination of the results revealed that the predictive power in drug use was accounted for by sex (i.e., femaleness; $\underline{R}^2 = .21$; $p < .005$) and C.D. severity ($\underline{R}^2 = .22$, $\underline{p} < .001$), and that the explained variance in drug impairment was mainly accounted for by sex (i.e., femaleness; $\underline{R}^2 = .21$, $\underline{p} < .01$) alone. None of the patterns of attachment were significant predictors of drug behaviour. However, the contribution of fearful ratings in the prediction of drug use approached significance, $\underline{R}^2 = .027$, $p < .09$.

Analysis of the contribution of the second order interaction terms revealed that there was no significant sex difference in the effect of the secure pattern on either drug use or impairment. However, ratings on the fearful pattern of attachment significantly interacted with sex to account for an additional 12% of the variance in drug use, $\underline{F}$ (5, 58) = 12.6, $\underline{p} < .001$, over and above the main effects, and an additional 14% of the variance in drug impairment, $\underline{F}$ (5, 50) = 12.3, $\underline{p} < .002$. A

review of the nature of the interaction revealed that, as shown by the correlations above, for females, relatively lower ratings on the fearful pattern significantly predicted relatively higher drug use and associated impairment, whereas for males, fearfulness ratings were positively related to drug behaviour but did not significantly predict the latter. The interaction of Sex X Preoccupied was also a significant predictor of use, $\underline{R}^2 = .05$, $\underline{F}$ (5, 60) = 4.04, $\underline{p} < .05$, and approached significance in the prediction of impairment, $\underline{R}^2 = .04$, $\underline{F}$ (5, 52) = 2.72, $\underline{p} < .10$, suggesting that the sex difference in magnitude and direction of association between degree of fit with the preoccupied style and drug behaviour noted above was significant. Further, ratings of dismissingness significantly interacted with sex to predict drug impairment but not use, accounting for an additional 8% of the variance over and above the main effects, $\underline{F}$ (5, 52) = 6.05, $\underline{p} < .05$. Analysis of the nature of the interaction indicated that ratings of dismissingness were significantly more positively related to reported impairment for females than for males.

Insert Tables 10-13 about here

Summary of Exploratory Analyses

In general, ratings of the different attachment patterns were more strongly related to drug behaviour in females than males. In addition to sex differences in magnitude, results suggested that the direction of associations between some attachment patterns and drug variables varied between males and females. The most

striking difference involved ratings on the fearful pattern, which were found to be highly predictive of relatively *lower* drug use and impairment in females.

Discussion

This work represents the first attempt to empirically test the self-medication hypothesis from an attachment perspective. Specifically, the study examined the validity of the notion that conduct-disordered adolescents, a population recognized as being at risk for the development of substance use disorders, tend to use substances as a means of coping with psychological distress that may be associated with insecurity in parent-child attachment.

The Role of Distress

Consistent with the self-medication hypothesis, results indicated that, after controlling for the relationship between conduct disorder severity and drug behaviour, self-reports of depressive symptoms and anxiety significantly predicted elevated drug use and associated impairment. However, the predictive power of psychological distress with respect to drug taking behaviour varied with gender. In males, psychological distress significantly predicted impairment associated with drug use, but not the extent of use itself. In contrast, reports of depression and anxiety were not indicative of relative drug behaviour among females, who, as a group, were found to endorse heavy drug use and substantial related impairment in functioning. Subsequent analyses revealed that sex (i.e., femaleness) was significantly related to and attenuated the predictive power of distress. That is, when sex was regressed on substance use or

impairment, the addition of psychological distress in the equation no longer accounted for a significant amount of variance in drug behaviour.

These findings indicate that regardless of the severity of the behavioural problems, the more elevated the distress reported by a male, the greater the likelihood that he was concurrently using drugs to a problematic degree (i.e., endorsing impaired functioning). However, simply knowing that a referral was a female in this sample was sufficient basis to predict considerable drug involvement; the extent of her reported distress provided little additional predictive information. In light of the finding that females in this sample reported greater distress than did males, it is plausible that the relationship between psychological distress and drug involvement is asymptotic rather than linear, such that beyond a certain level, variations in the extent of distress become less meaningful. Thus, although elevated distress was helpful in identifying adolescents who used substances extensively and who met criteria for at least one DSM-III-R (APA, 1987) substance use disorder, it did not distinguish as well among the latter, who tended to be female.

One may question whether the finding that distress predicted impairment truly supports the view that substances were used as a means of coping with negative emotional experience. Given that the substances mainly used by these adolescents were central nervous system depressants (i.e., alcohol and marijuana) and that there was no requirement in this study that youths be detoxified before participating, the possibility exists that distress was not a precursor of drug behaviour, but rather a consequence of it.

Although the correlational nature of the current design does not allow these arguments to be refuted, other available data lend credence to the notion of self-medication. Firstly, exploratory analyses revealed that of all the diagnostic information available based on the structured interview, only a history of clinical depression was a significant predictor of drug use and impairment, accounting for an additional 6% and 18% of the variance respectively, over and above that explained by conduct disorder severity. Similarly, discriminant analyses revealed that DICA-R diagnoses of past depression and oppositional defiant disorder (which is characterized by feelings of anger and irritation towards others) were significant predictors of substance disorder. In the absence of all other information, this combination of disorders successfully classified 89% of youth who met criteria for substance disorder, and 62% of the entire sample.

Secondly, the average ages of first episode of clinical depression ($\underline{M}$ = 11.0 years, $\underline{SD}$ = 2.60) and onset of oppositional defiant disorder ($\underline{M}$ = 9.11 years, $\underline{SD}$ = 3.77) were younger than the average age of onset of problematic substance use ($\underline{M}$ = 12.8 years, $\underline{SD}$ = 1.19). Although these group means do not reflect a given individual's experience and are based on retrospective reports, the latter findings suggest that, on average, negative emotional experience tended to precede elevated substance use.

Thirdly, although the reasons for substance use were not systematically measured in this study, adolescents' reports of personal experience with substances provided some qualitative support for the self-medication hypothesis. As part of

rapport-building, youth were asked several open-ended questions about their drug use prior to the substance use section of the DICA-R, including what factors led to their first attempt with drugs, why and under what circumstances did they use substances, and what they liked and did not like about them. In accordance with the findings of Johnston and O'Malley (1986), their responses suggested that, by and large, curiosity and/or peer pressure had been influential in their drug initiation. Several of the heavy users reported that they used drugs primarily when they felt "bad" and so that they could feel "better." One participant stated that she used substances when "I don't want to think about my family. I get to feel good, like I'm floating." (Subject 355). Another explained that,

> I use drugs for different reasons at different times. Sometimes it's because of peer pressure. But usually it's because I'm either angry or I need a way to numb out the pain. It doesn't always work and sometimes it makes it worse, but most of the time it lets me deal with a situation by myself. (Subject 301)

Although these youth were aware of the negative repercussions of drug use (e.g., the potential to get into trouble with the police or feeling sick later), they appeared to perceive drug involvement as worthwhile and as a way to "not give up."

The Role of Attachment

Contribution of the Level of Security. Based on the concept that insecure attachment would be associated with difficulty in adjusting to psychological distress, it was postulated that the relative degree of security would be negatively related to drug use and impairment. The latter was not substantiated, however; instead, no relationship was found between level of security and the dependent or independent

variables. Given that the population in question was expected to be relatively insecure, it was thought that the composite index incorporating all four attachment patterns would be a more sensitive measure of an individual's degree of security of attachment than would ratings on the secure pattern.

The possibility nevertheless remains that the measure used was not suited for the question addressed. In this study, an adolescent who moderately resembled more than one pattern of attachment (i.e., receiving scores of 3 or 4 on two or more of the four patterns) received the same or similar score on the security measure than did a youth who strongly matched one of the insecure prototypes (e.g., receiving a score of 7 on either the fearful, preoccupied, or dismissing patterns). It is conceivable, however, that the functional outcome of the disparate types of working models (i.e., much like one, versus somewhat like two insecure patterns of attachment) adopted would be very different for such individuals. Thus, two distinct people may have been misrepresented as similar.

Such a misconception may be particularly relevant to a clinical population of adolescents as was assessed here. Consistent with this view is the finding that the proportion of youth who moderately fit more than one insecure pattern (i.e., manifesting insecure "split" representations) was greater than that reported in an adult population (i.e., 20% versus 3% respectively; Bartholomew & Scharfe, unpublished data). The implications for split internal representations on personal and social adjustment remain to be determined. Future work focussing on the distribution of split representations in normative and clinical adolescent populations, as well as their

relationship to psychosocial adjustment may serve to elucidate whether such splits have adaptive value. That is, do split representations allow for greater flexibility in responding to stress within or across close relationships? Are split internal working models associated with more or less successful conflict resolution? Follow-up studies of adolescents into adulthood would also be helpful in determining the stability of such representations in the face of developmental and life circumstances, such as the loss or gain of intimate relationships.

Yet another possible reason for the failure to confirm the hypothesis that level of security would be negatively related to drug behaviour may have been a lack of sufficient power in the sample to detect an effect stemming from a third independent variable (Cohen, 1992). However, this explanation is weak, given that some of the individual patterns of attachment were found to be related to the variables in question, and showed a potential to predict drug variations in drug behaviour among females.

Contribution of the Different Attachment Patterns. Results showed that, as was the case with overall level of security, ratings on the secure pattern of attachment were not significantly predictive of drug behaviour. The absence of a relationship between the secure pattern and drug involvement may be due to the fact that in a group of adolescents comprised mostly of insecure youth, distinctions in relative degree of security were particularly challenging to make. However, given the high degree of reliability obtained between the two coders, indicating agreement regarding their perceptions of security within the sample, this explanation cannot fully account for the null finding. It is conceivable that in the current population of disturbed youth, many

of whom have suffered substantial abuse and disruption, there was insufficient opportunity to truly assess the construct of "security". That is, although there was some variance in ratings on the secure pattern, scores largely fell between 1 (no correspondence to the prototype) and 4 (moderate correspondence to the prototype).

Exploratory analyses revealed significant interactions between gender and the three insecure patterns of attachment, suggesting that attachment ratings tended to be more strongly related to drug behaviour in females than in males, and that the direction of some of those relationships varied across the sexes.

Of particular interest was the significant inverse relationship between degree of fearfulness and female drug involvement, indicating that relatively lower scores on the fearful pattern predicted comparably greater drug use and associated impairment. This finding suggests that a certain degree of positivity in one's models of self and other may be required in order for an adolescent female to become involved in the subculture that tends to surround the heavy use of drugs. Stated another way, the more fearful the female (i.e., the greater her tendency to avoid intimacy that could potentially lead to interpersonal conflict and rejection), the less able and/or willing she was to use drugs. The strong negative association between fearfulness and elevated drug involvement in females may partly reflect a fear of negative repercussions as a consequence of one's behaviour. This explanation receives some support from the finding that the degree of fearfulness was also negatively related to conduct disorder severity.

Another possible interpretation of the negative correlation between ratings on the fearful pattern and drug behaviour in females, consistent with the self-medication hypothesis, is that drugs may serve to modulate one's models of self and others. Given that those females who reported relatively greater involvement with drugs were rated as having correspondingly greater self-esteem and confidence and a relatively lesser tendency to avoid intimacy, it may be that their involvement with drugs, once initiated, was allowing them to be better defended against pain and interpersonal conflict. These relatively less fearful females who endorsed greater drug use also experienced correspondingly less depression and anxiety, as suggested by the positive relationship between fearful ratings and self-reports of distress. Thus, the use of drugs may be adaptive, if only in the short term, in that they may provide these adolescent females with a place in society, facilitate their social interactions, and allow them to maintain at least a marginal level of functioning. According to this thinking, one would predict that females reporting greater substance use would have been rated as relatively more fearful *prior* to their drug involvement. In addition, were these adolescents prevented from using substances, their psychological distress would be expected to increase and their views of self and others might become more negative.

The notion that substances may serve to modulate one's view of the self and others suggests that the relationship between attachment experiences, psychological distress, and substance taking behaviour may be more dynamic than was originally conceived. This suggests, in turn, that the theoretical formulation of a self-medicating model of drug behaviour, outlining that insecure attachment leads to psychological

distress that then leads to elevated drug use, may be overly simplistic. The question of whether substance use has an impact on one's internal representations would be best addressed in longitudinal research done on this population.

It is unclear why the relationship between fearful ratings and drug behaviour differed for males. In contrast to their female counterparts, males who endorsed elevated substance impairment received relatively *higher* ratings of fearfulness. Based on the above discussion, one could speculate that the use of substances was less effective for males than for females in relieving distress and facilitating social interactions. Instead, substances may have been used by the more fearful males as a substitute for intimacy. Alternatively, the more fearful the male, the more likely he may have been to perceive his use of substances as problematic, and thus to endorse greater drug-related impairment.

It follows from the findings that females who reported greater drug involvement and who were rated as relatively less fearful tended to be rated as relatively more preoccupied and/or dismissing. It seems possible that the different patterns of attachment may represent different motivations behind substance taking behaviour. For instance, the relationship between drug use and the degree to which one tends to be preoccupied with relationships and turning to others for comfort in times of stress may reflect a need, at least in part, to attain social acceptance within a peer network. In other words, the relationship of preoccupation to drug behaviour may be moderated by the attitude of an adolescent's peer group towards drugs. This proposition may partly account for the observed sex difference in the relationship

between ratings on the preoccupied pattern and drug behaviour. That is, preoccupied females may have tended to affiliate more extensively with peers who were more immersed in the drug culture than did preoccupied males. In contrast, scores on the dismissing pattern may indicate drug behaviour that is experienced as somehow empowering and aimed primarily at maintaining a positive view of the self. Thus, the relationship between drug involvement and dismissingness may be fairly independent of peer attitudes and/or behaviours.

Limitations

Several points of caution need to be highlighted in the interpretation of these results. First and foremost is the issue of generalizability of the findings. Given that the present study was based on a clinical population of adolescents referred specifically for severe behavioural problems, the extension of results and interpretations to adolescents in general is unwarranted. Of concern was the possibility of a cohort effect, such that results obtained in this study were confounded by unique sample characteristics. In order to address this issue, youth in this sample were compared to referrals between January 1989 and December 1993 on a number of demographic and psychiatric variables. These analyses revealed that youth in this study did not significantly differ from previous referrals in age, male:female ratio, IQ, geographic location, conduct disorder severity, distress or alcohol use. Participants in this study did, however, endorse significantly greater street drug use. Overall, these analyses suggest that the sample observed here is representative of the clinic-referred adolescent population at this provincial facility.

Nevertheless, replications of this work with larger samples from different clinical populations will be critical in determining the robustness of the sex differences uncovered between these clinic-referred adolescents. In this study, females were generally more distressed than males, and a greater proportion in comparison to males met criteria for substance use disorders, as well as a constellation of other diagnoses including externalizing and internalizing disorders. Thus, whereas males tended to present a range of behavioural and emotional difficulties, females were a more homogeneous group diagnostically. The finding is also consistent with the female affliction hypothesis that suggests that although males tend to outnumber females in the prevalence of disorders, those females who are identified as affected typically present with a more serious clinical picture (Eme, 1992). This phenomenon may partly explain the sex differences in strength of relationships between drug behaviour and attachment patterns. For whatever reason, behavioural problems and distress may go relatively unnoticed in girls by the referring community until they are exaggerated relative to boys and seen in combination with social adjustment problems, including attachment difficulties. More research will need to be done in order to ascertain the extent to which sex differences among clinical in presenting problems are due to selective referral issues versus to differential developmental pathways between males and females.

Second, it is also important to emphasize the preliminary aspect of attachment-related findings, as well as the exploratory nature of the analyses on which they were based. This study included a relatively small sample and comprises only a portion of

a larger, ongoing effort to examine the validity of Bartholomew's (1990) model of internal representations of attachment in adolescence, which represents the first successful attempt to date to measure attachment in a clinical population of adolescents. In addition, it is noteworthy that of the three youth who refused to have their psychological interview taped, all were Native Indian and female, and two of the three met criteria for at least one substance disorder. While culture may have played an important factor in their refusal, it is possible that fearfulness may have also been influential. Should this indeed be the case, the relationship between elevated fearfulness and less drug involvement among females presented here would be overestimated.

Third, this study provides only indirect support for a self-medicating model of drug use in that motivations were not systematically assessed. Clinicians and researchers interested in substance use in conduct-disordered adolescents may consider including an instrument that explicitly addresses adolescents' motivations for using substances. For instance, Cooper (1994) has recently published a brief measure focussing on alcohol use that has been validated on a large, representative sample of adolescents and shown to be stable across gender, race and age subgroups, thus allowing for normative comparisons. In differentiating drinking to achieve a positive outcome (i.e., "enhancement" and "social" motives) from drinking to remove a negative outcome (i.e., "coping" and "conformity" motives), she found that the latter motivations directly predicted drinking problems. In particular, coping motivations

were associated with heavier usual alcohol consumption, as well as with heavy solitary drinking.

Concluding Statements

This study highlighted the need for the caring community to be aware of the prevalence of substance use problems among conduct-disordered adolescents, and among females in particular. Results provided limited evidence for the notion that substance use among such youth is not purely an antisocial phenomenon, nor simply the result of elevated psychopathology, but that it may serve as an attempt to cope with negative emotional experience. As such, these findings add to the literature supporting the self-medication hypothesis and suggest that substance use merits specific attention in the assessment and treatment of conduct-disordered adolescents.

It was also found that although substance use and associated impairment were related, they were not completely synonymous. Whereas reports of drug use were significantly predicted by the severity of conduct problems, the extent of related impairment was correlated with level of psychological distress in males and inversely related to degree of fearfulness in females. These findings point to the importance of assessing both use and associated problems in research on substance use.

Finally, the finding that patterns of insecure attachment were moderately related to drug involvement in these clinic-referred females offers additional support for the value of attachment theory as a framework for dealing with such troubled youth. This, in turn, has important clinical implications. Not only may attachment theory guide clinicians by providing a specific focus for the goal and nature of therapy (i.e., to

work on attachment-related issues in an experiential manner), but it may also offer a non-pejorative way of conceptualizing these adolescents, which in itself may help to optimize therapeutic outcome.

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Appendix A

Rates of DSM-III-R Other Disorders of Childhood and Adolescence Assessed Using the DICA-R

Disorders	Total Sample (N = 65)	Males (N = 44)	Females (N = 21)
Past Depression	11 (18%)	5 (12%)	7 (29%)
Present Depression	7 (11%)	2 (5%)	5 (24%)
Attention Deficit Hyperactivity	27 (42%)	16 (37%)	11 (52%)
Oppositional Defiant Disorder	46 (73%)	26 (62%)	20 (95%)
Overanxious Disorder	24 (38%)	11 (26%)	13 (62%)
Post Traumatic Stress	11 (18%)	4 (9%)	7 (35%)
Anorexia Nervosa	0	0	0
Bulimia	1 (1.5%)	1 (2.3%)	0

Table 1

Demographic and psychiatric characteristics of the sample

	Males		Females		Total	
Number	44		21		65	
Mean age	13.5		14.0		13.7	
Diagnosis present	n	%	n	%	n	%
Conduct Disorder	40	90.0	19	95.0	59	90.7
Substance Disorder	16	34.0_b	18	85.7_b	34	50.0
Alcohol	10	23.3_b	16	76.2_b	26	40.6
Marijuana	13	29.5_a	14	66.7_a	27	41.5
Street Drugs	3	6.8_b	9	45.0_b	12	18.8

$_a\chi(1, N = 65) < .005$; $_b\chi(1, N = 65) < .0005$

Table 2

Mean scores for males versus females on the dependent and independent variables

	Males		Females		
Variable	*M*	*S.D.*	*M*	*S.D.*	*t*- Value
Drug use	.70	.61	1.44	.75	-4.20***
Drug impairment	.17	.20	.42	.29	-3.59**
C.D. severity	1.79	.68	1.57	.56	1.40
Distress	.58	.30	.94	.29	-4.98***
Level of security	-8.01	2.60	-8.65	3.41	.87
Secure ratings	2.72	1.43	2.52	1.68	.50
Fearful ratings	4.09	1.71	4.43	2.03	-.72
Preoccupied ratings	3.22	1.74	4.33	2.09	-2.28*
Dismissing ratings	3.40	2.11	2.40	1.28	2.41*

*p < .05; **p < .01; ***p < .001

Table 3

Pearson correlation coefficients for drug behaviour, conduct disorder severity, psychological distress and level of security of attachment (n = 65)

	DrugUse	Impairment	C.D.	Distress	Security
Drug Use	--	.76***	.38**	.31**	.01
Impairment		--	.10	.35**	-.06
C.D.			--	-.01	.04
Distress				--	-.10
Security					--

*p < .05; **p < .01; ***p < .001

Table 4

Pearson correlation coefficients for drug behaviour, conduct disorder severity, psychological distress, and level of security of attachment for males only (n = 44)

	Drug Use	Impairment	C.D.	Distress	Security
Drug Use	--	.70***	.49***	.10	-.07
Impairment		--	.21	.38*	-.05
C.D.			--	.03	-.09
Distress				--	-.03
Security					--

*p < .05; **p < .01; ***p < .001

Table 5

Pearson correlation coefficients for drug behaviour, conduct disorder severity, psychological distress, and level of security of attachment for females only (n = 21)

	Drug Use	Impairment	C.D.	Distress	Security
Drug Use	--	.73***	.64***	.13	.24
Impairment		--	.32	-.07	.01
C.D.			--	.22	.26
Distress				--	-.06
Security					--

***$p < .001$

Table 6

Hierarchical multiple regressions for psychological distress and level of security onto drug use and impairment

		Drug Use (n = 65)		Impairment (n = 57)	
Step	Variable Block	R^2	F	R^2	F
1	C.D. severity	.15	11.12**	.01	.50
2	Psychological distress	.10	8.30**	.12	7.38**
3	Level of security	.00	.01	.00	.05
1	C.D. severity	.15	11.12**	.01	.501
2	Level of security	.00	.03	.00	.20
3	Psychological distress	.02	8.15**	.13	7.08**

*p<.05; **p<.01; ***p<.001

Table 7

Hierarchical multiple regressions for psychological distress and level of security onto drug use and impairment for males only

		Drug Use (n = 44)		Impairment (n = 36)	
Step	Variable Block	R^2	F	R^2	F
1	C.D. severity	.24	13.2***	.05	1.70
2	Psychological distress	.02	.94	.13	5.24*
3	Level of security	.00	.10	.00	.00
1	C.D. severity	.24	13.2***	.05	1.70
2	Level of security	.00	.14	.00	.02
3	Psychological distress	.02	.89	.13	5.07*

*p<.05; **p<.01; ***p<.001

Table 8

Hierarchical multiple regressions for psychological distress and level of security onto drug use and impairment for females only (n = 21)

		Drug Use		Impairment	
Step	Variable Block	R^2	F	R^2	F
1	C.D. severity	.42	13.6**	.08	1.63
2	Psychological distress	.02	.55	.04	.86
3	Level of security	.00	.12	.01	.15
1	C.D. severity	.42	13.6**	.08	1.63
2	Level of security	.01	.19	.00	.08
3	Psychological distress	.01	.46	.05	.90

*p<.05; **p<.01; ***p<.001

Table 9

a) Pearson correlation coefficients for drug behaviour, conduct disorder severity, psychological distress, and ratings of attachment for males only (n = 44)

	Secure	Preoccupied	Fearful	Dismissing
Drug use	.03	-.24	.05	.26^{+}
Impairment	.06	-.09	.30	-.12
C.D.	-.05	.06	-.18	.18
Distress	.08	.03	.52***	-.36*

b) Pearson correlation coefficients for drug behaviour, conduct disorder severity, psychological distress, and level of insecurity of attachment for females only (n = 21)

	Secure	Preoccupied	Fearful	Dismissing
Drug use	.26	.36	-.62**	.12
Impairment	.03	.35	-.57**	.35
C.D.	.33	.19	-.23	-.20
Distress	.02	.01	.38^{+}	-.45*

$^{+}p < .10$; $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$

Table 10

Hierarchical multiple regressions for psychological distress and ratings of security of attachment onto drug use and impairment controlling for the effect of sex

		Drug Use (n = 65)		Impairment (n = 57)	
Step	Variable Block	R^2	F	R^2	F
1	Sex C.D. severity Psychological distress Ratings of security	.44	11.6***	.27	4.73**
2	Sex X Secure	.003	.271	.002	.115

**p<.01; ***p<.001

Table 11

Hierarchical multiple regressions for psychological distress and fearfulness ratings onto drug use and impairment controlling for the effect of sex

		DrugUse (n = 65)		Impairment (n = 57)	
Step	Variable Block	R^2	F	R^2	F
1	Sex C.D. severity Psychological distress Ratings of fearfulness	.46	12.8^{***}	.29	5.32^{**}
2	Sex X Fearfulness	.12	12.6^{***}	.14	12.3^{***}

$^{**}p<.01$; $^{***}p<.001$

Table 12

Hierarchical multiple regressions for psychological distress and ratings of preoccupation onto drug use and impairment controlling for the effect of sex

		Drug Use (n = 65)		Impairment (n = 57)	
Step	Variable Block	R^2	F	R^2	F
1	Sex C.D. severity Psychological distress Ratings of preoccupation	.44	7.61***	.28	4.99**
2	Sex X Preoccupation	.05	4.04*	.04	2.72

*p<.05; **p<.01; ***p<.001

Table 13

Hierarchical multiple regressions for psychological distress and ratings of dismissingness onto drug use and impairment controlling for the effect of sex

		Drug Use (n = 65)		Impairment (n = 57)	
Step	Variable Block	R^2	F	R^2	F
1	Sex C.D. severity Psychological distress Ratings of dismissingness	.46	7.65***	.27	4.88**
2	Sex X Dismissingness	.02	1.39	.08	6.05*

$^{+}p<.10$; $^{*}p<.05$; $^{**}p<.01$; $^{***}p<.001$

Figure Caption

Figure 1. Four-category model of adult attachment. Reproduced from Scharfe & Bartholomew, 1994, with permission of the authors.

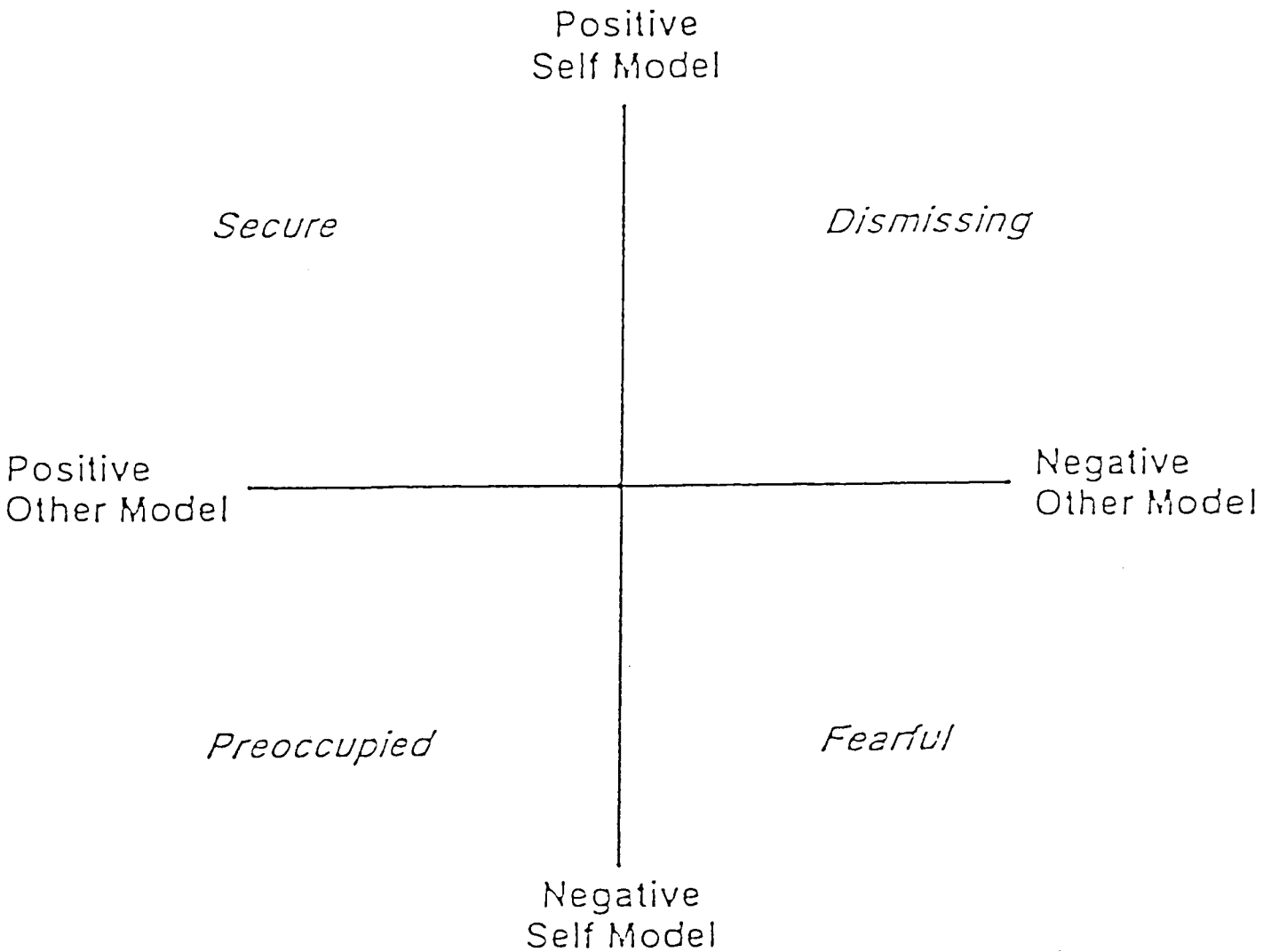
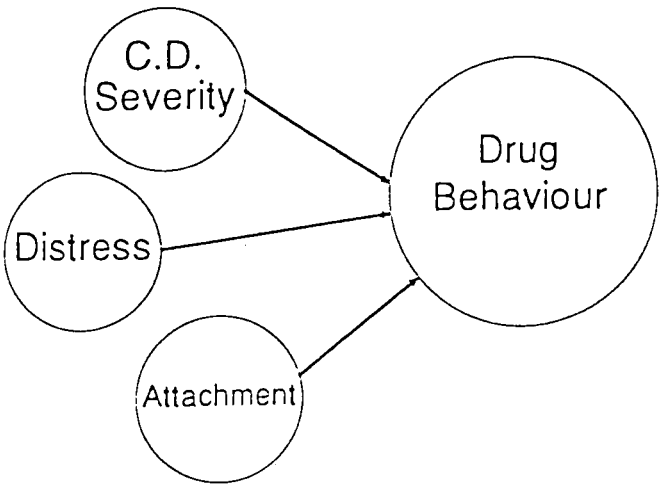

Positive
Self Model
Secure
Dismissing
Positive
Other Model
Negative
Other Model
Preoccupied
Fearful
Negative
Self Model

Figure Caption

Figure 2. Three possible relationships between the dependent and independent variables: (A) independent effects; (B) interactive effects; and (C) mediated effects.

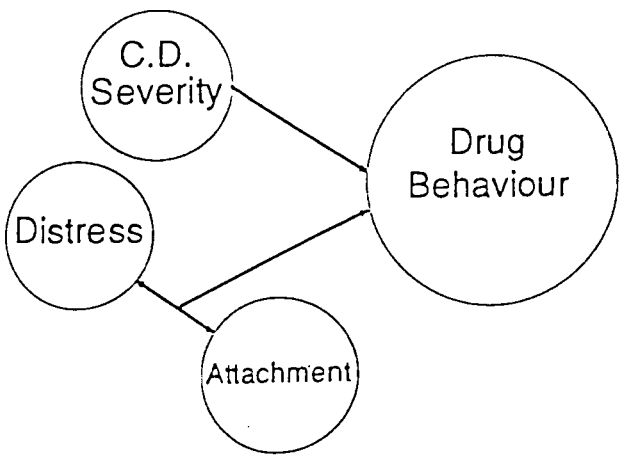
A

Independent Effects



B

Interactive Effects



C

Mediated Effects