

**THE RELATIONSHIP BETWEEN ADOLESCENT
DEPRESSIVE SYMPTOMOLOGY AND
SUBSTANCE ABUSE**

by

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with specialisation in Guidance and Counselling
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SUMMARY

This study examines the relationship between adolescent depressive symptomology and substance abuse. From a literature study six hypotheses were developed. A quantitative empirical study, undertaken in a South African high school, investigated the level of adolescent depressive symptomology and substance abuse, as well as the relationship between the two. The influence of various moderator variables was also examined.

In line with most international studies, the relationship between adolescent depressive symptomology and substance abuse was found to be significant. This research has shown that adolescent depressive symptomology is significantly and positively correlated with earlier age of onset of substance abuse as well as frequency of usage. There appear to be gender differences in the way adolescents deal with their depression in terms of substance abuse. In addition, risk factors for depression and substance abuse were confirmed. Recommendations have been made based on these results.

Key terms

adolescent

depressive symptomology

substance abuse

depression

age of onset of substance abuse

rates of substance abuse

risk factors

gender differences

Student number: 319-674-7

I declare that the relationship between adolescent depressive symptomology and substance abuse is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.


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(Mrs L G Blore)

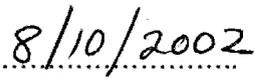

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CHAPTER ONE OVERVIEW AND RATIONALE

1.1 BACKGROUND

Both depression and substance abuse among adolescents are issues of concern in schools because of the deleterious effect of both phenomena on the adolescent. In this study, the researcher is interested in the possible connection between depression and substance abuse.

1.1.1 Adolescence

Findings from epidemiological studies have indicated that the prevalence of a number of health-compromising behaviours (such as substance abuse) and psychiatric disorders (such as depression) increase dramatically during adolescence (Windle & Davies 1999:823). The prevalence of both depressive symptomology and substance use/abuse has serious implications for development in adolescents because of their harmful effects.

Adolescence is a period of progressive psychological growth and adaptation. It is a transitional stage during which biological, psychological and sexual maturation is accelerated, cognitive capacities approach their peak and adult sexual roles are experimented with (Kaminer 1994:41). Adolescence is characterized by marked and rapid mood fluctuations and an intensity of feelings unrecorded outside this period of life (Lewin & Williams 1994:13). In the context of accelerated changes, both internally, and in the world around them, the adaptive demands that adolescents face often produce feelings of confusion, alienation, loneliness and dysphoria.

According to Bukstein (1995:71-93) the adolescent may be at risk for substance abuse due to constitutional or temperamental characteristics, which have biological or genetic origins. The adolescent is then exposed to peer, parent and adult models and attitudes, popular adolescent culture and media

messages generally promoting and encouraging substance use (Hawkins, Catalano & Miller 1992:82-85). Unfortunately adolescents' immaturity and lack of cognitive development often cause them to exercise poor judgement (South African Central Drug Authority 2001:1). As they become involved in substance abuse, it is likely that the substances themselves and the subculture surrounding the abuse, will further inhibit maturation (Kaminer 1994:71-72).

Various researchers have focussed on the character traits that increase vulnerability to depression and substance abuse and these are explored in greater detail in the literature section.

1.1.2 Adolescent depression

The prevalence, chronic nature, and the extensive suffering and disability they produce, make depressive disorders one of the most important of all human illnesses. Adolescence is generally thought of as a period of turmoil and lability of emotions, but this is not true for all adolescents. Windle and Davies (1999:837) studied over 1000 adolescents, assessing them twice: immediately at the beginning of their research, and then one year later. They found consistently healthy functioning and emotional stability in their "no problem group". Golombek and Marton (1992:269) tracked teenagers over the entire course of their development. They found 35% of the teenagers did not experience problems, while 41% did experience problems at each adolescent subphase. However, when this second group was studied longitudinally, the disturbances fluctuated over the course of adolescence for 42% (this they ascribed to transient adolescence turmoil), but 24% presented with continuous dysfunction.

This distress experienced by these adolescents can vary from mild dysphoria, to dysthymia, to major depressive disorder (MDD). Although current prevalence figures (Kaplan & Sadock 1998:1245) for MDD puts the figure for adolescent sufferers at about 5-10%, Lewinsohn (1999:271) believes that depression in adolescents could be as high as 20%.

The depressive symptoms interfere with the acquisition of important developmental tasks and skills, and are likely to alter the course of the child's development (Gottlieb & Hammen 1996:66). Adolescent depression is closely linked to functional impairment and disease (Lewinsohn, Seeley, Hibbard, Rohde & Sack 1998:1120), subsequent adult depression (Harrington 2001:21), as well as to increased suicide risk (Kaplan & Sadock 1998:553). As will be seen in the literature study, it is unclear whether adolescent depression is different from adult depression and this issue is explored at some length.

1.1.3 Adolescent substance abuse

It is important to understand adolescent substance abuse because of its prevalence and negative consequences. In a recent report on adolescent substance abuse (Oven 2001:1) 25% of 2281 Pretoria respondents (school district three) in grades 10 and 11 were of the opinion that the illegal drug problem was getting worse. Forty-two percent had witnessed the sale of drugs on the school premises; 33% admitted to smoking dagga; 25% had inhaled substances; 27% had used mandrax, ecstasy, LSD and other drugs, and 22% had smoked crack, cocaine or mandrax. Almost 40% of them admitted getting drunk occasionally in the course of a typical month. Twenty-seven percent had smoked in the last 30 days prior to the survey. From these figures there can be no doubt that adolescent substance use is rife and a health problem.

Yet other researchers believe that the problem is transitory. According to Bukstein (1995:201), adolescent substance abuse is different from adult abuse, but hardly anything else is known about it. These authors state that almost all adolescents experiment with alcohol, and some adolescents with other substances of abuse. They contend that where problems develop, most difficulties do not persist. Furthermore, they state that most adolescents go on to adulthood without persistent substance abuse problems and without treatment. There is substantial evidence that, for most adolescents, problem drinking peaks between 18 and 20 years, and declines thereafter (Bukstein 1995:69). Some may even argue that episodic heavy drinking and drug

experimentation is a normal process given its widespread use (Bukstein 1995:55). However, as the pharmacological effects of various psychoactive substances on the adolescent brain are unknown, the researcher is most hesitant to dismiss adolescent experimentation as harmless as it quite possibly does more damage to the developing brain in adolescents than to adults. According to the Centre for Substance Abuse Treatment (1995:5), an American Substance Abuse and Mental Health Services' organisation, substance use can initiate, cause and exacerbate psychiatric disorders. In some cases, experimentation will lead to drug abuse and dependency (Glantz & Pickens 1992:xv). This means that any substance abuse is a cause for concern. Kinnier, Metha, Okey and Keim (1994:51) point out that increasing drug use is associated with an increase in depression, a decrease in self-esteem, and a deterioration of purpose of life among high school students. Serious abuse is potentially life threatening (Barnes, Murray, Patton, Bentler & Anderson 2000:136). According to Kaplan and Sadock (1998:385-386), substance abuse is also a major precipitating factor for suicide, second only to the frequency among patients with major depressive disorder.

Evaluating some recent epidemiological data, which suggest that the incidence of major depressive disorder may be increasing among people less than 20 years old, Kaplan and Sadock (1998:539) hypothesize that this could be related to the increased use of alcohol and other substances in this age group.

1.2 ANALYSIS OF THE PROBLEM

This research focuses on adolescent depressive symptomology, adolescent substance abuse and the relationship between the two.

1.2.1 Adolescent depressive symptomology

The literature study explores the current controversies on adolescent depression as a phenomenon, and co-morbidity with other conditions. It also examines the characteristics of depressive symptomology in adolescents.

1.2.2 Adolescent substance abuse

Adolescent substance use is also controversial, with the trajectories towards lifetime abuse being unclear. Various protective and risk factors are identified in the literature, as well as the effects on development.

1.2.3 The relationship between adolescent depressive symptomology and adolescent substance abuse

Numerous associations between depression and substance abuse have been found in the literature, yet in some recent studies, no significant relationship was found between adolescent depression and substance abuse. In addition, research is hampered by lack of clarity of concepts. Adolescents are often polysymptomatic and their symptoms are often co-morbid with other pathological disorders (Kaminer 1994:17) and this has added to the confusion. In the main literature study the researcher explores the issues of co-morbidity, the primary-secondary debate, the associations between abuse substances and depression, risk factors, gender differences, the casual link and explanatory paradigms, as well as the common risk factors for both adolescent depressive symptomology and adolescent substance abuse.

Thus the general research question is:

Is there a significant relationship between adolescent depressive symptomology and substance abuse?

1.3 AIMS OF THE RESEARCH

The research has both specific and general aims that are listed here.

1.3.1 Specific aims

To conduct a literature study in order to describe and explain the following:

- adolescent depressive symptomology

- adolescent substance abuse
- the relationship between adolescent depressive symptomology and substance abuse

To conduct an empirical study to assess in adolescents the following:

- the level of depressive symptomology in a convenience sample
- the level of substance abuse in the same convenience sample
- the relationship between depressive symptomology and substance abuse

1.3.2 General aims

- To make recommendations for further research needed in the areas of adolescent depressive symptomology and adolescent substance abuse
- To make recommendations for educational psychologists, departments of education, parents and other relevant members of the community regarding adolescent depressive symptomology and adolescent substance abuse.

1.4 RESEARCH METHOD

A literature study and a quantitative empirical study will be undertaken. The literature study will precede the empirical study so that the phenomena are thoroughly explored and important factors identified.

1.4.1 Hypotheses

In accordance with the general research question, the following hypotheses can be stated:

- H_0 : There is no significant relationship between adolescent depressive symptomology and substance abuse.
- H_1 : There is a significant relationship between adolescent depressive symptomology and substance abuse.

Other hypotheses will be stated in the chapter dealing with research design.

1.4.2 Method

A quantitative research approach will be followed. The data will be collected by means of a questionnaire. The Statistical Programme for the Social Sciences (SPSS) will be used to test the hypotheses.

1.5 DEMARCATION OF THE RESEARCH

A sample of all the learners from grade 8 to grade 12 in an urban, former "model C" school (approximately 1300 learners), with which the researcher is associated, will be used. Thus the sample is a convenience, non-probability sample.

1.6 CLARIFICATION OF CONCEPTS

A number of concepts need clarification regarding the way they are used in this study; namely adolescence, adolescent depressive symptomology and adolescent substance abuse.

1.6.1 Adolescence

For the purposes of this study, adolescence is defined as a transition period between childhood and adulthood (Van den Aardweg & Van den Aardweg 1993:10). All the learners in the school in this study from grade 8 to grade 12 meet this definition.

1.6.2 Adolescent depressive symptomology

Depression is the same word that is applied to a brief negative mood, an interrelated set of symptoms and experiences and to a medically-defined syndrome (Gotlief & Hammen 1996:2). The term is widely used to cover both transient dysphoric loss-related emotional states and clinical depression leading to profound disturbance of mental and social functioning. This is misleading and hazardous (Maj & Sartorius 1999:1). In contrast to "the

normal and transitory experiences of mood depression and its attendant symptoms, the syndrome of depression ... (clinically significant depression) ... is defined as depressed mood along with a set of additional symptoms, persisting over time, and causing disruption and impairment of functioning" (Gottlieb & Hammen 1996:2). According to Kaplan and Sadock (1998:553) a depressed mood and a loss of interest are the key symptoms of depression. The depressive symptoms influence, and interact with, sets of other symptoms in the domains of cognition, behaviour, and bodily functioning. Each of these areas of symptoms in turn affects another (Gottlieb & Hammen 1996:3).

There is controversy as to whether adolescent depression is different from adult depression. The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-R:324) considers them essentially the same. However, Harrington (2001:21) believes the data from epidemiological studies, which show a distinctive pattern of age and sex trends during adolescence, warrant a separate classification for adolescent depression in the DSM-IV-R.

The literature study will uncover the symptoms commonly associated with depression in adolescence and the number of these symptoms gives an indication of the severity of the depressed mood.

1.6.3 Adolescent substance abuse

The term "substance abuse" refers to the misuse and abuse of legal substances such as nicotine, alcohol, solvents, inhalants, as well as the use of illicit drugs (South African Department of Welfare Drug Master Plan 1999:49). As it is illegal to purchase and consume alcohol before one's eighteenth birthday (Morojele 1997:207), all alcohol use will be deemed to be abuse.

1.7 RESEARCH PROGRAMME

Chapter two deals with a literature review of adolescent depressive symptomology, adolescent substance abuse and the relationship between

these two phenomena. Variables identified will then be used to design the empirical study.

In Chapter three the research design is discussed. Chapter four deals with the results and discussion based on the results. Chapter five gives the conclusions and recommendations.

1.8 CONCLUSION

This research adds to the body of knowledge that already exists about the relationship between adolescent depressive symptomology and substance abuse. It is the first research of this kind to be carried out in South Africa. In the next chapter a literature review on the relationship between adolescent depressive symptomology and substance abuse is presented.

CHAPTER TWO

THE RELATIONSHIP BETWEEN ADOLESCENT DEPRESSIVE SYMPTOMOLOGY AND ADOLESCENT SUBSTANCE ABUSE

2.1 INTRODUCTION

In the previous chapter, an overview of and rationale for the study were given. This chapter explains adolescent depressive symptomology and adolescent substance abuse as phenomena, as well as the relationship between the two as a field of study. It is necessary first to examine each phenomenon separately, before examining the relationship.

2.2 THE PHENOMENON OF DEPRESSION

The term, "depression" is used to cover both transient dysphoric loss-related emotional states and clinical depression leading to profound disturbance of mental and social functioning (see 1.1.2; Gottlieb & Hammen 1996:2). As pointed out by Compass, Ey and Grant (1993:323), research on depressive phenomena during adolescence has focused on three separate constructs: depressed mood, depressive symptoms, and depressive disorders. The constructs share a common set of symptoms reflecting negative affectivity, but differ in their inclusion of other symptoms, and in the duration and severity of symptoms they include. Studies are not always clear in their definitions and this has led to some confusion.

According to Stefanis and Stefanis (1999:42), there is no valid, scientifically based diagnosis of depression, as yet. The symptoms of the patient (as described by himself or observed by others) serve as the basis of the diagnosis. However, symptoms are judgement-based and therefore there are no clear cut-off points or measurements that adequately define and diagnose a case of depression. As stated previously, Kaplan and Sadock (1998:553) maintain that a depressed mood and a loss of interest are the key symptoms of depression. Other symptoms (Kaplan & Sadock 1998:556) have been itemized in the depressive symptomology table (see table 2.1).

This section focuses on the different approaches to the conceptualization of depression (see 2.2.1), adolescent depression as distinct from adult depression (see 2.2.2), characteristics of adolescent depression (see 2.2.3), aetiology (see 2.2.4), epidemiology (see 2.2.5) which also looks at prevalence rates and gender differences, co-morbidity (see 2.2.6) and course and outcome (see 2.2.7).

2.2.1 Various approaches to the conceptualisation of depression

One of the major conceptual issues is whether a categorical or a dimensional approach would better explain the nature of mood disorders. This next section examines this dilemma, as well as looking at other ways to describe depression.

2.2.1.1 *Depressive disorders as categories*

A categorical approach such as the DSM-IV-R is grounded in medical models. It assumes that there are discrete subtypes that can be identified by their aetiology and outcomes. (Both the symptoms of major depressive disorder and dysthymia, as defined by the DSM-IV-R, are included in the depressive symptomology table - see table 2.1). An estimated 40 percent of patients with MDD also meet the criteria for dysthymic disorder, a combination often referred to as double depression (Kaplan & Sadock 1998:576). Distinctions between various categories, (for example, MDD and dysthymia, anxiety disorders, recurrent brief depression, minor depression and MDD) are still to be validated as their boundaries within the framework of depressive disorders are unclear (Kaplan & Sadock 1998:573; Stefanis & Stefanis 1999:40).

The DSM-IV-R has attempted to describe mood disorders as specifically as possible to facilitate a differential diagnosis. This is likely to be an on-going refinement. Others are highly critical of this process. For example, Angst (1999:54) believes that the creation of 'artificial' new categories is based on the uncritical assumption that the subgroups of depression truly represent distinct categories. Van Praag (1999:59) calls this "nosologo-mania".

According to Stefanis and Stefanis (1999:39), it is worth emphasizing that diagnostic heterogeneity may indicate aetiological heterogeneity.

2.2.1.2 Depressive symptoms as a continuum

The continuum model consists of a series of affective syndromes ordered along a continuum. According to Stefanis and Stefanis (1999:3), most functions appear continuous across symptom, severity, duration and impairment measures. Data summarized by Miller (1995:209) suggests that individuals with subclinical levels of depressive symptoms are at an increased risk for developing major affective episodes. A study by Gotlib, Lewinsohn and Seeley (1995:90-100) seems to confirm this. Yet, there is doubt as to whether depression, as a single construct, is a continuous, quantitative dimension, as there appears to be qualitative differences between mild depression and more severe clinical syndromes (Gotlib & Hammen 1996:6; Kaplan & Sadock 1998:525; Stefanis & Stefanis 1999:40). Kendall (1999:52) comments that an uneasy compromise between those who favour categories and those who favour a continuum in the conceptualization of the depressive disorders has been reached with the realization that the boundaries between the categories have been imposed and no discontinuities have been identified.

2.2.1.3 Other systems

Other systems that identify types of patients with mood disorders usually differentiate between endogenous-reactive and primary and secondary depression (Kaplan & Sadock 1998:552). The endogenous-reactive continuum is a controversial division as it implies that endogenous depressions are biological and that the reactive depressions are psychological. As we understand better now how the biological and psychological dimensions interact with each other, this distinction no longer seems particularly valid. The distinction between primary and secondary depression is another way to categorise depression and is based on its temporal relationship to another illness or event. Primary depression implies

a disorder with its own etiology, whereas secondary depression implies the result of something else. However, as Stefanis and Stefanis (1999:4) point out, temporal sequences are complex and often unclear. The situation is further complicated when the two individual distinct episodes (depressive and non-depressive) have a concurrent onset of symptoms. As a result, some researchers prefer to use the co-morbidity concept (see 2.1.6). Others, like Kutcher (1999:278), believe that a critical re-evaluation of the conceptual framework itself is needed.

Whether there is a depressive personality or not is another controversial subject. Clinical theorists describe a syndrome of depressive temperament and disorder characterised by dejection, gloominess, inadequacy and negativity towards oneself and others. Others consider this to be part of the mood disorder rubric (Paykel 1992:192; Miller 1995:207). Ryder, Bagby and Dion (2001:90-91) report that depressive personality disorder (DPD) is being considered for inclusion in future editions of the DSM-IV-R, in spite of the substantial conceptual and empirical overlap with dysthymia. Their results suggest that, although DPD is not synonymous with dysthymia, it may be a milder subtype. Even the question of whether adolescent depression should be considered as a separate phenomenon from adult depression is controversial.

2.2.2 Adolescent depression as a phenomenon

As stated previously, there is disagreement as to whether childhood and adolescent depression is distinct from adult depression. One of the best summaries is in Clarizio (1989:3-7), which the researcher has adapted here. Psychoanalytically orientated theorists believe that children lack a well-developed superego and therefore they question whether depression in children can exist. Another viewpoint is that depression in children is 'masked'. Children tend to act out, avoid or fail at school, or develop psychosomatic symptoms. These are seen as 'depressive equivalents', i.e. behaviours that replace depressive feelings. Alessi (1993:14) feels that to call it 'masked' is a misnomer as it is merely unidentified. The DSM-IV-R sees

adult depression and childhood depression as one and the same. Another school of thought describes childhood depression as encompassing the core clinical features that characterise the adult disorder, and that includes other symptoms, only seen in children, such as social withdrawal, aggression, negativism, conduct disorders and school refusal. It is unclear whether these factors are essential features or secondary to childhood depression. On the other hand, developmental psychologists, such as *Compass et al.* (1993:323), and experts in the field, such as *Harrington* (2001:21), believe that the distinctive pattern of age and sex trends during adolescence warrants a separate classification for adolescent depression, as distinct from adult depression in the DSM-IV-R. *Lewinsohn, Hops, Roberts, Seeley and Andrews* (1993:142) think that the early-onset depression is associated with a greater degree of co-morbidity and they postulate that it may represent a more serious form of depression. There has been a growing acceptance of this viewpoint (*Dumenci & Windle* 1996:314).

The DSM-IV-R view is the most popular one, but as *Gotlief and Hammen* (1996:66) and *Fombonne* (1999:293) stress, developmental differences are not adequately reflected in current measurement procedures. It is clear more research is needed in this area. The characteristics of adolescent depression are better understood as will be seen in this next section.

2.2.3 Characteristics of adolescent depression

The two criteria for adolescent depression are a disturbance in mood and irritability (*Kaplan & Sadock* 1998:1245). Affective disturbances in adolescents are often dismissed as adolescent 'turmoil', yet, as *Harrington* (1999:233) notes, one in four referrals to child psychiatrists in the United Kingdom suffers from a depressive disorder. The physical and cognitive changes of this period make it difficult to establish the limits of depressive disorder in adolescents. Depressed adolescents tend to have multiple problems, such as educational failure, impaired psychosocial functioning, and co-morbid psychiatric disorders. *Kaplan and Sadock* (1998:553) comment that poor academic performance, substance abuse, antisocial behaviour,

truancy, and running away may be symptoms of depression in adolescents. These authors speak of a depressive equivalent, a symptom or syndrome that may be an equivalent of a depressive episode. For example, a triad of truancy, alcohol abuse and sexual promiscuity in a formerly well-behaved adolescent may constitute a depressive equivalent. Biederman and Spencer (1999:276) and Faraone (1999:271) add that adolescent depression has atypical features, particularly mood reactivity. Their depression has an insidious onset; it is chronic rather than acute; it is episodic; and there is a larger proportion of co-morbidity than in adult depression. Lamarine (1995:391) remarks on the adolescent's unusual concern and attention to death and dying and common complaint of boredom. Gottlieb and Hammen (1996:43) state that irritability/anger might be considered equivalent to a sad/depressive mood, and low self-esteem might be equivalent to excessive guilt. They add that somatic complaints, social withdrawal, and hopelessness are common in children and adolescents and, in their opinion, should be included in the diagnostic criteria.

According to Biederman and Spencer (1999: 276) and Fombonne (1999: 293), the co-morbidity with other disorders of childhood depression has obscured youth depression. Both Fombonne (1999:293) and Faraone (1999:269) point out that the DSM-IV-R favours other diagnoses, rather than depression in children. Kaplan and Sadock (1998:1245) add that the expression of a disturbed mood varies in children according to their ages. In late adolescence pervasive anhedonia, severe psychomotor retardation, delusions and a sense of hopelessness are more common than in younger children. According to these authors, symptoms that occur with the same frequency regardless of age and developmental status include suicide ideation, a depressed or irritable mood, insomnia, and a diminished ability to concentrate.

Marcotte (1996:935) noted that depressed adolescents tend to make unrealistic demands on themselves. Two irrational beliefs, held by depressed adolescents, are low frustration tolerance and a tendency to "awfulize". Windle and Davies (1999:823) found that depressed adolescents have a more

internalised pattern of intrapersonal and interpersonal dysfunction than other adolescents. In a recent study (Muris, Schmidt, Lambrichs & Meesters 2001:555), the researchers found that high levels of parental rejection, negative attributions, passive coping styles, and low self-esteem accompany depression. Vitiello (1999:295) points out that mood is more reactive in youth and that the diagnosis of depressive disorders is less stable than in adults. It is most likely that depression disrupts the adolescent's cognitive, interpersonal and academic functioning.

Symptoms of adolescent depression are tabulated in the symptomology table (see table 2.1). The sources of these factors are mentioned in the discussion above, the Beck Depression Inventory (Beck, Steer & Brown 1996:5), the Reynolds Adolescent Depression Scale (Reynolds 1986:3), Kaplan and Sadock (1998:542), and the DSM-IV-R criteria for MDD and dysthymia. Those factors indicated in bold on the table will be used as the basis for the questionnaire in the empirical study.

Table 2.1 *Depressive symptomology and their sources*

VARIABLE	DSM-IV MDD	DSM-IV Dysthymia	BECK Depression Inventory	REYNOLDS Adolescent Depression Scale	KAPLAN AND SADOCK	OTHER SOURCES
Depressed mood	X	X	X	Dysphoria	X	X
Loss of interest/pleasure	X		X	X	X	
Sadness	X		X	X		
Crying/tearfulness	X		X	X		
Weight fluctuations	X					
Appetite fluctuations	X	X	X	X		
Sleep disturbances	X	X	X	X	X	
Fatigue/loss of energy	X	X	X	X		
Worthlessness/guilt	X		X	X		
Lack of concentration	X	X	X		X	
Suicidal thoughts and wishes	X		X	Self- injurious	X	
Irritability		X	X	X	X	X
Low self-esteem		X	Self-dislike	X		
Hopelessness		X				
Pessimism			X	X		X
Past failure			X			
Psychomotor retardation or agitation	X			Reduced speech	X	
Self-criticalness/self-reproach			X			X
Agitation/worry			X			
Loss of interest in sex			X			
School anxiety				X		X
Loneliness				X		
Being devalued by parents				X		
Social withdrawal				X		X
Somatic complaint				X		X
Helplessness				X		X
Self-pity				X		
Anger				X		
Aggression/acting out						X

2.2.4 Aetiology

The aetiology of adolescent depressive disorders, like adult depressive disorders, is likely to be multifactorial. The causative factors are sometimes divided into biological, genetic, and psychosocial, but, as these factors interact among themselves, this distinction is artificial (Kaplan & Sadock 1998:524). Exposure to various life events and experiences is likely to influence the underlying structure and function of the brain and in this way biological vulnerability can be acquired as a consequence of life experience (Kaplan & Sadock 1998:543; Kendall 1999:54; Miller 1995:297). Some of the vulnerability factors (inherited or acquired) may be latent in nature and require activation in order to present. Genetic data, family studies, adoption studies, twin studies and linkage studies all demonstrate that a significant genetic factor is involved in the development of a mood disorder (Kaplan & Sadock 1998:542-543; Miller 1995:41). As yet, no specific gene has been located

(Stefanis & Stefanis 1999:41). Todd (1999:310) believes that the inheritability of depression has been systemically underestimated.

Psychodynamic theories of depression stress psychosocial factors. Popular concepts are "learned helplessness" (Kaplan & Sadock 1998:545) and the existence of a "diathesis", i.e. a psychological characteristic that has developed in early childhood that puts the individual at risk for depression. Examples of diatheses are the depressive self-schema of Beck (this and other examples are described in Gotlib & Hammen 1996:67-89) and the maladaptive self-regulatory process model of Pyszczynski and Greenberg (1992:59-111). Usually some sort of stress is the activator of the diathesis that brings on an episode of depression (Miller 1995:250). Common cognitive misinterpretations include negative self-evaluation, pessimism and hopelessness (Kaplan & Sadock 1998:545).

2.2.5 Epidemiology

2.2.5.1 *Adolescent prevalence rates*

Current estimates suggest that 2 to 20% of adolescents experience depression. Kaplan and Sadock (1998:525) put the figures for adolescent MDD at 5%, for dysthymia at 3,3% and estimate significant depressive symptomology at 10%.

The longitudinal study of Golombek and Marton (1992:269) found 24% of adolescents presented with continuous emotional dysfunction. Marcotte (1996:939) also reported figures in this region. According to Golombek and Marton (1992:245), teenagers present with higher levels of anxiety and depression in early and late adolescence than they do in middle adolescence. They believe that early and late adolescence is a period of disrupted affect as a result of life changes and disrupted personality organisation. Tyano (1999:300) points out that the bodily changes happen at the same time as the elevated rate of depression in early adolescence. He believes this suggests a biological underpinning of the depression, whereas Golombek and Marton

(1992:245) see it purely as a psychosocial event. It may be a bit of both. A recent study of Chinese youth (Chan 1995:267-279) using the Beck Depression Inventory, found 64% of the sample had mild depression and 9% were severely depressed. In another study in a major Canadian city that used the Beck Depression Inventory, Connelly, Johnston, Brown, McKay and Blackstock (1993:153), found in a community sample of 2698 adolescents the statistics presented in table 2.2. It should be noted that Lewinsohn *et al.* (1993:142) did not find an increase in depression in the 14 and 18 year olds in their analysis of the Oregon Adolescent Depression Project, which evaluated 10200 community subjects.

Table 2.2 *Percentage of students by age experiencing none, mild, moderate and severe depression*

Depression	Age 13	Age 14	Age 15	Age 16	Age 17	Age 18	Age 19	Overall
None	70	77	68	63	68	66	56	68%
Mild	24	16	23	25	22	24	30	22%
Moderate	4	5	6	8	8	6	10	7%
Severe	1	1	3	4	3	3	3	3%
Total	99	99	100	100	101	99	99	100%

Own compilation. Adapted from Connelly et al. (1993:153)

2.2.5.2 Gender differences

In childhood there do not appear to be sex differences in the incidence rates. This picture changes at adolescence. Windle and Davies (1999:839) found a ratio for depression of 2,5:1 for girls, relative to boys, in their study of 1000 adolescents. According to Lewinsohn (1999:272), beginning at age 12 to 13, depression is twice as prevalent in girls. This picture continues into adulthood (Kaplan & Sadock 1998:539). Nolen-Hoeksema and Girgus (1994:424) found the same ratios for girls after age 15. Girls not only report significant more depressive symptomology, they also report less satisfaction with their appearance on various measures of body image and significantly lower self-esteem. They suggest that girls are more affected by the stresses of adolescence than boys. This hypothesis is supported by the work of Petersen, Sarigiani and Kennedy (1991:247) who found that girls were at risk for developing depressed affect by the twelfth grade because they

experienced more challenges in early adolescence than boys did. In particular, they cited early puberty timing - which had long-term negative effects for girls only - and they suggest this is associated with negative body image. Golombek and Marton (1992:245) found girls to be more introspective at all adolescent subphases than boys are. Gotlief and Hammen (1996:51) report that there was an "enormous" peak onset in the 15-19 year-old interval for women, though men's rates also increased in this age interval.

Another interesting observation, which is made by Reed (1994:293-302), is that there are gender differences in personality predictors for depression. This suggests that the forerunners of depressive symptoms may be different for the two sexes and that treatment effectiveness differs across gender. In a longitudinal study quoted by Gotlief and Hammen (1996:51-52), boys, who reported depression at a later stage, were seen as aggressive, self-aggrandizing and uncontrolled since their early years; whereas the girls, who were depressive at age 18, were intropunitive, oversocialised, and overcontrolled in their earlier years.

Other researchers have looked at societal socialization norms to explain the gender differences. Leadbeater, Blatt and Quilan (1995:18) showed that girls tend to have a more internalizing pattern of symptom expression, whereas boys tend to have an externalizing pattern. As a result girls would be more inclined to self-report depression than males as they adopt gender-linked personality characteristics (Nolen-Hoeksema & Girgus 1994:438). Leadbeater *et al.* (1995:1) subtyped the vulnerability to depression and found that females show more interpersonal depressive vulnerabilities and are more reactive to life events than boys, but do not differ from boys in vulnerability to self-criticism and sensitivity to stressful events involving themselves. Gore and Aseltine (1995:301) found gender differences in the way adolescents marshal their personal and support resources in managing friendship problems. However, it is often difficult to unravel the relationships between the factors because of the co-morbidity with other disorders.

2.2.6 Co-morbidity

Lewinsohn (1999:272) states that 50% of depressed adolescents have another mental disorder, the most common being conduct disorder, substance abuse, anxiety and attention deficit disorders. Gotlief and Hammen (1996:44-46) differentiate according to the age of the adolescents, finding oppositional and conduct disorders, anxiety and attention deficit disorders more common in younger adolescents, and eating disorders and drug or alcohol abuse more common in older adolescents. According to Barnes *et al.* (2000:149), adult depression commonly coexists with Axis 11 disorders (especially borderline and avoidant disorder) and it seems probable that this would be the case with adolescents too. Tyano (1999:299) points out that in childhood, anxiety and depression are inseparable and it is at adolescence that the two syndromes are divided.

2.2.7 Course and outcome

According to Harrington (1999:238), children diagnosed as depressed are more likely to have subsequent episodes of depression. This increased risk extends into adulthood and those with double depression (MDD and dysthymia) have a worse outcome. Most adolescents with MDD will recover to a significant extent, but a substantial proportion of those who recover will relapse (Gotlief & Hammen 1996:49). Follow-up studies have found that 20 to 40% of adolescents who have MDD will develop bipolar one within five years of the index depression (Kaplan & Sadock 1998:1249). The onset of a mood disorder may be difficult to diagnose when first seen if the adolescent has attempted to self-medicate with alcohol or other illicit substances (Kaplan & Sadock 1998:127).

2.2.8 Conclusion

To conclude, it can be stated that there is no scientifically based diagnosis of depression (Stefanis & Stefanis 1999:42). Different conceptualizations have attempted to elucidate the concept. Each conceptualization has run into

anomalies that cannot be accommodated within their paradigms. Other dilemmas are the validation of the depressive personality as a separate entity, distinct from early, onset dysthymia (predisposing to clinical depression), and the relationship between depressive symptomology and the depressive personality formation. The jury is still out on whether adolescent depression is a separate phenomenon from adult depression.

2.3 THE PHENOMENON OF ADOLESCENT SUBSTANCE ABUSE

The South African Government has responded to the drug problem in South Africa by introducing a National Drug Master Plan (South African Department of Welfare 1999) that is aimed at building a drug-free society. To implement this, they have established, inter alia, a Central Drug Authority (CDA). Various South African studies have documented the increasing rates of substance abuse among the youth (Fisher, Parry, Evans, Lombard & Muller 1998:5; Oven 2001:1; Parry & Pluddemann 1999:2), but it is unclear how adolescent substance abuse differs from adult abuse (Bukstein 1995:210; Kaminer 1994:12). The South African National Drug Master Plan (1999:1) states that the greatest number of drug experimenters are of school-going age and the age of first experimentation has dropped. Some of the adolescents will go on to develop drug dependency, a state detrimental to their well-being (Tarter & Mezzich 1992:149).

This section will look at definitions (see 2.3.1), the debate as to whether adult substance abuse is different to adolescent substance abuse (see 2.3.2), the socialization model (see 2.3.3), transitions in substance abuse (2.3.4), risk factors and consequences (see 2.3.5), epidemiology which includes prevalent rates, age of use, race and ethnicity, gender differences (see 2.3.6), aetiology (see 2.3.7), the addictive personality (see 2.3.8), adult and adolescent co-morbidity (see 2.3.9) and finally, depression and suicide (see 2.3.10).

2.3.1 Definitions and commentary

Various authorities have defined substance use/abuse and these definitions are now discussed.

2.3.1.1 *Substances and substance-related disorders*

The DSM-IV-R refers to brain function altering substances as *substances* and to the related disorders as *substance-related disorders*. The concept does not include chemicals such as organic solvents, which may be ingested on purpose or by accident. It includes legal and illegal substances. The word *drug* implies a manufactured chemical, whereas many substances associated with abuse patterns occur naturally or are not meant for human consumption (Kaplan & Sadock 1998:375).

2.3.1.2 *Psychoactive substances*

The International Statistical Classification of Diseases and Related Health Problems (ICD-10) uses the term *psychoactive substance* to refer to substances that can be abused. They include solvents, unlike the DSM-IV-R. They, too, do not discriminate between legal and illegal substances, but they mention that the substance may or may not have been medically prescribed. Disorders are described as mental or behavioural, with diagnostic guidelines provided for identifying the substance and for determining the specific nature of the disorder (Kaplan & Sadock 1998:376).

2.3.1.3 *Substance abuse*

The DSM-IV-R defines substance abuse as characterized by the presence of at least one specific symptom indicating that the substance abuse has interfered with the person's life.

Failure to meet even a minimal level of impairment or distress, despite a maladaptive pattern of use, may reduce the number of adolescents who meet

the DSM-IV criteria for a diagnosis of substance abuse (Bukstein 1995:23-27). Patterns of consumption and consequences of use vary between adults and adolescents, and there are differences in the social, peer, and developmental contexts of use (Bukstein 1995:24-26; Kaminer 1994:19). In addition, several researchers have noted the discontinuity between adolescent problem use and adult abuse and dependency. Glantz (1992:390) believes that "drug abuse" denotes that the adolescent's behaviour has taken on the characteristics of a psychopathological behaviour.

2.3.1.4 *Substance dependence*

The term *addiction* has been replaced with *substance dependence*, which includes two concepts:

- behavioural (emphasizing pathological use patterns), and
- physical/physiological (emphasizing tolerance and withdrawal).

In the DSM-IV-R, clinicians can specify whether symptoms of physiological dependence are present. Yet, according to Kaplan and Sadock (1998:376), the distinction between physiological and psychological dependence is flawed as psychological or behavioural dependence reflects physiological changes in the behavioral centers of the brain. In addition, these authors believe that there may be common neurochemical and neuroanatomical substrates among all addictions - whether related to substances or to gambling, sex, stealing or eating. This concept is explored in more detail in the section called "The Addictive Personality" (see 2.3.8).

2.3.1.5 *DSM-IV-R polysubstance dependence*

This diagnosis is reserved for behaviour during the same twelve-month period in which the person was repeatedly using at least three groups of substances (not including caffeine and nicotine), but no single substance has predominated. Further, during this period, the dependence criteria were met for substances as a group, but not for any specific substance.

2.3.1.6 Adolescent substance use (ASU)

This term is used to refer to the non-pathological use of, experimentation with, or the occasional irregular use of psychoactive substances. This stage is often referred to as 'recreational' use. This category is not catered for in the DSM-IV-R. It should be noted that there is no clear demarcation indicating the transition from "use" to "abuse" (Glantz 1992:389), nor is there clarity about adolescent substance abuse as a distinct form of substance abuse.

2.3.2 The debate: adult versus adolescent substance abuse

The DSM-IV-R has developed terminology with little or no empirical evidence for its appropriateness for adolescents (Bukstein 1995:210; Kaminer 1994:12). Yet, according to Kaminer (1994:19), present knowledge does not support a distinct adolescent-orientated category, in spite of such age-related differences. He believes that there are at least two different types of alcoholism among adolescents: a more 'malignant' course type, and an abuse syndrome that does not lead to dependency. While much research has been done on alcohol, the consequences of the other substances for adolescents are not nearly so well documented and it is possible other such subtypes exist. It should further be noted that the unique nature of each drug makes it difficult to generalise as rates of dependency depend on the psychoactive nature of those drugs. Furthermore, some view adolescent use as a socialisation process (while not endorsing such behaviour) and believe it is mostly self-limiting, which is discussed in the next section.

2.3.3 The socialisation model of adolescent substance use/abuse

Bukstein (1995:55) listed the adolescent developmental behaviours that promote substance use. Adolescents are establishing independence from parents, their identities are being established and they experiment with alternative attitudes, lifestyles and behaviour (including substance use). They are increasingly dependent on peer-orientated attitudes and behaviours. The behavioural norms, values and beliefs held by the peer group may encourage

experimentation (Hawkins *et al.* 1992:85). Such experimentation may be considered normal (Bukstein 1995:26; Kaminer 1994:42). Moreover, Schedler and Block (Kaminer 1994:42) found that youngsters who had experimented with psychoactive substances were psychologically healthier than either frequent users or abstainers. Others have pointed out the negative consequences of adolescent substance abuse, including an increase in depression (Kinnier, Metha, Keim, Okey, Adler-Tabia, Berry & Mulvenon 1994:101; Morojele 1997:214) and possible brain alterations (Knowlton 1995:2). Bukstein (1995:31) cautions that one must consider the developmental role and context of substance abuse by the adolescent. There are frequently coexisting problems (e.g. deviant behaviour, psychopathology, and environmental stressors), which may confuse one into believing the resulting dysfunction is due entirely, or in part, to substance abuse rather than to the co-existing problem. There are also transitional stages in substance abuse and these are now discussed.

2.3.4 Transitions in substance abuse

According to Kaminer (1994:68), Kandel (1975) introduced the Gateway theory, which suggests that there are at least four distinct developmental stages in the initiation of substance use by children and adolescents. He postulated that they progress through beer or wine, cigarettes or hard liquor, marijuana to illicit drugs. Kaminer (1994:69) notes that 25% of the total population who used substances proceeded through all four developmental stages of drug use by their mid 20's, while two thirds of young people passed through the first three stages. Bukstein (1995:56) quotes research that found that problem drinking or regular alcohol use follows marijuana use and proceeds the use of all other illicit drugs. In the study by Flisher *et al.* (1998:4), the mean age of first use was lowest for glue and cigarettes, then alcohol, then cannabis and mandrax. Those substances with a later onset of use are ecstasy and crack, which have a mean age onset of 16 years.

Clayton (1992:21-28) refined Kandel's description by looking at the type of transition and he postulates the following stages: initiation, continuation,

maintenance and progression, progression across drug classes leading to polysubstance abuse and dependence and finally regression, cessation and relapse cycles. A position at one stage does not necessarily imply the user will progress to the next stage and this is particularly true with adolescents (Bukstein 1995:24; Bukstein 1997:1; Clayton 1992:26; Newcomb 1992:255). Kaplan, Landa, Weinhold and Shenker (1984:600) noted that those who abuse one substance *and* are depressed are more likely to progress to the next stage of substance abuse than those who are not depressed.

2.3.5 Risk factors and consequences of adolescent substance abuse

Adolescent substance abuse can seriously disrupt the ability of adolescents to adequately handle developmental tasks (Kaminer 1994:71-72; South African Central Drug Authority 2001:1; Newcomb 1992:294). Certain risk factors have been identified (Bukstein 1995:58-67; Glantz 1992:389-419; Hawkins *et al.* 1992:64-105). Those risk factors common to depression and substance abuse are highlighted by Lewinsohn, Gotlib and Seeley (1995:1226) and are dealt with in section 2.3.7.

2.3.6 Epidemiology

It is important to look at the prevalent rates, the age of onset, unique cultural differences and gender differences.

2.3.6.1 Adolescence prevalent rates

In the Calafat, Amengual, Palmer and Saliba study (1997:5) of 1312 adolescents in Spain, there were 31,6% daily smokers, 28,2% weekend drinkers, and 0,5% daily drinkers. Of the adolescents, 25% admitted to getting drunk in the last six months, 14,3% used cannabis, 0,3% heroin and 0,9% cocaine. In the *Monitoring the future* American study of 17 300 grade eights, 13 900 grade 10's and 14 100 grade 12's, the researchers found the 30 day prevalence rates of illicit drugs to be 12,2% for grade eights, 22,1% for grade 10's and 25,9% for grade 12's (Johnston, O'Malley & Bachman

2000:39). The study by Flisher *et al.* (1998:3-10) of 1413 CapeTown adolescents suggests that use among South African youth (as seen in the table below) is far behind that of the Americans, but more severe than the Spanish youth surveyed in the study quoted above. Fisher (2000: 63) found similar figures for South African youth in the CapeTown Bridges High School survey, as the following table illustrates.

Table 2.3 *Thirty day prevalence rates of substance abuse in a CapeTown community*

	Grade 8		Grade 11	
	Female	Male	Female	Male
Cigarettes	22,9%	24,4%	43,9%	58,4%
Alcohol	18,1%	22,4%	47,8%	66,4%
Cannabis	2,2%	3,5%	13,1%	32,0%
Mandrax	1,0%	1,6%	1,9%	5,7%
Crack	0,1%	0,3%	1,0%	2,6%
Ecstasy	0,8%	0,7%	3,1%	4,3%
Glue	1,6%	1,4%	4,9%	15,8%
Other	0,9%	1,2%	2,4%	3,9%

Own compilation. Adapted from Flisher et al. (1998:3,9-10)

2.3.6.2 Age

Rates of drug abuse show considerable variation by age (Kaplan & Sadock 1998:383), with a positive association between age and the prevalence of drinking and dagga smoking in adolescents (Rocha-Silva 1998:18). In recent American data (Kaplan & Sadock 1998:383), the highest rates of illicit drug use were found among the 16 to 17 age group (15,6%) and the 18 to 20 age group (18%). Leggett (1999:9) notes that the modal age of South African substance users at raves is 18 years. It should be noted that the age of onset into a particular stage of substance use and the frequency of use at an earlier stage are strong predictors of progression to later stages (Kandel, Yamaguchi & Chien 1992:447; Windle 1990:86).

2.3.6.3 *Race and ethnicity*

In a study conducted by Flisher, Ziervogel, Chalton, Leger and Robertson (1993:480) on the risk taking behaviour of 7340 Cape Peninsula high-school students, the prevalence of drinking was highest among adolescents whose home language was English. However, the heaviest binge drinking was among Xhosa speaking males. Rocha-Silva, de Miranda and Erasmus (1996:67) found that the use of home-made liquor is also associated with traditional African youth. In analysing the South African rave scene, Leggett (1999:9) found few blacks attended raves, where drug abuse is common.

2.3.6.4 *Gender differences*

Abuse and dependence on substances are more common in men than in women, with the difference being more marked for non-alcohol substances than for alcohol (Kaplan & Sadock 1998:378). This same pattern is found among adolescents (Flisher *et. al.* 1998:3-10; Kaminer 1994:35; Rocha-Silva 1998:16). Yet, Martin, Arria, Mezzich and Bukstein (1993:511) did not find adolescent gender differences in the use of different classes of drugs, or in their severity of involvement. However, their study was limited to a small sample of in-patients. In another in-patient study, Van Hasselt, Null, Kempton and Bukstein (1993:9-18) found gender differences in personalities of abusers.

2.3.7 *Aetiology*

According to Bukstein (1995:10-17), contemporary theories of adolescent substance use/abuse can be divided into four major groups: the disease model which views addiction as a disease, various psychological theories, the self-medication hypothesis and various behavioral, learning and environmental theories. It should be noted that evidence increasingly points to certain factors as underlying a vulnerability to substance use/abuse (Bukstein 1995:15; Kaplan & Sadock 1998:387; Kaminer 1994:18). With the exception of alcohol, researchers have identified particular neurotransmitters

through which, or neurotransmitter receptors on which, the substances have their effects (Kaplan & Sadock 1998:387). None of the theoretical perspectives appear to be exclusive. There seems to be a growing understanding of the importance of the heterogeneity of patterns of substance use, abuse and dependence - each having multiple etiologies - and this favours a multifactorial paradigm of addiction (Bukstein 1995:51; Glantz & Pickens 1992:9; Kaminer 1994:40). The greater the number and severity of risk factors (e.g. parent substance abuse and dependence, peer-group interactions), the higher the risk for adolescent substance abuse (Hawkins *et al.* 1992:85). The relative contribution of the factors varies between individual adolescents, as do outcomes (Bukstein 1995:16).

2.3.8 The addictive personality

Barnes *et al.* (2000:3-16) have summarized the growing evidence that personality traits are fairly stable, and that there is a biological basis underlying primary personality characteristics. Novelty seeking, thought to be a factor in substance abuse, has been linked to certain gene factors. One such gene, the A1 allele of the dopamine receptor gene, is linked to alcoholism, cocaine dependence, cigarette smoking, and polysubstance abuse. Supporting the idea of addictive personality traits is the study of Curran, White and Hansell (2000:375) who found "disinhibition" to be a predictor of problem marijuana use.

2.3.9 Adult and adolescent co-morbidity

According to Kaplan and Sadock (1998:383-384), 76% of men and 65% of women with a diagnosis of substance abuse or dependence had an additional psychiatric diagnosis. The most common co-morbidity involves two substances of abuse, usually alcohol and another substance. Personality disorders are more prevalent in polydrug users who are more likely to have Axis 1 disorders, such as depression, and Axis 11 disorders, such as borderline personality disorder and antisocial disorder, than patients addicted to only one drug (Barnes *et al.* 2000:149). This is likely to be the case with

adolescents too. MDD, dysthymia and anxiety disorders are frequently diagnosed as co-morbid among individuals with substance abuse disorders (Kaminer 1994:15). Kaplan and Sadock note that the most potent and dangerous substances have the highest co-morbidity rates with depression (Kaplan & Sadock 1998:384-385).

2.3.10 Substance abuse, depression and suicide

According to Kaplan and Sadock (1998:385-386), substance abuse is a major precipitating factor for suicide. Bukstein (1995:87) says that the increased risk of suicide in depressed people is mediated by both the acute and chronic effects of substance abuse.

2.3.11 Conclusion

To summarise this section on substance abuse, it can be seen that there is a growing understanding of the importance of the heterogeneity of patterns of substance use and abuse and each having multiple etiologies (Kaminer 1994:40). Biological vulnerability (Bukstein 1995:15; Kaplan & Sadock 1998:387; Kaminer 1994:18) and personality type (Barnes *et al.* 2000:283) are important factors. We have noted that the greater the number and severity of risk factors (e.g. parent substance abuse and dependence, peer-group interactions), the higher the risk for adolescent substance abuse (Hawkins *et al.* 1992:85). Kaplan *et al.* (1984:600) have noted that those who abuse one substance and are depressed are more likely to progress to the next stage of substance abuse than those who are not depressed.

In this next section, the researcher will examine the relationship between depressive symptomology and substance abuse among adolescents.

2.4 THE RELATIONSHIP BETWEEN DEPRESSION AND SUBSTANCE ABUSE

Research has generally concluded that adolescent depression and substance abuse are strongly interrelated (Bukstein 1995:73; Deykin, Buka & Zeena 1992:1341; Kaminer 1994:100-101; Kaplan *et al.* 1984:596; Kinnier *et al.* (b) 1994:51; Stefanis & Kokkevi 1986:129; Swanson, Linksey, Quintero-Salinas, Pumariega & Holzer 1992:669). Both depression and substance abuse tend to be chronic conditions and both are associated with psychosocial morbidity. When these disorders are co-morbid, functioning is further impaired (Rao, Ryan, Dahl, Birmacher, Rao, Williamson & Perel 1999:1114). There is also a strong relationship between severity of substance dependence and depression scores in adults (Coelho, Rangel, Ramos, Martins, Prata & Barros (2000:105). It is likely that co-morbid psychiatric disorder and substance abuse problems are as important in adolescent populations as in adults (Bukstein 1995:73), but they have not been studied so extensively.

Not everyone agrees that there is a relationship between depression and substance abuse however. Calafat *et al.* (1997:19) found no significant relationship between depression and substance abuse in their community sample of 1312 adolescents aged 13-19. Neither did Miller-Johnston, Lochman, Coie, Terry and Hyman (1998:229). They found that substance abuse was not elevated in adolescents with high levels of depressive symptoms - without concurrent high levels of conduct disorder. Way, Staber, Nakkula and London (1994:353) found differences in the correlation between substance abuse and depression in their two diverse populations: one a suburban school, one an inner-city school. Depression in the suburban school was positively correlated with the use of cigarettes, marijuana, and harder drugs, but not in the urban school. Merikangas, Angst, Eaton, Canino, Rubio-Stipec, Wacker, Wittchen, Andrade, Essau, Whitaker, Kraemer, Robins and Kupfer (1996:58) examined the epidemiological studies in four countries for the associations between affective disorders and substance abuse disorders. They found the magnitude of the associations to be quite low.

They also found no significant difference in the patterns of co-morbidity by gender, age group, affective subtype or prevalence period.

Therefore, it is important that the relationship between depression and substance abuse among adolescents is explored. A discussion now follows on: co-morbidity (see 2.4.1), the causal link (see 2.4.2), the primary and secondary debate (see 2.4.3), the association between alcohol and depression (see 2.4.4), the association between depression and other substances of abuse (see 2.4.5), gender differences (see 2.4.6), risk factors (see 2.4.7) and substance abuse, depression and suicide (see 2.4.8).

2.4.1 Co-morbidity

Disorders that co-occur are said to be co-morbid (Kaminer 1994:88). With respect to depressive disorders, co-morbidity is the rule rather than the exception (Gotlief & Hammen 1996:44). Other researchers would prefer a more restrictive description. According to Stefanis and Stefanis (1999:4-5), co-morbidity should refer to distinct disease entities within a well-defined time-window instead of to various conditions within an undetermined time relationship. They speculate that what often appears to be a co-morbid relationship of two discrete conditions may well be the polymorphic presentation of a single nosological concept.

Achenbach (1990:271-278) reviewed five factors that may contribute to an erroneous assumption of co-morbidity between disorders. He suggests that the symptoms used to diagnose the different disorders may result from the same underlying cause. Diagnostic procedures may fail to discriminate accurately between disorders that do not occur together with greater than chance incidence, or the diagnostic criteria may omit features that would increase the discriminability of a disorder from other disorders. It is possible that the apparent co-morbidity could involve a higher-order pattern of co-occurring problems that should be used to define a single diagnostic entity. It is also possible that by incorrectly placing a border between the normal and

the pathological, or between two disorders, the categories may not be congruent with the distinctive criteria that define them.

Others have observed that ' Berkson's fallacy ' may influence the inferences drawn from co-morbidity studies. Berkson, according to Kaminer (1994:88), indicated that individuals with more than one disorder are more likely to seek treatment than those with only one disorder. This could lead to an erroneous higher estimate of the association between two disorders than would have been the case if each single disorder independently leads the sufferer to seek medical treatment. Caron and Rutter (1991:1063-1080) reviewed the issue for both apparent and real co-morbidity and they conclude that the findings of many studies on co-morbidity are likely to be misleading. In their opinion, true co-morbidity of disorders share risk factors, have overlapping risk factors, that the one disorder creates an increased risk for another and the co-morbid patterns constitute a meaningful syndrome. Coelho *et al.* (2000:105) add that there may be a lack of objective chronological information about the patient that leads to an erroneous dual diagnosis.

2.4.1.1 Co-morbidity within the DSM-IV-R

Anxiety, alcohol dependence, other substance-related disorders and medical conditions co-occur with depressive disorders and are recognised by the DSM-IV-R specifiers. Major depressive disorder, dysthymia and anxiety disorders are frequently diagnosed as co-morbid among individuals with substance abuse disorders (Christie, Burke, Regier, Rae, Boyd & Locke 1988:972; Kaminer 1994:15). Patients with dysthymic disorder tend to develop coping mechanisms for their chronically depressed state and often use alcohol or stimulants, such as cocaine, or marijuana. The choice of the latter depending primarily on a patient's social context (Kaplan & Sadock 1998:576). Anxiety affects about 90% of all depressed patients (Kaplan & Sadock 1998:553). In anxiety disorders, the DSM-IV-R notes the existence of mixed anxiety-depression disorder. But, it is unclear whether depression and anxiety are affected by two distinct disease processes or by a single disease process (Kaplan & Sadock 1998:554). As previously stated, the most potent

and dangerous substances have the highest co-morbidity rates with depression (Kaplan & Sadock 1998:384-385).

2.4.1.2 Substance-induced mood disorders in the DSM-IV-R

One of the categories in the DSM-IV-R is substance-induced mood disorder. While the epidemiology of substance-induced mood disorder is unknown, the prevalence is probably high given the wide-spread use of recreational drugs, the many prescription drugs that cause depression and the toxic chemicals in the environment.

Table 2.4 *DSM-IV-R substance-induced disorders distributed in other DSM-IV-R sections with phenomenologically similar disorders*

	Dependence	Abuse	Intoxication	Withdrawal	Mood disorders
Alcohol	X	X	X	X	LW
Amphetamines	X	X	X	X	LW
Cannabis	X	X	X		
Cocaine	X	X	X	X	LW
Hallucinogens	X	X	X		L
Inhalants	X	X	X		L
Nicotine	X			X	
Opiates	X	X	X	X	L
Polysubstance	X				
Other	X	X	X	X	LW

X, L, and W indicate that the category is recognized in DSM-IV.

L indicates specifier 'with onset during intoxication'

W indicates specifier 'with onset during withdrawal'

Table adapted from Table 12.1-2 in Kaplan and Sadock (1998: 377)

Symptoms of depression frequently appear during intoxication and withdrawal phases of drug dependence and are considered part of substance abuse induced disorder. In the DSM-IV-R, the substances vary as to whether a pathological state is associated with withdrawal, or persists after the substance is eliminated from the body. Substance related disorders are cross-referred in the DSM-IV-R categories that cover those particular symptoms or syndromes. For example, a substance induced mood disorder is cross-referenced as a mood disorder, as well as a substance abuse disorder. This emphasises the differential diagnosis of mood disorder

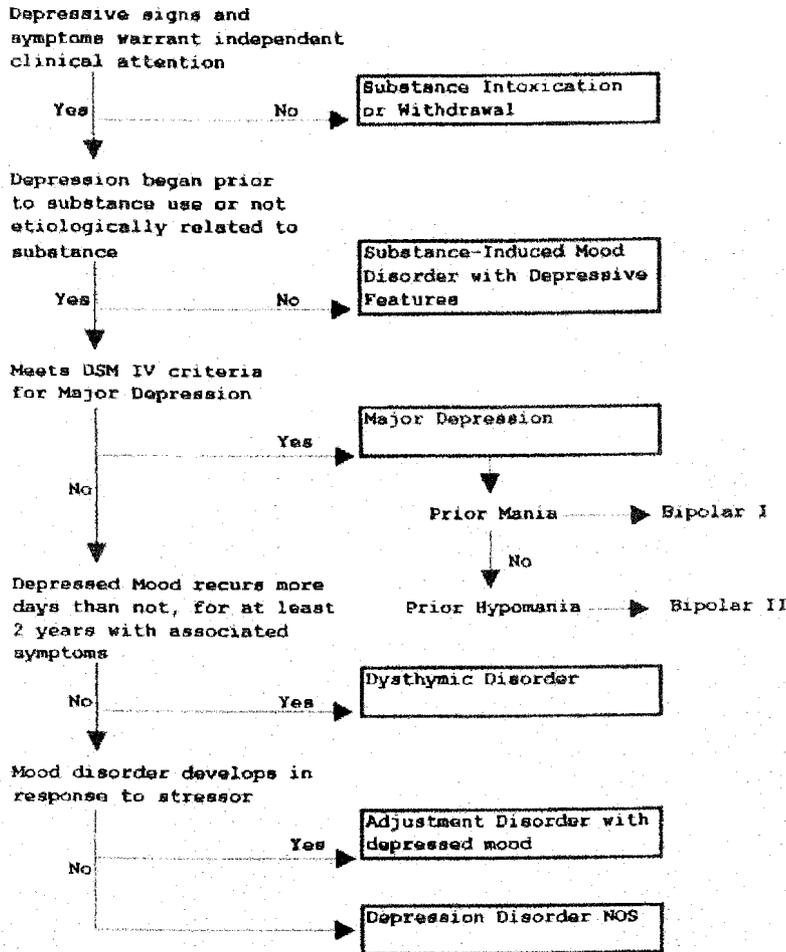
symptoms while emphasizing that a single substance can result in many neuropsychiatric symptoms and syndromes (Kaplan & Sadock 1998:376). The DSM-IV-R allows for the diagnosis of alcohol-induced mood disorder with manic, depressive or mixed features. The DSM-IV-R also includes amphetamine-induced mood disorder, inhalant-related mood disorder, phencyclidine (PCP)-related mood disorder, cocaine-induced mood disorder and sedative, hypnotic or anxiolytic-related mood disorder. All four have specifiers: with onset during intoxication and onset during withdrawal. Opioid-induced mood disorder is in the DSM-IV-R, but it can only be specified with onset during intoxication. Yet, an associated feature of opioid withdrawal is depression (Kaplan & Sadock 1998:440). The DSM-IV-R does not formally recognise cannabis-induced mood disorders; therefore such disorders are classified as cannabis-related disorders not otherwise specified. Cannabis intoxication can be associated with depressive symptoms, although such symptoms may suggest long-term cannabis use (Kaplan & Sadock 1998:418).

It must be noted that symptoms meeting the full criteria of MDD are encountered in drug dependants while they are free both from the direct drug effect and withdrawal symptoms (Stefanis & Stefanis 1999:29).

2.4.1.3 Decision Tree for distinguishing substance-related depression from primary depression disorders

It may be helpful to follow a decision tree when trying to unravel "pure" depression from substance-induced depression. The difficulty with the table is the decision as to whether "the depressive signs symptoms warrant independent clinical attention" (see figure 2.1). This decision would depend on the clinician's level of experience.

Differential Diagnosis of Depression



Decision tree distinguishing substance-related depression from primary depressive disorders.

Figure 2.1 *Decision tree for differential diagnosis of depression*

This figure is reproduced from Kantor (1996:13)

Once we have distinguished between these disorders presented in the figure, we can look at the relationship between depression and substance abuse, which is the topic of the next section.

2.4.2 The causal link

According to Kaplan and Sadock (1998:375), some substances can affect both internally perceived states, such as mood, and externally observable activities, such as behaviour. The substances can cause neuropsychiatric symptoms indistinguishable from those of common psychiatric disorders with

no known cause (for example, mood disorders). Thus primary psychiatric disorders and disorders involving the use of substances are possibly related. Kaplan and Sadock postulate that if the depressive symptoms seen in some people, who have not taken a brain function altering substance, are indistinguishable from the depressive symptoms in a person who has taken a brain-altering substance, there may be a brain-based commonality between substance abuse and depression.

The relationship between depression and substance abuse is highly complex. Bukstein (1995:81-82), Galaif, Chou, Sussman and Dent (1998:276) and Stefanis and Kokkevi (1986:129) have all attempted to differentiate between the different associations with depression and substance abuse. In addition, six possible explanatory paradigms are reported in Kaminer (1994:95). The researcher has used these paradigms in Kaminer as a framework for the discussion that follows, adding two further paradigms.

- *Psychiatric symptoms or disorders developing as a consequence of substance abuse*

Bukstein, Brent and Kaminer (1989:1131) state that substance abuse has a major role in the etiology and prognosis of psychiatric disorders. Kokkevi and Stefanis (1995:334) found the initiation of drug use generally preceded the onset of affective disorders. In studies comparing addicts with the general population, addicts score high on depression, which occurs after the onset of the addiction problems and dissipates with treatment (Barnes *et al.* 2000:150). Rao, Daley and Hammen (2000:215) found that substance abuse predicted MDD over five years, but the reverse was not true. A similar finding was made by Bukstein, Glancy and Kaminer (1992:1044). Brown, Lewinsohn, Seeley and Wagner (1996:1602) found that smoking was found to increase the risk of MDD and other drug abuse in a community sample of 1706 adolescents.

- *Psychiatric disorders altering the course of substance abuse*

Alcoholics with depression have been found to become alcoholic at an earlier age and have a more rapid course to problem drinking than alcoholics without additional problems (Bukstein 1995:82). However, subgroups of substance abusers may be affected differently to other subgroups. In follow-up studies of adult alcoholics and opiate addicts, coexisting psychiatric diagnoses, including depression, predicted poorer treatment outcomes than those without depression (Kaminer 1994:99). A better prognosis has been observed in alcoholics with primary mood disorders than those with primary alcoholism (Bukstein 1995:82).

- *Substance abuse developing as a consequence of psychopathology and dysfunction in the individuals and their families*

Some researchers contend that dysthymic disorders are a major risk factor for all types of substance abuse (Birmacher, Ryan, Williamson, Brent, Kaufman, Dahl, Perel & Nelson 1996:1435; Galaif *et al.* 1998:295; Hovens, Cantwell & Kiriakos 1994:482; Rao *et al.* 1999:1116; Stefanis & Kokkevi 1986:124). Bukstein *et al.* (1992:1042) observed in their sample that the average age of onset of substance abuse disorder preceded the average age of onset of MDD by one year. The National Co-morbidity Study in the U.S.A. found the median age for the onset of a mental disorder to be 11 years, with the median onset for substance abuse disorder to be five to ten years later (Florida Commission on Mental Health and Substance Abuse:no date). The Epidemiological Catchment Area (ECA) study, which included data from 20000 households, reported that there are increased rates of depression between the ages of 15 and 19 years (Kaminer 1994:91) and Burke, Burke, Rae and Regier (1991:789) found a similar shift for drug abuse and dependence. They hypothesize that the shift to an earlier age of onset for major depression, reported in the ECA study, could be one of the factors leading to an increased drug abuse/dependence in late adolescence found in the same study. One interesting observation is that the "amotivational syndrome" - so commonly thought of as a consequence of marijuana use -

could possibly precede it. In addition, Boyle, Offord, Racine, Szatmari, Fleming and Links (1991:761) and Capaldi (1992:277) noted that conduct disorder in early adolescence predicted substance abuse in older adolescents.

Stress and coping models of substance abuse have theorized that substance abuse is an avoidant type of coping mechanism that helps individuals calm down when they are depressed, resulting in a reduction of the depressed feelings (Miller-Johnson *et al.* 1998:223). Kaplan and Sadock (1998:419) state that cannabis use may be related to an underlying depressive disorder. Depressed patients often use stimulants, such as cocaine and amphetamines, to relieve their depression (Kaplan & Sadock 1998:554). As previously noted, researchers have found a strong relationship between severity of dependence and depression scores (Coelho *et al.* 2000:105). In addition to this, Rao *et al.* (1999:1113) found that the progression from alcohol to drug initiation to onset of substance abuse disorder occurs more rapidly in depressed adolescents.

In addition, maternal MDD is associated with an increased risk of both substance abuse and MDD (Merikangas, Rounsaville & Prusoff 1992:94). Furthermore, there are reports that link family factors with preference for specific substances (Kaminer 1994:96-111).

- *Substance abuse altering the course of psychiatric disorders*

An association was found by Patton, Hibbert, Rosier, Carlin, Caust and Bowes (1996:229) which suggests that substance abuse alters the course of depression. They reported that poorer mental health (i.e. depressive symptomology) persists, even after adolescent smokers stop smoking. The Center for Substance Abuse Treatment of the American Substance Abuse and Mental Health Services Administration (SAMSHA) states that alcohol and drug use can " prompt the development, provoke the reemergence, or worsen the severity of psychiatric disorders " (Centre for Substance Abuse Treatment 1995:5). Leshner (Knowlton 1995:3) notes that substance abuse changes the

course of bipolar illness, by precipitating it in younger populations, worsening and changing the condition, and precipitating rapid-cycling states.

- *Psychiatric disorders and substance abuse being mutually exclusive but coincidentally manifested*

If psychiatric disorders and substance abuse simply co-exist, then there is no causal link. This point was made in the section on co-morbidity. It is not always clear if the various studies have controlled for this. Capaldi (1992:277) agrees that this is a problem. For example, she found that boys with conduct disorder have poor relationships and this makes them vulnerable for depressed moods.

- *Substance abuse and psychiatric disorders originating from a common vulnerability*

Support for the paradigm that substance abuse and psychiatric disorders originate from a common vulnerability has come from a number of studies. For example, Bukstein (1995:83) surveyed a number of studies in the literature and concludes that the findings suggest the existence of a broader, shared genetic vulnerability to various forms of psychopathology, with the underlying genetic risk manifested in different disorders - alcoholism, or affective disorders. In addition, substantial research has pointed to a strong relation between problem-solving deficits and both depression and substance abuse (Kantor 1996:197). Leshner (Knowlton 1995:1) stated that "addiction disorders are brain dysfunctions displayed as behavioural dysfunctions".

- *Substance abuse and affective disorders being caused by the third variable that is correlated to both life events and distress*

According to the problem-behaviour theory of Jessor and Jessor (Jessor, Donovan & Costa 1991:18-36), drinking, smoking and substance abuse are causally related to identification with a deviant lifestyle in which substance

abuse is considered normal. Kozlowski, Annis, Cappell, Glaser, Goodstadt, Israel, Kalant, Sellers and Vingilis (1992:15) added that in this model, "affective variables are presumed to be an epiphenomenon that may be correlated with other problem-behaviour variables" (e.g. alienated attitudes, poor relationships with parents and/or school, but have no causal role in drug use). According to Williamson, Birmaher, Frank, Anderson, Matty and Kupfer (1998:1049), depressed adolescents are exposed to high levels of stress prior to becoming depressed. These adolescents may initiate substance abuse in order to obtain perceived affect-regulation functions. However, regular users may show increased stress as part of their attempts to cope with the stressors; and for persons who have ceased regular use, the remembered coping functions of prior use may be an important factor for relapse temptations when levels of emotional stress are high (Kaplan & Sadock 1998:387).

- *A bi-directional model of influence*

Bukstein (1995:75) believes that the direction of influence is often bi-directional, i.e. the substance use/abuse and mood disorder influence each other. Windle and Windle (2001:215) reported that serious and persistent depressive symptoms are predictors over 1,5 years of increased cigarette smoking, after controlling for baseline levels of smoking. Similarly, heavy and persistent smoking predicts increases in depressive symptoms. This demonstrates the reciprocal influence of the one on the other. Windle and Windle's findings were bolstered by the inclusion of other possible confounding variables (e.g. alcohol and other substance abuse, delinquent activity that may have been related to both smoking and depression).

Support for a bi-dimensional model does not negate the research that has been completed using unidirectional models; it simply suggests that such models are not likely to be comprehensive enough to accommodate the dynamics of change involving smoking or any substance of abuse, and depression. Windle and Windle (2001:222) suggest that altered brain biochemistry may mediate the relationship between depressed affect and

smoking in adolescents as well as in adults - and indeed this may be the case in other substances of abuse. The work of these researchers lends support to Kaplan and Sadock's contention that the depressive symptoms seen in a non-substance abuser are indistinguishable from the depressive symptoms in a person who has taken a brain function altering substance. As stated before, according to these authors there is likely be a brain-based commonality between substance abuse and depression (Kaplan & Sadock 1998:375).

The idea of a bi-dimensional model of influence tends to make the primary-secondary debate, which is the topic of the next section, unnecessary, and even, obsolete. Yet, as will be seen, some researchers believe there may be two pathological processes for those people with depression prior to substance abuse and those with substance abuse prior to depression. The researcher examines this debate in the next section.

2.4.3 The primary-secondary debate

This debate is complicated by the different meanings given to the words 'primary' and 'secondary'. Some researchers use it to mean the chronological order of appearance; the diagnosis whose specific signs and symptoms appear first is considered primary and later-appearing diagnoses are considered secondary. This paradigm does not assume a direction of causality or etiology. Other researchers use 'primary' to mean the underlying disorder and 'secondary' to mean the resultant disorder. The particular meanings ascribed to these terms is not always clarified in the literature. What follows here are some of the findings, without this clarity of meaning.

It has been estimated that 20-30% of adult alcoholics develop secondary affective disorder (Kaminer 1994:96). In clinical cohorts of in-patient adolescents with substance abuse disorders, secondary depression was more common than its primary form (Kaminer 1994:96; Bukstein *et al.* 1992:1041).

An early study by Deykin, Levy and Wells (1987:178) found that when depression and substance abuse occur together in adolescence, the onset of

depression almost always comes first. Deykin *et al.* (1992:1341) later found that adolescent subjects whose depression preceded their substance abuse had different characteristics from those whose depression began after their substance abuse. These researchers believe this may suggest the possibility of two pathological processes, similar in manifestation, but with different associated features and possibly with distinct etiologies. Another team of researchers, Rao *et al.* (1999:1110), also hypothesized two different disorders. In their study, the subjects were categorized into two groups: those with SUD prior to the depression and those with depression prior to SUD. They found important differences in demographic, psychological, functional and familial factors, suggesting that, although their clinical presentations may be similar, there are different pathophysiological processes and distinct etiologies.

Yet in another study, these same researchers, Rao *et al.* (2000:219) found no demographic, social adjustment or clinical differences when they compared women substance abusers with regard to primary and secondary depression. Bukstein *et al.* (1992:1041) concluded that utilizing the primary-secondary paradigm could not aid in showing differential prediction of a mood disorder remission among adolescents with co-morbid substance abuse disorders, and MDD. However, in Curran *et al.* (2000:375), depression (and peer drug use) best predicted problem 'hard' drug use. Faraco-Hadlock (1990: 71) believes it is likely that the depression comes first and is the result of a lack of spiritual meaning in the substance abusers' lives.

By surveying clinical and epidemiological retrospective studies, other researchers have shown that there is about an even distribution of MD prior to and following the onset of drug use (Stefanis & Stefanis 1999:30). Therefore, it seems that the question as to which of the two conditions precedes the other and might have a causative influence on the other is still open.

Various associations between depression and substance abuse have been found in the literature and the next section looks at depression and alcohol and then depression with other substances of abuse.

2.4.4 The association between alcoholism and depression

There is a large body of evidence that alcoholism in adults is associated with depression, in addition to anxiety (Barnes *et al.* 2000:51; Stefanis & Stefanis 1999:29) but the temporal relationship is unclear. Grant, Hasin and Dawson (1996:126) found that a chronology-based primary and secondary distinction had diagnostic and prognostic significance among patients diagnosed with both major depression and alcohol use disorder. They stated that abuse of alcohol and other drugs is more likely to follow anxiety disorders and major depression. Barnes *et al.* (2000:52) infer that the conflicting results in the temporal sequence of alcohol and depression may simply reflect the heterogeneous nature of alcoholism and that cognizance should be taken of the type of alcoholism too. They believe that the association of alcoholism and depression can be explained by underlying personality characteristics, which are neurobiologically determined and likely to be influenced by genetic, inheritable means (Barnes *et al.* 2000:52).

The immediate effects of alcohol use may be perceived to decrease levels of depression, but the long-term impact is a further heightening of depression levels (Aneshensel & Huba 1983:134; Kaminer 1994:101). Chen, Anthony and Crum (1999:38) found that having depressive symptoms is associated with a higher risk of developing alcohol-related problems in adolescents. They postulate that depressive symptoms and poor perceived cognitive competence may combine to foster subsequent development of alcohol-related problems.

Windle and Davies (1999:823-844) studied over a 1000 New York adolescents and found that between 24 and 27% of adolescents identified as depressed also met the criteria for heavy drinking; and between 23 and 27% of adolescents identified as heavy drinkers also met the criterion for depression. They found in their mixed depression and heavy drinking subgroup the most persuasive, lowest levels of functioning. The group had the highest levels of childhood externalizing problems, the most stressful life events, the lowest levels of family social support and the highest levels of

delinquency. This group was also temperamentally inflexible i.e. they reported difficulties adapting to changes in their environment. These researchers believe that this co-occurring pattern of depression and heavy drinking among adolescents represents a distinctive pattern of difficulties.

2.4.5 The association between depression and other substances of abuse

Early research documented the association between depression and various substances of abuse. For example, Kaplan *et al.* (1984:600) noted that those who abuse one substance and are depressed are more likely to progress to the next stage of substance abuse than those who are not depressed. Groups of adolescents given a double-depression diagnosis were found to include significantly more alcohol-dependent individuals, as well as amphetamine abusers than adolescents without this dual diagnosis (Kashani, Keller, Solomon, Reid & Mazzola 1985:153).

More modern research has generally confirmed these early findings. Way *et al.* (1994:331-357) found that depression and cigarette, marijuana, and harder drug use among the suburban students shared a positive relationship, but this was not true for the urban (inner city) students. Their qualitative analysis suggested across school differences may be related to the various meanings of depression and substance use that are formed by the cultural contexts in which they occur. This finding lends support to the findings of the study of Galaif *et al.* (1998:294-295). These researchers contend that adolescents from different ethnic or socio-economic backgrounds may take drugs for different reasons. They state that, according to the gender intensification theory, females learn to internalize their problems, which places them at a higher risk for depression than males who tend to externalize their problems in conduct disorder and substance abuse. They found that the cultural theory of 'familismo', i.e. the strong family bonds in Latino subjects, may be a protective factor in these adolescents avoiding the levels of substance abuse found in Caucasians in various studies. In a similar vein, Aseltine (1998:549) found low family support to be the most distinctive risk associated with the co-occurrence of depression and substance abuse. Another cultural study is that

of Swanson *et al.* (1992:677) who found household poverty and house affluence to be significant risk factors for illicit drug use: each having different interpretations. They suggested that affluence meant that there was the cash to buy drugs. The more Anglo-acculturated the sample was, the greater the tendency to use drugs.

In the Galaif *et al.* (1998:276) study, referred to above, the researchers also found significant differences among the factor correlations for Latinos and Caucasians, with mood enhancement being a particularly important reason for hard substance abuse in Caucasian males. Rao *et al.* (2000:215) found major depressive disorder and substance abuse to co-occur during the post high-school transition period for women and this study implicated environmental factors as stressors. Environmental factors were found to be important in the Siegel and Ehrlich (1989:925) study too. These researchers found high socio-economic, white substance abusers scored significantly higher on a depression scale than low socio-economic white substance abusers. Their findings suggest that the relationships among depression and substance abuse may vary across social class. Another study that implicates other factors as mediators between depression and substance abuse is one by Simons, Whitbeck, Conger and Melby (1991:466). They found depression increased the probability of substance abuse only if the peer group was tolerant of such behaviour, or the person was a member of a deviant subgroup. Coelho *et al.* (2000:103), Patton *et al.* (1996:225) and Stefanis and Kokkevi (1986:126) found a cause-effect relationship between the severity of dependence and depression.

Hansell and White (1991:288) did not find support for the hypothesis that adolescents use drugs to cope with pre-existing psychological distress and physical symptoms. However, most other researchers have. Harlow, Newcomb and Bentler (1986:5) found that in response to psychic discomfort (i.e. depression and self-derogation), men are more apt to turn to drugs and alcohol than women are. Conversely, in response to feelings of meaninglessness or lack of purpose in life, more females turn to substance abuse than males. Building on this early research, Kinnier *et al.* (1994:101-

111) found that feelings of meaninglessness and lack of purpose were important variables in the connection between adolescent depression and substance abuse, but this was true for both sexes. They uncovered a strong mediating relationship between purpose in life with the precursor of depression and the consequence of substance abuse. Mainous III, Martin, Oler, Richardson and Haney (1996:807) found that a feeling state of unfulfilled needs might propel adolescents into the destructive behaviour of substance use. This may be the case for depressed adolescents as well.

Patterns among substance abusers with conduct disorder and/or depression were found by Capaldi (1992:277) and Miller-Johnson *et al.* (1998:221) who found conduct disorder groups exhibited the highest levels of substance abuse. Another study that examined the relationships between depression, conduct disorder and substance abuse is one by Henry, Feehan, McGee, Stanton, Moffitt and Silva (1993:469-480). They studied 1037 New Zealand schoolchildren over four years. They found that pre-adolescent depressive symptoms were found to predict multiple drug use four years later for boys only. No predictive relation was found between early symptomology and later substance abuse among females. The strongest association between predictors and substance abuse that were measured from age 11 to age 15 were multiple drug use and concurrent conduct problems for both males and females. Lewinsohn *et al.* (1995:1227) found that externalizing behaviour problems to be more strongly predictive of substance abuse and internalizing behaviour problems to be more predictive of MDD. These researchers hypothesize that the time of life (early or late adolescence) of the conduct disorder could be an important variable in predicting MDD. There are also important gender differences, which is the subject of the next section.

2.4.6 Gender differences

According to Kaminer (1994:101), the sex distribution of males and females of depressive symptomology experienced by adolescents involved in substance abuse is similar. However, the Henry *et al.* study (1993:469-480) found significant gender differences, as did the Pumariega, Johnson, Sheridan and

Cuffe study (1996:115). Moreover, gender-specific profiles that predicted substance abuse in in-patient depressed adolescents with 90% sensitivity were identified by King, Ghaziuddin, McGovern, Brand, Hill and Naylor (1996:743-751). The significant predictors for girls were longer depressive episodes, more conduct problems, more psychosocial impairment, and more active involvement with boys; those for boys were conduct disorder, older age, and schoolwork problems.

Other studies have examined gender differences too. Stefanis and Kokkevi (1986:127) found that girls, but not boys, smoking regularly, had higher depressive scores in their study. Cigarette smoking was also the only statistically significant difference in substance abuse that emerged for gender in the Galaif *et al.* (1998:290) study. Patton *et al.* (1996:228) also found an association between regular smoking and depression in girls of all ages, but only for boys in their youngest group. Whalen, Jammer, Henker and Delfino (2001:99) found high levels of depression, combined with high levels of aggression or delinquency, seemed to double the risk of smoking for girls, but dampen them for boys. Further, when these variables were looked at separately, the link with depression emerged only in female participants. In their discussion, these researchers suggest the self-enhancement motives that have been implicated in adolescent smoking are amplified in girls with depressive tendencies. By contrast, the boys in this study seem to use smoking more for risk-taking, rule-breaking and rebellion than for social affiliation, and that depressive symptoms blunt this effect.

Windle (1990:86) has suggested that the links between depression and substance abuse are more important in earlier development, at least for males, and that links between conduct disorders and substance abuse emerge later in adolescence. A study that analyzed the concurrent associations between substance abuse, attention deficit hyperactivity disorder (ADHD), conduct disorder (CD), and MDD and depression in a clinical sample of conduct-disordered, substance-abusers is one by Whitmore, Mikulich, Thompson, Riggs, Aarons and Crowley (1997:87). They found that CD, MDD and ADHD may all be important concomitants of substance abuse in males,

while in females, depression may be the primary variable related to substance abuse.

Researchers have looked for the risk factors for depression and substance abuse and their work is covered in the next section.

2.4.7 Risk factors for depression and substance abuse

Windle and Davies (1999:823-844) found support for unique risks associated with specific subgroups in their study of 1000 adolescents. Particularly significant and distinguishing for their mixed group of heavy drinking and depression were childhood externalizing problems, stressful life events, higher levels of current substance abuse, and higher levels of delinquency. Lewinsohn *et al.* (1995:1226) identified the risk factors specific to a major depressive disorder, to substance abuse and to both disorders. By scoring these risk factors for a subject, clinicians can estimate the probability of the person developing either disorder, or both, according to these researchers.

Table 2.5 Psychosocial risk factors that are specific to MDD (major depressive disorder), shared, or specific to SUD (substance abuse disorder)

Specific to MDD	Shared	Specific to SUD
Daily hassles	Current depression	Ever used tobacco
Major life events	Internalizing behaviour problems	Current rate of tobacco use
Emotional reliance	Coping skills	Days missed at school
Physical health	Interpersonal conflict with parents	Late for school
Lifetime number of physical symptoms	Dissatisfaction with grades	Parental dissatisfaction with grades
Ever attempted suicide	Externalizing behaviour problems	Past SUD diagnosis
Past depression diagnosis		
Past anxiety diagnosis		

Table reproduced from Lewinsohn et al. (1995:1226)

2.4.8 Substance abuse, depression and suicide

Wagner, Cole and Schwartzman (1996:300) report that adolescents reporting co-morbid drug abuse, plus either depression or conduct disorder, were more likely to have made a prior suicide attempt than those reporting depression or conduct problems without drug abuse. Galaif *et al.* (1998:277) state that substance abuse conveys a much higher risk for adolescent suicide when it is combined with major depression. These researchers also note that the strength of the associations among depression, suicidal ideation and substance abuse is found to be stronger for adolescent females than males.

2.5 CONCLUSION

In conclusion, it can be stated that adolescence is the highest risk period for onset of both depression and substance use disorder (Rao *et al.* 1999:215). Dually diagnosed adolescents are at a higher risk for lifelong dysfunction and even suicide (Rao *et al.* 2000: 221) and therefore the early identification and treatment of these adolescents are imperative. Some important work has been done on shared risk factors, but these factors need to be confirmed. If we could identify the risk factors as has been claimed by Lewinsohn *et al.* (1995:1228), then adolescents at risk for developing MDD and/or SUD could be identified. Schools could then focus their intervention programmes (i.e. the Life Orientation Programme) more effectively.

It seems likely that new findings in the way the brain works at a neurochemical level will provide important clues to the interaction of depression and substance abuse. The life stage (early or late adolescence) and the gender profile seem to be important moderating factors. It is clear from this literature study that substance abusers suffering from depression pose complex diagnostic and therapeutic challenges, as do depressive adolescents abusing substances. It would seem prudent to remember that different adolescents have different problems, and the identified risk factors, and their combinations, for these problems are not necessarily going to be the same. It is clear that

further research is needed on the interaction between depression and the use of, and response to, substance abuse among adolescents.

This chapter has focussed on a literature study of the relationship between adolescent depressive symptomology and substance abuse. The information from this chapter has been used in the development of a research design, which is the topic of the next chapter.

CHAPTER THREE

RESEARCH DESIGN

3.1 INTRODUCTION

In the previous chapter the relationship between adolescent depressive symptomology and substance abuse was explored and it became clear that there is considerable confusion in the field. The lack of a valid, reliable nosology and specific criteria for depression and substance abuse disorders in adolescents prevents a true understanding of these phenomena. This confusion seems to be the result of lack of clarity of concepts and the bi-directional mode of influence between depression and substance abuse. As an alternative to categorical classifications, this study will use dimensional measures to explore the relationship.

This chapter will describe a research design used to assess the levels of depressive symptomology and substance abuse among adolescents and the relationship between the two. A number of specific research problems, null and research hypotheses are stated. Thereafter the research design is explained.

3.2 GENERAL PROBLEM STATEMENT

As stated in Chapter one (section 1.2.3), the general research problem is defined as follows:

Is there a significant relationship between adolescent depressive symptomology and substance abuse?

3.3 SPECIFIC PROBLEM STATEMENTS

The following are specific research problem statements, which were identified during the literature review, and which will direct the statement of the hypotheses and the empirical research of this study:

- (1) Is there a significant relationship between *adolescent depressive symptomology* and *substance abuse* in the study sample?
- (2) Is there a significant level of *adolescent depressive symptomology* in the study sample?
- (3) Is there a significant level of *adolescent substance abuse* in the study sample?
- (4) Are there significant differences in *depressive symptomology* among *diverse groups*?

The groups are of diverse *age, grade, success or failure at school, gender, ethnic group, and home language*.

- (5) Are there significant differences in *substance abuse* among *diverse groups*?

The groups are of diverse *age, grade, success or failure at school, gender, ethnic group, and home language*.

- (6) Are there significant dependencies between some *risk factors* and *adolescent depressive symptomology/substance abuse*?

In this regard the focus will be on the identified highest risk factors, most important symptom of depression and the most abused substance.

3.4 HYPOTHESES

(1) Research problem 1

Null-hypothesis

H₀₁: There is no significant relationship between adolescent depressive symptomology and substance abuse.

Experimental hypothesis

H₁: There is a significant relationship between adolescent depressive symptomology and substance abuse.

(2) Research problem 2

Null-hypothesis

H₀₂: There is no significant level of depressive symptomology in the sample.

Experimental hypothesis

H₂: There is a significant level of depressive symptomology in the sample.

Note: Based on the literature study, if 10% or more of the sample experienced depression, this would be considered significant.

(3) Research problem 3*Null-hypothesis*

H₀₃: There is no significant level of substance abuse in the sample.

Experimental hypothesis

H₃: There is a significant level of substance abuse in the sample.

Note: Based on the literature study, if 10% or more of the sample abused substances, this would be considered significant.

(4) Research problem 4*Null-hypothesis*

H₀₄: There are no significant differences in depressive symptomology among diverse groups.

The groups are of different age, grade, success or failure at school, gender, ethnic group and home language.

Experimental hypothesis

H₄: There are significant differences in depressive symptomology among diverse groups.

The groups are of different age, grade, success or failure at school, gender, ethnic group and home language.

(5) Research problem 5*Null-hypothesis*

H₀₅: There are no significant differences in substance abuse among diverse groups.

The groups are of different age, grade, success or failure at school, gender, ethnic group and home language.

Experimental hypothesis

H₅: There are significant differences in substance abuse among diverse groups.

The groups are of different age, grade, success or failure at school, gender, ethnic group and home language.

(6) Research problem 6

Null-hypothesis

H₀₆: There is no significant dependency between certain risk factors and adolescent depressive symptomology and substance abuse.

Experimental hypothesis

H₆: There is a significant dependency between certain risk factors and adolescent depressive symptomology and substance abuse.

3.5 THE RESEARCH DESIGN

The research methods used in this study were a literature study and an empirical investigation. The empirical research was conducted as follows.

3.5.1 Respondents

The sample included all the learners registered at a former 'model C' high school situated in a major city in central Gauteng, South Africa. This school was chosen for convenience. McMillan and Schumacher (1997:169) note that a convenience sample is a group of subjects selected on the basis of being accessible. The researcher is connected to the school. This school is similar to many former 'model C' schools in urban areas and, to that extent, the researcher is able to generalise to that population of adolescents.

3.5.2 Instrument

A questionnaire was used to collect data on adolescent depressive symptomology and adolescent substance abuse, as well as other important variables (the questionnaire appears as appendix A and the answer sheet appears as appendix C). Closed form and structured items were used in the design of the questionnaire to promote effective quantification, and to facilitate data analysis. The questionnaire was made up of four sections. The first

section gathered biographical information. The variables in this section were used as moderator variables. The second section consisted of a number of statements, which measured the level of depressive symptomology. The third section measured substance use/abuse (both lifetime rates and 30 day rates). The fourth section focused on some of the risk factors identified in the literature review.

- Depressive symptomology

In section 2.2.3 a comparative table of adolescent depressive symptoms was compiled from the sources used in the literature study. Of these items, 20 concepts were chosen as being representative of the field from all the surveyed sources. Twenty questions were then developed, 10 positively worded and 10 negatively worded, assigned in a random order. (See appendix B).

- Substance abuse

Patterns of use included types of substances and frequency of use. The answers to the questions in this section ascertained the type of substance, age of first use and frequency of use. The data from the questionnaire yielded both lifetime (once or more in a lifetime) and 30 day rates (last 30 days).

- Common risk factors

The factors identified in section 2.4.7 are included. These examined the role of stressful life events, interpersonal conflict with parents, dissatisfaction with grades, absenteeism, lateness for school, delinquency (conduct disorder), ADHD and suicide attempts.

3.5.3 Procedures

Ethical measures were undertaken in accordance with the guidelines given in Strydom (1998:24-35). Permission for administering the questionnaire was

requested from the school's Governing Body. The parents were informed of the questionnaire by the school's newsletter and given the opportunity to withdraw their children. Learners were also informed about the purpose of the study, prior to the administration of the test and they were asked to participate. Thus informed consent was obtained. There was no deception and the anonymity of the questionnaires guaranteed privacy. The questionnaires were administered in class time.

3.5.4 Pilot study

A pilot study with learners at a school not included in the research was conducted. Thereafter the questionnaire was finalised.

3.6 VALIDITY

Validity is concerned with whether a test measures what it is purposed to measure (Mulder 1989:215). There are two measures of validity used in this study: content validity and face validity (De Vos & Fouche 1998:82).

3.6.1 Content validity

This means that the items contained in the scale have been validated by the literature study and experts in the relevant fields. In this study, both the items used to assess adolescent depressive symptomology and the items used to assess adolescent substance abuse have been validated by the literature study in Chapter two and by experts in each field to sample both phenomena adequately.

3.6.2 Face validity

Face validity relies on the subjective judgement of the researcher. According to Leedy (1993:41) two important questions are:

- Is the instrument measuring what it is supposed to measure?

- Is the sample being measured adequate to be representative of the phenomena?

To ensure face validity, experts in these fields have given an opinion as to whether the items of the questionnaire, on the face of it, have determined adolescent depressive symptomology and adolescent substance abuse.

3.7 RELIABILITY

Reliability refers to the degree of consistency and/or accuracy with which the questionnaire measures (Mulder 1989:209). In this study the reliability was checked by means of a computer analysis, which calculated the Cronbach alpha correlation coefficient of the scaled items. This is a split half method. The reliability was measured at 0.83, which is good for this type of questionnaire.

3.8 ANALYSIS OF DATA

The following statistical techniques were used to test the hypotheses: correlation and analysis of the variance (ANOVA). T-tests and chi-square tests were used to determine the significance of the differences and dependencies. If F-values indicated significant differences between means, post hoc T-tests (Tukey) were executed to determine between which means the significant differences occurred.

3.9 CONCLUSION

This chapter focused on the investigation of the research problem statements by describing the empirical research design which is used. The various statistical techniques that are to be used to test the hypotheses in this research were also identified.

In the next chapter, the results of the empirical investigation with regard to adolescent depressive symptomology, adolescent substance abuse and the relationship between the two are presented and discussed.

CHAPTER FOUR

RESULTS

4.1 INTRODUCTION

In the previous chapter the empirical research design was discussed. This chapter focuses on the results of the empirical investigation with regard to adolescent depressive symptomology, adolescent substance abuse and the relationship between the two. Each research problem and hypothesis is discussed separately. The results are presented in tables.

4.2 RESULTS AND DISCUSSION

4.2.1 Hypothesis 1

H₀₁ There is no significant relationship between adolescent depressive symptomology and substance abuse.

The correlation between adolescent depressive symptomology and substance abuse in the sample is seen in table 4.1.

Table 4.1 *Correlation between adolescent depressive symptomology and substance abuse*

Variables	Correlation	Significance
Depressive symptomology and age of first use	.22	p < 0.01
Depressive symptomology and use in the last 30 days	.27	p < 0.01

Table 4.1 indicates that:

- both correlations are low and positive - this means that as the learners have more and more symptoms of depression, they tend to be (a) younger when starting with drugs and (b) have more drug use in the last 30 days. (The higher the score for depressive symptomology, the *happier* the learner.)
- both correlations are significant on the 1%-level of significance. Thus the null-hypothesis may be rejected on the 1%-level. This means there is a

significant relationship between adolescent depressive symptomology and substance abuse.

4.2.2 Hypothesis 2

H₀₂ There is no significant level of adolescent depressive symptomology in the sample.

The frequency of the different depressive symptoms is seen in table 4.2.

Table 4.2 Percentages of respondents who experience different kinds of depressive symptomology

Item	%Disagree	%Unsure	%Agree
Sadness, loss of pleasure	77	17.4	5.5
School anxiety	50.1	21.1	28.7
Fatigue	47.3	20.3	32.4
Loneliness, social withdrawal	85.7	7.9	6.4
Anger, irritability	13.1	23.8	63.1
Agitation, worry	41.3	27.6	21.1
Devalued by parents	83.9	10.1	5.9
Loss of interest, boredom	32.8	26.4	40.7
Appetite fluctuations	39.5	19.2	41.4
Sleep disturbances	62.9	14.5	22.5
Worthlessness, guilt	13.2	17	69.9
Inability to concentrate	33.4	22.4	44.1
Suicide ideation	14.8	9.8	75.4
Irritability	88	7.7	4.3
Low self-esteem	22.1	28.2	49.7
Pessimism	60.3	26.6	13.0
Self-critical	73.1	16.9	10.1
Somatic complaints	74.6	14.6	10.8
Helplessness, pessimism	28.4	23.3	48.3
Aggression	22.8	18.9	58.3

Table 4.2 indicates that:

- the null-hypothesis may not be rejected for sadness, loneliness, feeling of being devalued by parents, and irritability (experienced by less than 10%). More than 10% of the sample experience school anxiety, fatigue, agitation and worry, loss of interest and boredom, appetite fluctuations, sleep disturbances, the inability to concentrate, low self esteem and feelings of

helplessness, pessimism, self-criticism and somatic complaints. Thus the null-hypothesis is rejected for these symptoms;

- the null-hypothesis, in particular, may be rejected for anger, feelings of worthlessness and guilt, suicide ideation and aggression (experienced by more than 50% of the sample).

4.2.3 Hypothesis 3

H₀₃ There is no significant level of adolescent substance abuse in the sample.

The following tables show the percentages of substance abuse for lifetime use, age of first use, and the 30 day rate of use.

Table 4.3 Percentages of substance use

Substance	Never used (%)	Used (%)
Cigarettes and tobacco	36	64
Alcohol	20	80
Inhalants	83	17
Dagga	65	35
Stimulants	92	8
Cocaine	97	3
Heroin	98	2
Hallucinogens	93	7
Ecstasy	93	7

Table 4.4 Age of first use as percentages

Substance	%	%	%	%	%
	Never used	Before 13	13-14	15-16	17 and older
Cigarettes & tobacco	34.6	25.0	24.7	14.1	1.6
Alcohol	21.0	23.6	32.1	20.4	2.9
Inhalants	82.9	4.1	7.3	5.3	0.3
Dagga	65.6	4.0	13.3	15.0	2.2
Stimulants	92.6	1.3	1.8	3.5	0.7
Cocaine	97.1	0.6	0.4	1.6	0.2
Heroin	97.8	0.3	0.5	0.9	0.3
Hallucinogens	92.9	0.7	1.7	3.5	1.2
Ecstasy	92.3	0.9	1.3	4.0	1.4

Table 4.5 *Percentages of substance abuse in the last 30 days*

Substance	% Never used	% 1-5 times	% 6-10 times	% More than 10 times
Cigarettes & tobacco	59	14	4	23
Alcohol	46	37	8	9
Inhalants	96	3	1	1
Dagga	85	11	2	2
Stimulants	97	2	0	1
Cocaine	98	1	0	0
Heroin	99	1	0	1
Hallucinogens	97	2	0	1
Ecstasy	96	3	1	0

Tables 4.3, 4.4 and 4.5 indicate that:

- more than 10% of the sample used cigarettes and tobacco, alcohol, inhalants and dagga (the level set as significant in the literature study -see section 3.4), thus the null hypothesis is rejected for these substances; the null-hypothesis may not be rejected for stimulants, cocaine, heroin, hallucinogens and ecstasy. This means that there is not a significant number of adolescents who use these substances.

4.2.4 Hypothesis 4

H₀₄ There are no significant differences in depressive symptomology among diverse groups. These groups are of diverse age, grade, success or failure at school, ethnic group and language group.

Significance differences were found for the age, grade, success or failure at school and gender groups, but not for the ethnic group or the home language group. Each group is discussed separately.

4.2.4.1 Age

Table 4.6 Means for absence of depressive symptomology for diverse age groups

Age group	N	Mean
Less than 13 years	6	3.5583
13-14 years	440	3.7015
15-16 years	526	3.5572
17 years & older	330	3.5029

Table 4.7 Significance of difference and F-value for absence of depressive symptomology for diverse age groups

Groups that differ significantly	df	F-value	Significance
Between groups	3	10.066	p< 0.01
13-14 years with 15 and 16 years			p< 0.01
13-14 years with 17+ years			p< 0.01

Tables 4.6 and 4.7 indicate that:

- the happiest group was the 13-14 year group (highest mean of 3,7), and the least happy was the 17 years and older group (lowest mean of 3,5); the F-values are significant on the 1%-level of significance. Thus the null-hypothesis may be rejected for two age groups: the 13-14 year olds are significantly happier (less depressed) than adolescents of 15 years and older.

4.2.4.2 Grade

Table 4.8 Means for absence of depressive symptomology for diverse grade groups

Grade	N	Mean
Grade 8	317	3.7465
Grade 9	303	3.5864
Grade 10	216	3.5723
Grade 11	262	3.4848
Grade 12	201	3.5192

Table 4.9 Significance of difference and F-value for absence of depressive symptomology for diverse grade groups

Groups that differ significantly	df	F-value	Significance
Between groups	4	10.462	p< 0.01
Grade 8's with grade 9's			p< 0.01
Grade 8's with grade 10's			p< 0.01
Grade 8's with grade 11's			p< 0.01
Grade 8,s with grade 12's			p< 0.01

Tables 4.8 and 4.9 indicate that:

- the happiest group were the grade 8's, and the least happy were the grade 11's.
- the F-value is significant on the 1%-level of significance. Thus the null-hypothesis may be rejected. The grade 8 adolescents experience significantly less depressive symptomology than the other grades. This confirms the results of 4.2.4.1.

4.2.4.3 Success or failure at school

Table 4.10 Means for absence of depressive symptomology for groups measuring success or failure at school

Repetition of grade	N	Mean
No	1064	3.6109
Yes	236	3.5112

Table 4.11 T-Test for significance of difference between means

Factor	df	t-value	Significance
Depressive symptomology	1298	.010	p< 0.05

Tables 4.10 and 4.11 indicate that:

- those who have repeated a grade (lower mean) are the unhappiest i.e. they have the most depressive symptomology; the t-values are significant on the 5%-level of significance. Thus the null-hypothesis may be rejected. Adolescents who have repeated a grade experience significantly more depressive symptomology than those who have never repeated a grade.

4.2.4.4 Gender

Table 4.12 Means for absence of depressive symptomology for different gender groups

Gender	N	Mean
Male	582	3.6280
Female	716	3.5652

Table 4.13 T-Test for equality of means

Factor	Df	t-value	Significance
Depressive symptomology	1296	2.095	p < 0.05

Tables 4.12 and 4.13 indicate that:

- the t-value is significant on the 5%-level of significance. Thus the null-hypothesis may be rejected. Males report less depressive symptomology i.e. the boys are significantly happier than the girls.

4.2.4.5 Ethnic group

Table 4.14 Means for absence of depressive symptomology for ethnic groups

Ethnic group	N	Mean
African	244	3.5903
Asian	14	3.3143
Coloured	56	3.4893
Indian	60	3.6544
White	927	3.5989

Table 4.15 Analysis of variance for equality of means

Factor	Df	F-value	Significance
Depressive symptomology	4	1.690	p > 0.05

Tables 4.14 and 4.15 indicate that:

- the f-value is not significant. Thus the null-hypothesis is not rejected. There is no significant difference in how ethnic groups report depressive symptoms.

4.2.4.6 Language group

Table 4.16 Means for absence of depressive symptomology for language groups

Language Group	N	Mean
English	1035	3.5961
Afrikaans	23	3.3500
African language	187	3.5969
Foreign language	55	3.5991

Table 4.17 Analysis of variance for equality of means

Factor	df	F-value	Significance
Depressive symptomology	3	1.584	p> 0.05

Tables 4.15 and 4.17 indicate that:

- the f-value is not significant. Thus the null-hypothesis is not rejected. Language groups do not differ significantly in how they report depressive symptoms.

4.2.5 Hypothesis 5

H₀₅ There are no significant differences in substance abuse among diverse groups. These groups are of diverse age, grade, success or failure at school, ethnic group and language group.

The questionnaire dealt with both lifetime and 30 day rates of substance abuse and thus both are discussed here. The groups are of diverse age, grade, success or failure at school, gender, ethnic group and language group. The results for lifetime use appears in section 4.2.5.1 and for 30 day rate in section 4.2.5.2.

4.2.5.1 Lifetime rates

(1) Lifetime rate and age

The results appear in tables 4.18 and 4.19 and can be seen in the graph. Significant differences were found for all substances, except for heroin. Thus the results of heroin are not tabulated.

Table 4.18 *Frequencies and percentages for lifetime use of significant substances for diverse age groups*

Substance	Count		Before 13	13-14 years	15-16 years	17+ years
	Cigarettes & Tobacco	Never Used	Count	2*	233	176
		% within age	33.3%	53.1%	33.5%	17.6%
Used		Count	4*	205	346	268
		% within age	66.7%	46.7%	65.8%	81.2%
Alcohol	Never Used	Count	2*	139	91	28
		% within age	33.3%	31.7%	17.3%	6.5%
	Used	Count	4*	300	434	301
		% within age	66.7%	68.3%	82.5%	91.2%
Inhalants	Never Used	Count	5	405	422	243
		% within age	83.3%	92.3%	80.2%	73.6%
	Used	Count	1*	34	103	87
		% within age	16.7%	7.7%	19.6%	26.4%
Dagga	Never Used	Count	4*	379	324	137
		% within age	66.7%	86.3%	61.6%	41.5%
	Used	Count	2*	59	210	193
		% within age	33.3%	13.4%	38.2%	58.5%
Stimulants	Never Used	Count	6	419	485	284
		% within age	100.0%	95.4%	92.2%	86.1%
	Used	Count	0	19	41	46
		% within age	0%	4.3%	7.8%	13.9%
Cocaine	Never Used	Count	4*	435	512	314
		% within age	66.7%	99.1%	97.3%	95.2%
	Used	Count	2*	3	14	16
		% within age	33.3%	0.7%	2.7%	4.8%
Hallucinogens	Never Used	Count	6	431	492	278
		% within age	100.0%	98.4%	93.5%	84.2%
	Used	Count	0	6	34	52
		% within age	0%	1.40%	6.50%	15.80%
Ecstasy	Never Used	Count	4*	433	486	280
		% within age	66.7%	98.9%	92.4%	84.8%
	Used	Count	2*	4*	40	50
		% within age	33.3%	9.0%	7.6%	15.2%

*These cells have a count less than 5

The results from table 4.18 are depicted in figure 4.1.

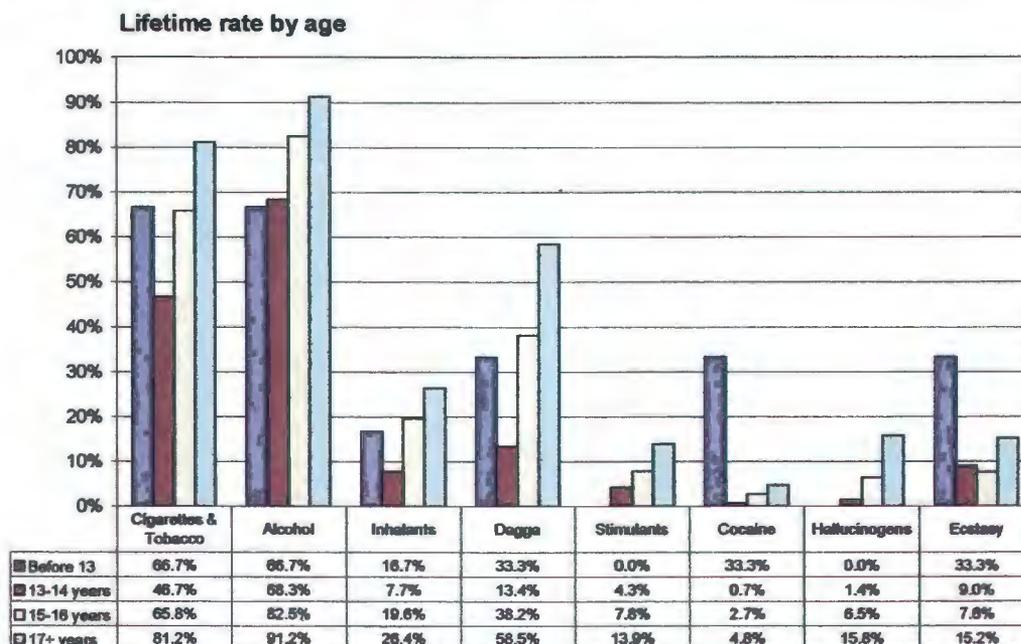


Figure 4.1 Substance use by various age groups

Table 4.19 Chi-square and significance of use for diverse age groups

Substance	Chi-square test value	df	Significance
Cigarettes and tobacco	109.81	3	$p < 0.01$
Alcohol	71.86	3	$p < 0.01$
Inhalants	50.429	3	$p < 0.01$
Dagga	175.176	3	$p < 0.01$
Stimulants	25.853	3	$p < 0.01$
Cocaine	36.073	3	$p < 0.01$
Hallucinogens	62.115	3	$p < 0.01$
Ecstasy	63.705	3	$p < 0.01$

Tables 4.18 and 4.19, as well as figure 4.1 indicates that:

- the chi-square values are significant on the 1%-level of significance and the null-hypothesis is rejected. Thus, there is a significant dependency between age and the use of different drugs. As the learners grow older, they use more substances.

(2) Lifetime rate and grade

The results appear in tables 4.20 and 4.21. Significant differences are found for the use of substances by learners from different grades for all substances,

except for heroin and cocaine. Thus the results for these two drugs are not presented.

Table 4.20 *Frequencies and percentages for lifetime use of significant substances for diverse grade groups*

Substance	Count		Grade 8	Grade 9	Grade 10	Grade 11	Grade 12
	Never Used	Count					
Cigarettes & Tobacco	Never Used	Count	185	116	75	59	34
		%	58.4%	38.4%	34.7%	22.5%	16.9%
	Used	Count	131	183	139	202	165
		%	41.3%	60.6%	64.4%	77.1%	82.1%
Alcohol	Never Used	Count	117	73	33	24	13
		%	36.9%	24.2%	15.3%	9.2%	6.5%
	Used	Count	200	228	182	238	188
		%	63.1%	75.5%	84.3%	90.8%	93.5%
Inhalants	Never Used	Count	301	261	166	201	145
		%	95.0%	86.4%	76.9%	76.7%	72.1%
	Used	Count	16	40	50	61	56
		%	5.0%	13.2%	23.1%	23.3%	27.9%
Dagga	Never Used	Count	287.0	227.0	124.0	122.0	84.0
		%	90.5%	75.2%	57.4%	46.6%	41.8%
	Used	Count	30	73	92	140	117
		%	9.5%	24.2%	42.6%	53.4%	58.2%
Stimulants	Never Used	Count	304	282	196	235	174
		%	95.9%	93.4%	90.7%	89.7%	86.6%
	Used	Count	13	19	20	27	27
		%	4.1%	6.3%	9.3%	10.3%	13.4%
Hallucinogens	Never Used	Count	310	291	198	234	171
		%	98.1%	96.4%	91.7%	89.3%	85.1%
	Used	Count	6	10	18	28	30
		%	1.9%	3.3%	8.3%	10.7%	14.9%
Ecstasy	Never Used	Count	311	289	201	232	167
		%	98.4%	95.7%	93.1%	88.5%	83.1%
	Used	Count	5	12	15	30	34
		%	1.6%	4.0%	6.9%	11.5%	16.9%

These results are depicted graphically on the next page as figure 4.2.

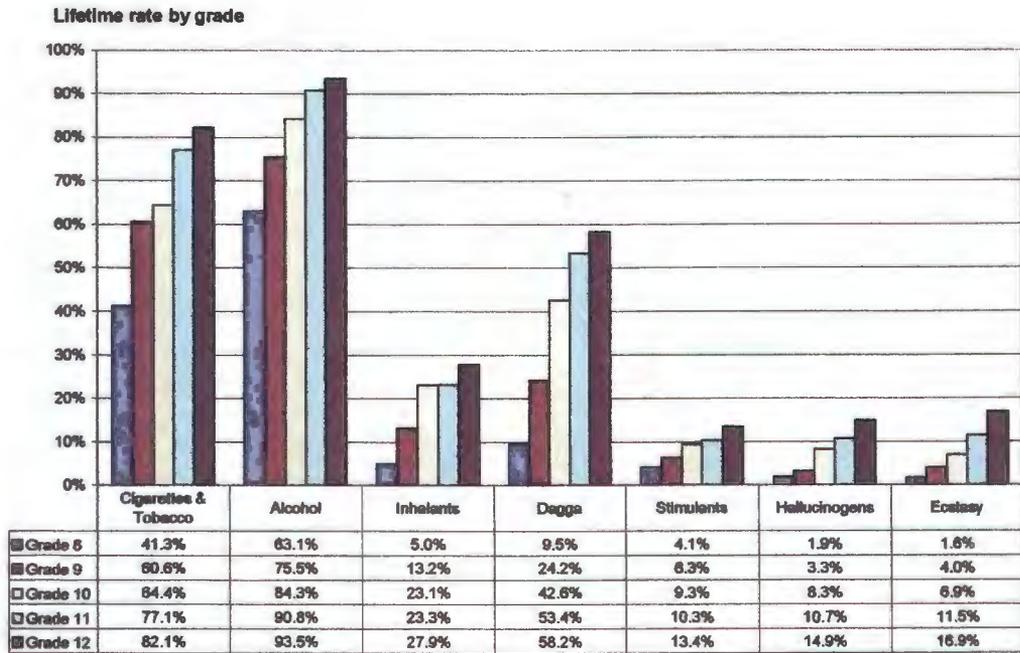


Figure 4.2 Substance abuse by various grades

Table 4.21 Chi-square and significance of use of significant substances for different grades

Substance	Chi-square	df	Significance
Cigarettes & tobacco	137.24	4	$p < 0.01$
Alcohol	137.247	4	$p < 0.01$
Inhalants	67.67	4	$p < 0.01$
Dagga	205.202	4	$p < 0.01$
Stimulants	21.039	4	$p < 0.01$
Hallucinogens	47.06	4	$p < 0.01$
Ecstasy	56.895	4	$p < 0.01$

Tables 4.20 and 4.21 indicate that:

- the chi-square values are significant on the 1%-level of significance. Thus the null-hypothesis is rejected. There is a significant dependency between grade and use of other substances. As the learners move to higher grades, they increase their use of substances significantly.

(3) Lifetime rate and success or failure at school

The use of substances for learners who had failed, and those who had not, appear in tables 4.22 and 4.23.

Table 4.22 *Frequencies and percentages for use of significant substances for adolescents who have and have not failed at school*

Substances	Count		No repeat	Yes, repeated
	Never used	Count		
Cigarettes & Tobacco	Never used	Count	403	66
		%	37.9%	28%
	Used	Count	656	166
		%	61.7%	70.3%
Alcohol	Never used	Count	222	37
		%	20.9%	15.7%
	Used	Count	841	197
		%	79.1%	83.5%
Inhalants	Never used	Count	888	186
		%	83.5%	78.8%
	Used	Count	175	49
		%	16.5%	20.8%
Dagga	Never used	Count	707	136
		%	66.5%	57.6%
	Used	Count	356	99
		%	33.5%	41.9%
Cocaine	Never used	Count	1042	222
		%	98%	94.1%
	Used	Count	21	14
		%	2%	5.9%
Heroin	Never used	Count	1053	226
		%	99.1%	95.6%
	Used	Count	9	10
		%	0.8%	4.2%
Hallucinogens	Never used	Count	995	211
		%	93.6%	89.8%
	Used	Count	9	10
		%	0.8%	4.2%

Table 4.23 *Chi-square and significance of use of significant substances for adolescents who have and have not failed at school*

Substance	Chi-square value	df	Significance
Cigarettes & Tobacco	18.62	1	p< 0.01
Alcohol	12.093	1	p< 0.01
Inhalants	7.096	1	p< 0.05
Dagga	10.798	1	p< 0.01
Cocaine	11.532	1	p< 0.01
Heroin	15.614	1	p< 0.01
Hallucinogens	15.614	1	p< 0.05

Tables 4.22 and 4.23 indicate that:

- the chi-square values are significant on the 1%-level of significance, except for inhalants and hallucinogens where the values are significant on

the 5%-level of significance. Thus the null-hypothesis is rejected. This means that there is a significant dependency between repetition of a grade and substance abuse. If learners have failed, they use more substances.

(4) *Lifetime rate and gender*

Gender differences regarding substance abuse appear in tables 4.24 and 4.25.

Table 4.24 *Frequencies and percentages for use of significant substances for diverse gender groups*

Substances	Count		Males	Females
	Never used	Count		
Inhalants	Never used	Count	458	814
		%	78.8%	85.8%
	Used	Count	122	102
		%	21%	14.2%
Dagga	Never used	Count	351	492
		%	60.4%	66.7%
	Used	Count	229	224
		%	39.4%	31.3%
Stimulants	Never used	Count	516	676
		%	88.8%	94.4%
	Used	Count	65	40
		%	11.2%	5.6%
Ecstasy	Never used	Count	525	676
		%	90.5%	94.4%
	Used	Count	55	40
		%	9.5%	5.6%

Table 4.25 *Chi-square and significance of use of significant substances for diverse gender groups*

Substance	Chi-square value	df	Significance
Inhalants	11.561	1	p < 0.01
Dagga	10.703	1	p < 0.01
Stimulants	13.524	1	p < 0.01
Ecstasy	7.161	1	p < 0.01

Tables 4.24 and 4.25 indicate that:

- the chi-square values are significant on the 1%-level of significance. Thus the null-hypothesis is rejected. This means that males use significantly more inhalants, dagga, stimulants and ecstasy than females. However, no

significant gender differences were found for use of cigarettes and tobacco, alcohol, cocaine, heroin and hallucinogens.

(5) Lifetime rate and ethnic group

No significant ethnic differences were found for use of cigarettes and tobacco, inhalants, dagga, stimulants, cocaine, heroin, hallucinogens and ecstasy. Thus the results for these substances are not tabulated here. The results for alcohol follow.

Table 4.26 *Frequencies and percentages for use of alcohol for different ethnic groups*

Use	Ethnic Group				
	African	Asian	Coloured	Indian	White
Never Used	65 26.7%	4* 28.6%	13 23.2%	16 26.7%	162 17.5%
Used	176 72.4%	10 71.4%	43 76.8%	44 73.3%	765 82.5%

* the cell has a count of less than 5

Table 4.27 *Chi-square and significance of use of alcohol for different ethnic groups*

Chi-square value	df	Significance
22.340	4	p < 0.05

Tables 4.25 and 4.26 indicate that:

- the chi-square values are significant on the 5%-level of significance. Thus the null-hypothesis is rejected for alcohol. This means that there is a significant dependency between ethnic group and alcohol use. Whites (82,5%) use the most alcohol, followed by Coloureds (76,8%), Indians (73,3%), then Africans (72,4%) and Asians (71.4%).

(6) Lifetime rate and language group

Significant dependencies were found for the use of cigarettes and tobacco as well as heroin as follows:

Table 4.28 *Frequencies and percentages for use of cigarettes and tobacco for different language groups*

Use	Home language			
	English	Afrikaans	African language	Foreign language
Never used	355 34.3%	10 43.5%	72 38.7%	32 58.2%
Used	675 65.2%	13 56.5%	111 59.7%	22 40%

Table 4.29 *Chi-square and significance of use of cigarettes and tobacco for different language groups*

Chi-square value	df	Significance
30.047	3	p < 0.05

Tables 4.28 and 4.29 indicate that:

- the chi-square values are significant on the 5%-level of significance. Thus the null-hypothesis is rejected for cigarettes and tobacco. This means that there is a significant dependency between language group and tobacco use. English speaking learners (65,2%) use more cigarettes and tobacco than African language speakers (59,7%), who use more than Afrikaans speaking learners (56,5%). The foreign language speakers (40%) use the least.

Table 4.30 *Frequencies and percentages for use of heroin for different language groups*

Use	Home language			
	English	Afrikaans	African language	Foreign language
Never used	1020 98.6%	23 100%	182 97.8%	53 96.4%
Used	15 1.4%	0 0%	4 2.2%	1 1.8%

Table 4.31 *Chi-square and significance of use of heroin for different language groups*

Chi-square value	df	Significance
23.543	3	p < 0.01

Tables 4.30 and 4.31 indicate that:

- the significance of the home language differences in the use of heroin is at the 1%-level of significance. Thus the null-hypothesis is rejected for heroin usage. There is a significant dependency between language group and heroin usage. African language learners (2,2%) use the most heroin, and Afrikaans learners (0%) do not use heroin. However, it should be noted that cells had less than five counts.

4.2.5.2 Thirty day rates

These groups are of diverse age, grade, success or failure at school, gender, ethnic group and language group.

(1) Use during the previous 30 days and age

Significant differences were found for all substances, except for inhalants, stimulants and heroin. Please note that for simplifying the tables, any use in the previous 30 days (2-5 times, 6-10 times, more than 10 times) are noted as 'used'.

Table 4.32 *Frequencies and percentages for use of significant substances in the previous 30 day period for diverse age groups*

Substance	Count		Before 13	13-14 years	15-16 years	17+ years
Cigarettes & Tobacco	Never Used	Count % within age	3* 80%	326 74.9%	295 56.9%	140 42.6%
	Used	Count % within age	2* 40%	109 25%	223 43%	188 57.2%
Alcohol	Never Used	Count % within age	4* 66.7%	277 63.8%	219 42.4%	88 26.7%
	Used	Count % within age	1* 16.7%	157 36.2%	297 57.4%	240 73%
Dagga	Never Used	Count % within age	4* 86.7%	405 92.9%	437 84.4%	252 76.6%
	Used	Count % within age	2* 33.3%	31 7.1%	81 15.6%	75 22.8%
Cocaine	Never Used	Count % within age	5 83.3%	433 98.3%	510 98.6%	318 97.2%
	Used	Count % within age	1* 16.7%	2 0.5%	7 1.4%	9 2.7%
Hallucinogens	Never Used	Count % within age	6 100%	434 99.6%	504 97.3%	308 94.2%
	Used	Count % within age	0 100%	2 0.5%	14 2.7%	19 5.8%
Ecstasy	Never Used	Count % within age	4* 86.7%	430 98.6%	497 95.9%	304 96%
	Used	Count % within age	2* 33.4%	6 1.4%	21 4.1%	52 4.1%

Table 4.32 is graphically presented as figure 4.3 as follows:

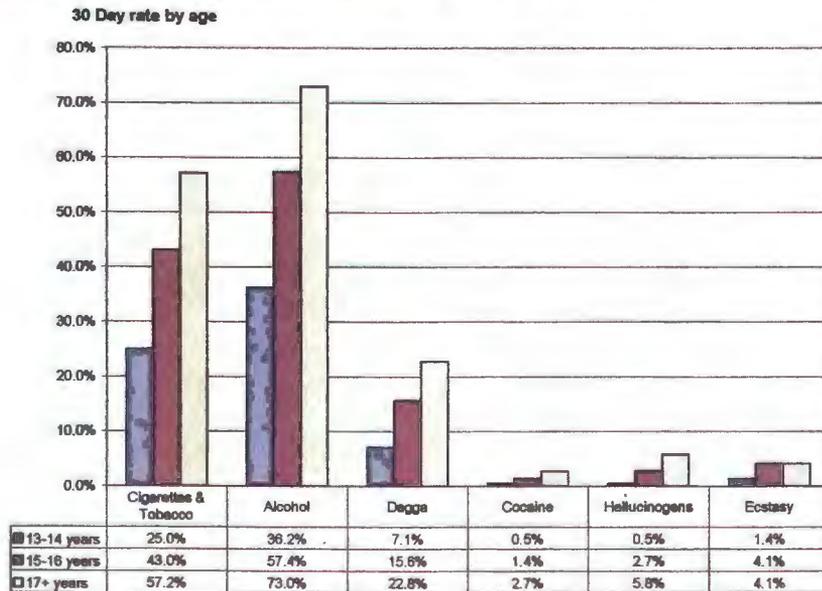


Figure 4.3 *Substance use during previous 30 days by various age groups*

Table 4.33 *Chi-square and significance of 30 day use for diverse age groups*

Substance	Chi-square test value	df	Significance
Cigarettes & Tobacco	119.882	9	p< 0.01
Alcohol	133.5	9	p< 0.01
Dagga	48.613	9	p< 0.01
Cocaine	31.502	9	p< 0.01
Hallucinogens	22.064	9	p< 0.01
Ecstasy	92.888	9	p< 0.01

Tables 4.32, 4.33 and figure 4.3 demonstrate that:

- As the learners become older, more use different substances in a 30 day period. The chi-square values were calculated for age against the rate of use: namely 2-5 times, 6-10 times and more than 10 times. The differences are significant at the 1%-level of significance. Thus the null-hypothesis is rejected. This means that adolescents use significantly more substances such as cigarettes and tobacco, alcohol, dagga, cocaine, hallucinogens and ecstasy as they grow older. Therefore there is a dependency between the age of the learner and the incidence of substance abuse in the 30 day period prior to the completion of the questionnaire.

(2) Use during the previous 30 days and grade

Table 4.34 illustrates use of substances during the previous 30 days. The results are depicted in figure 4.4 that follows.

Table 4.34 *Frequencies and percentages for use of substances in the previous 30 days for diverse grade groups*

Substance	Count		Grade 8	Grade 9	Grade 10	Grade 11	Grade 12
Cigarettes % Tobacco	Never Used	Count	253	179	115	132	84
		% within grade	81.4%	80.9%	53.2	50.4%	41.8%
	Used	Count	58	115	101	130	116
		% within grade	18.6%	39.2%	46.8%	49.6%	57.7%
Alcohol	Never Used	Count	221	149	80	77	61
		% within grade	70.6%	51%	37%	29%	30.5%
	Used	Count	92	143	136	185	139
		% within grade	29.3%	48.9%	63%	70.2%	69.5%
Dagga	Never Used	Count	301	265	181	207	182
		% within grade	95.9%	96.7%	84.2%	78%	76%
	Used	Count	13	34	34	55	48
		% within grade	4.1%	13.3%	15.8%	21.1%	24%
Ecstasy	Never Used	Count	307	285	208	246	185
		% within grade	97.7%	97.3%	96.3%	94.3%	83%
	Used	Count	7	8	8	15	14
		% within grade	2.20%	2.7%	3.7%	5.7%	7%

These results are illustrated by the graph below.

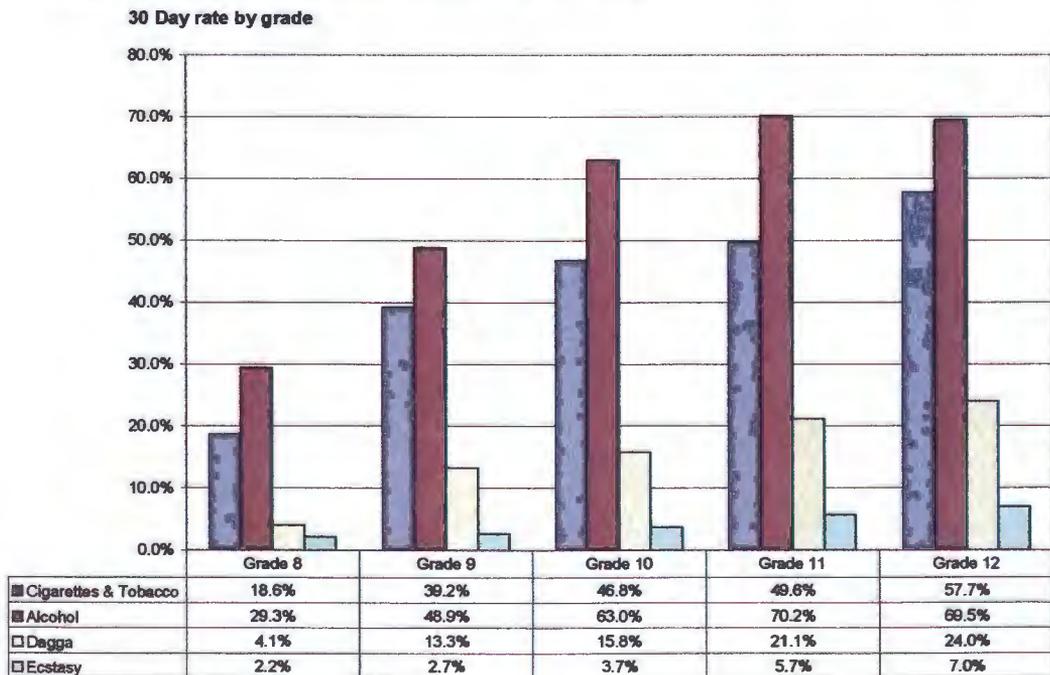


Figure 4.4 *Substance use during the previous 30 days by various grades*

Chi-squares were calculated to determine if there are significant dependencies between grade (8-12) and rate of usage (never, 2-5 times, 6-10 times and more than 10 times). The results appear in table 4.35.

Table 4.35 *Chi-square and significance of use of alcohol in the last 30 days for diverse groups*

Substance	Chi-square	Df	Significance
Cigarettes & Tobacco	147.118	12	p< 0.01
Alcohol	170	12	p< 0.01
Dagga	74.095	12	p< 0.01
Ecstasy	26.108	12	p< 0.05

Table 4.34, 4.35 and figure 4.4 demonstrate that:

- as the learners move up the grades, they use more cigarettes and tobacco, dagga and ecstasy. Alcohol use shows an increase by grade until grade 11 where it peaks (70,2%), with a marginal drop in use in grade 12 (69,5%). The difference between the grades is significant at the 1%-level for cigarettes, dagga and alcohol, and at the 5%-level for ecstasy. Thus the null-hypothesis is rejected for these substances. This means that there is a significant dependency between adolescents from different grades and usage of these substances.

(3) Use during the previous 30 days and success or failure at school

(Repetition of a grade was used to measure this)

Table 4.36 illustrates the use of substances by adolescents of diverse school success during the previous 30 days. Chi-square values were calculated to determine if there is a dependency between success at school and current rate of usage: none, 2-5 times, 6-10 times, more than 10 times. Significant dependencies are illustrated in table 4.37.

Table 4.36 *Frequencies and percentages for use of significant substances for diverse groups who failed or did not fail at school*

Substance	Count		No repeat	Yes, repeated
	Never used	Count	490	97
Alcohol		%	46.5%	4.2%
	Used	Count	563	134
		%	53.5%	58%
	Dagga	Never used	Count	909
		%	86.4%	80.3%
Used		Count	143	46
		%	13.6%	19.7%
Stimulants	Never used	Count	1028	222
		%	97.7%	95.3%
	Used	Count	24	11
		%	2.30%	4.70%
Cocaine	Never used	Count	1042	223
		%	99.1%	95.7%
	Used	Count	9	10
		%	0.9%	4.3%
Heroin	Never used	Count	1043	225
		%	99.1%	96.6%
	Used	Count	9	8
		%	0.9%	3.4%
Hallucinogens	Never used	Count	1029	221
		%	97.9%	94.4%
	Used	Count	22	13
		%	2.1%	5.5%

Table 3.37 *Chi-square and significance of use of significant substances in the Previous 30 days for groups who failed or did not fail at school*

Substance	Chi-square value	df	Significance
Alcohol	13.379	3	p< 0.05
Dagga	18.044	3	p< 0.01
Stimulants	8.211	3	p< 0.05
Cocaine	21.299	3	p< 0.01
Heroin	14.063	3	p< 0.01
Hallucinogens	9.466	3	p< 0.05

Tables 4.36 and 4.47 demonstrate that:

- the difference between the repeater and non-repeater groups is at the 5%-level of significance for alcohol, stimulants and hallucinogens, and at the 1%-level for dagga, cocaine, and heroin. Thus the null-hypothesis is

rejected for these substances. This means that there is a significant dependency between success or failure at school and the rate of substance abuse for the substances mentioned. Those who repeat a grade are more inclined to substance abuse.

(4) Use during the previous 30 days and gender

There were no significant gender differences in the use of substances in the last 30 days before questionnaire completion. Thus the null-hypothesis is accepted.

(5) Use during the previous 30 days and ethnic group

Significant differences for ethnic groups were found in the use of (a) cigarettes and tobacco, and (b) alcohol in the previous 30 days before questionnaire completion as illustrated by tables 4.38. and 4.39.

Table 4.38 *Frequencies and percentages for use of cigarettes and tobacco in the last 30 days for diverse ethnic groups*

Usage	Ethnic Group				
	African	Asian	Coloured	Indian	White
Never Used	159 66.3%	11 84.6%	26 46.4%	42 71.2%	525 57.2%
Used	81 33.8%	2* 15.4%	30 53.6%	17 28.9%	393 42.8%

* the cell has a count of less than 5

Table 4.39 *Chi-square and significance of use of cigarettes and tobacco in the last 30 days for diverse ethnic groups*

Chi-square value	df	Significance
36.434	12	p < 0.01

- The use of cigarettes and tobacco in the last 30 days before questionnaire completion was as follows: Coloureds (53,6%), Whites (42,8%), African (33.8%), Indian (28,9%). The Asian cell count was only 15%. Chi-square values determined if significant dependencies existed between the rate of

use (none, 2-5 times, 6-10 times and more than 10 times) for different ethnic groups. The results appear in table 4.39. The difference between the groups is at the 1%-level of significance. Thus the null-hypothesis is rejected for cigarettes and tobacco. This implies that there is a significant dependency between ethnic group and use of cigarettes and tobacco, as mentioned.

Table 4.40 *Frequencies and percentages for use of alcohol in the previous 30 days for diverse ethnic groups*

Use	Ethnic Group				
	African	Asian	Coloured	Indian	White
Never Used	140 58.3%	10 76.9%	20 35.7%	37 62.7%	381 41.5%
Used	100 41.7%	3* 23.1%	32 64.3%	22 37.3%	536 58.5%

* the cell has a count of less than 5

Table 4.41 *Chi-square and significance of dependency of use of alcohol in the previous 30 days for diverse ethnic groups*

Chi-square value	df	Significance
47.385	10	P < 0.01

Tables 4.40 and 4.41 demonstrate that:

- Coloured learners use the most alcohol (64,3%), followed by Whites (58,5%), Africans (41,7%), and Indians (37,3%). The Asian cell count was below 5. The dependency between ethnic group and rate of alcohol use is at the 1%- level of significance, thus the null-hypothesis is rejected for alcohol. This implies a significant dependency between ethnic group and current rate of use in four categories: none, 2-5 times, 6-10 times and more than 10 times.

(6) Use during the previous 30 days and language group

There are significant language group differences in the use of cigarettes and tobacco, as well as alcohol. No significant differences were found for use of the other substances. These results appear in tables 4.42, 4.43, 4.44 and 4.45.

Table 4.42 *Frequencies and percentages for use of cigarettes and tobacco in the previous 30 days for diverse language groups*

Use	Home language			
	English	Afrikaans	African language	Foreign language
Never used	586	13	123	42
	57.2%	56.5%	67.2%	76.4%
Used	438	10	60	13
	42.8%	43.4%	32.2%	23.6%

Table 4.43 *Chi-square and significance of use of cigarettes and tobacco in the last 30 days for diverse language groups*

Chi-square value	df	Significance
23.389	9	p < 0.05

Tables 4.42 and 4.43 demonstrate that:

- Afrikaans (43,4%) and English (42,8%) speaking learners have smoked more in the last 30 days before questionnaire completion than learners speaking an African language (32,2%), or a foreign language (23,6%). The difference between the groups is at the 1%-level of significance. Thus the null- hypothesis is rejected for the use of cigarettes and tobacco. This implies that there is a significant dependency between the use of cigarettes and tobacco (none, 2-5 times, 6-10 times, more than 10 times) for the previous 30 days and language use.

Table 4.44 *Frequencies and percentages for dependency of use of alcohol in the previous 30 days for diverse language groups*

Use	Home language			
	English	Afrikaans	African language	Foreign language
Never used	439	10	108	31
	42.9%	43.5%	59%	56.4%
Used	584	13	75	24
	57.1%	56.5%	40.9%	43.7%

Table 4.45 *Chi-square and significance of use of alcohol in the last 30 days for diverse language groups*

Chi-square value	df	Significance
26.427	9	p < 0.01

These tables demonstrate that:

- English (57,1%) and Afrikaans (56,5%) speaking learners have used more alcohol in the last 30 days than learners speaking a foreign language (43,7%) or an African language (40,9%). Table 4.45 depicts the results of the chi-square calculation. The difference between the groups mentioned above is at the 1%-level of significance. Thus the null-hypothesis is rejected for alcohol, implying that there is a significant dependency between current use of alcohol (none, 2-5 times, 6-10 times, more than 10 times) and language use.

4.2.6 Hypothesis 6

H₀₆ There is no significant dependency between certain risk factors and depressive symptomology/substance abuse.

The depressive symptom with the highest frequency was suicide ideation (75%), as can be seen in table 4.2. Table 4.3 demonstrates that alcohol (80%) is the most frequently used substance. The frequency of certain risk factors identified in the literature as significant was determined by means of the questionnaire. The results of the answers to these questions appear in the next table.

Table 4.46 *Frequencies and percentages of various risk factors*

Risk Factor	Count	Yes	No
Parents' use	Count	121	1164
	%	9.4%	90.4%
Friends' use	Count	626	659
	%	48.6%	51.2%
Strong craving	Count	254	1030
	%	19.8%	80.2%
Physical fighting/vandalism	Count	219	1065
	%	17%	82.9%
School disciplinary hearings	Count	105	1179
	%	8.2%	91.8%
Police involvement	Count	151	1132
	%	11.8%	88.2%
Depression diagnosed by professional	Count	103	1178
	%	8%	91.9%
Prior suicide attempt	Count	201	1077
	%	15.7%	84.2%
Fighting with parents	Count	389	887
	%	30.4%	69.4%
Major stressful event	Count	667	612
	%	52.2%	47.8%
Satisfied with marks	Count	535	741
	%	41.9%	58%
Absenteeism	Count	118	1156
	%	9.2%	90.6%
Lateness	Count	185	1065
	%	14.8%	85.1%

Table 4.46 shows the following:

- the risk factors with the highest frequencies are dissatisfaction with marks (58%), major stressful event (52%), friends' use (49%), and fighting with parents (30%)

To determine the dependency between (a) these four risk factors from table 4.46 and (b) depressive symptomology and substance abuse, four possibilities were examined. These are as follows:

- (1) dissatisfaction with marks and suicide ideation, and dissatisfaction with marks and alcohol use/abuse
- (2) major stressful event and suicide ideation, and major stressful event and alcohol use/abuse
- (3) friends' use of substances and suicide ideation, and friends' use of substances and alcohol use/abuse

(4) fighting with parents and suicide ideation, and fighting with parents and alcohol use/abuse.

The significance of these dependencies is examined by chi-square values, which are shown in table 4.47 and 4.48.

Table 4.47 *Chi-square values for risk factors for suicide ideation*

Risk Factors	Chi-square value	df	Significance
Dissatisfaction with marks	28.592	4	p<0,01
Major stressful event	47.176	4	p<0,01
Friends' use of substances	10.503	4	p<0,01
Fighting with parents	79.753	4	p<0,01

Table 4.48 *Chi-square values for risk factors for alcohol use/abuse*

Risk Factors	Chi-square value	df	Significance
Dissatisfaction with marks	10.694	3	p<0,01
Major stressful event	42.726	3	p<0,01
Friends' use of substances	90.404	3	p<0,01
Fighting with parents	18.349	3	p<0,01

Tables 4.47 and 4.48 show that:

- all the null-hypotheses may be rejected on the 1%-level of significance, except for the dependency between dissatisfaction with marks and alcohol use, as well as friends' use of substances and suicide ideation, which are rejected on the 5%-level of significance. This means that there are significant dependencies between, on the one hand, (a) dissatisfaction with marks, (b) experience of major stressful events, (c) friends' use of substances (other than cigarettes and tobacco and alcohol), and (d) a fighting relationship with parents and, on the other hand, suicide ideation and alcohol use/abuse.

4.3 CONCLUSION

This chapter has focused on the results of the empirical investigation with regard to adolescent depressive symptomology, adolescent substance abuse and the relationship between the two. Each research problem and hypothesis were discussed separately. The next chapter discusses the conclusions, the recommendations and limitations of the study.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

In the previous chapter the results of the empirical research were discussed. This chapter focuses on the conclusions of the literature study with regard to adolescent depressive symptomology, adolescent substance abuse and the relationship between the two. Thereafter conclusions from the empirical study are discussed. Finally conclusions are drawn from both approaches. Recommendations are made and the limitations of the study highlighted. It should be noted that the conclusions are applicable to the school involved in the research. However, they may also be applicable to many adolescents in South Africa and elsewhere.

5.2 CONCLUSIONS

The following conclusions have been drawn from the literature study and empirical investigations.

5.2.1 Conclusions from the literature study

The literature study first examined depression and substance abuse in adolescents as distinct phenomena and then looked at the relationship between the two.

5.2.1.1 Adolescent depression

In the conclusions drawn at the end of Chapter two, it was stated that there is no scientifically based diagnosis of depression. Different conceptualizations had attempted to elucidate the concept, but had run into anomalies that could not be accommodated within their paradigms. There are other dilemmas that are currently under review. These include the validation of the depressive

personality as a separate entity, distinct from early, onset dysthymia (predisposing to clinical depression), and the relationship between depressive symptomology and the depressive personality formation (see 2.2.1). The jury is still out on whether adolescent depression is a separate phenomenon from adult depression. Numerous investigators have examined adolescent depression and the results of some of these investigations were summarized on the adolescent depressive symptomology table in section 2.2.3. The number of depressive symptoms experienced by the adolescent was used in the empirical study to ascertain the level of depression.

The literature study examined prevalence rates (see 2.2.5.1). Kaplan and Sadock (1998:525) put the figures for adolescent MDD at 5 %, for dysthymia at 3.3%, and estimate significant symptomology at 10%. Golombek and Martin (1992:269) found 24% of adolescents present with continuous emotional dysfunction. Higher levels of depression in early and late adolescence were found by Golombek and Martin (1992:245). However, Lewinsohn *et al.* (1993:142) did not find this. The study by Connelly *et al.* (1993:153) found that mild and moderate depression increases by age to 19% in 19 year olds. A level of 10% was considered significant in the empirical study.

The literature study examined gender issues (see 2.2.5.2). Windle and Davies (1999: 839) found a depression ratio of 2,5:1 for girls, relative to boys, whereas Lewinsohn (1999:272) found depression to be twice as prevalent in girls.

5.2.1.2 Adolescent substance abuse

According to Bukstein (1995:10-17), contemporary theories of substance use/abuse can be divided into four major groups (see 2.3.7). None of the theoretical perspectives appear to be exclusive. There seems to be a growing understanding of the importance of the heterogeneity of patterns of substance use, abuse and dependence - each having multiple etiologies - and this favours a multifactorial paradigm of addiction (see 2.3.7). The greater the

number and severity of risk factors (e.g. parent substance abuse and dependence, risky peer-group interactions), the higher the risk for adolescent substance abuse (Hawkins *et al.* 1992:85). The relative contribution of the factors varies among individual adolescents, as do outcomes (Bukstein 1995:16). It should be noted that evidence increasingly points to certain factors as underlying a vulnerability to substance use/abuse and various personality traits have been identified (see 2.3.8).

Dual diagnoses are common (see 2.1.6 & 2.3.9). According to Kaplan and Sadock (1998:383-384), 76% of men and 65% of women with a diagnosis of substance abuse or dependence had an additional psychiatric diagnosis. The most common co-morbidity involves two substances of abuse, usually alcohol and another substance. Personality disorders are more prevalent in polydrug users who are more likely to have Axis 1 disorders such as depression, and Axis 11 disorders, such as borderline personality disorder and antisocial disorder, than patients addicted to only one drug (Barnes *et al.* 2000:149). This is likely to be the case with adolescents too. MDD, dysthymia and anxiety disorders are frequently diagnosed as co-morbid among individuals with substance abuse disorders (Kaminer 1994:15). Kaplan and Sadock (1998:384-385) note that the most potent and dangerous substances have the highest co-morbidity rates with depression. The increased risk of suicide in depressed people is mediated by both the acute and chronic effects of substance abuse (Bukstein 1995:87).

Adolescent substance abuse seems to be different from adult substance abuse in some important ways (see 2.3.2 & 2.3.3). The 'gateway theory', whereby adolescents progress from mild to harder drugs, is generally accepted (Fisher *et al.* 1998:4). However, a position at one stage does not necessarily imply the user will progress to the next stage and this is particularly true with adolescents (see 2.3.3). Bukstein (1995:31) cautions that one must consider the developmental role and context of substance abuse by the adolescent. Some experimentation may be considered normal (see 2.3.3 & 2.3.4). Kaplan *et al.* (1984:600) noted that those who abuse one

substance and are depressed are more likely to progress to the next stage of substance abuse than those who are not depressed.

5.2.1.3 *The relationship between depression and substance abuse*

Research has generally concluded that adolescent depression and substance abuse are strongly interrelated (see 2.4). When these disorders are co-morbid, functioning is further impaired (Rao *et al* 1999:1114). There is also a strong relationship between severity of dependence and depression scores in adults (Coelho *et al.* 2000:105). It is likely that co-morbid psychiatric disorders and substance abuse problems are as important in adolescent populations as in adults (Bukstein 1995:73), but they have not been studied so extensively.

On the other hand, other researchers have found no major difference in the patterns of co-morbidity by gender, age group, affective subtype or prevalence period (see 2.4). Thus, it was important that the relationship between depression and substance abuse among various groups of adolescents be confirmed.

The DSM-IV-R cross-references affective disorders and substance abuse, but it does not accommodate all substances or all the relationships (see 2.4.1). Kaplan and Sadock (1998:375) postulate that if the depressive symptoms seen in some people, who have not taken a brain-altering substance, are indistinguishable from the depressive symptoms in a person who has taken a brain-altering substance, there may be a brain-based commonality between substance abuse and depression.

Eight paradigms were developed to accommodate the complexity of the relationship between depression and substance abuse (see 2.4.2). They are as follows:

- *psychiatric symptoms or disorders developing as a consequence of substance abuse*
- *psychiatric disorders altering the course of substance abuse*

- *substance abuse developing as a consequence of psychopathology and dysfunction in the individuals and their families*
- *substance abuse altering the course of psychiatric disorders*
- *psychiatric disorders and substance abuse being mutually exclusive but coincidentally manifested*
- *substance abuse and psychiatric disorders originating from a common vulnerability*
- *substance abuse and affective disorders being caused by the third variable that is correlated to both life events and distress*
- *a bi-directional model of influence*

Some researchers believe there may be two pathological processes for those people with depression prior to substance abuse and those with substance abuse prior to depression (see 2.4.3). Altered brain chemistry seems to be the key factor in this relationship (see 2.4.4 & 2.4.5).

The life stage (early or late adolescence) and the gender profile seem to be important moderating factors (see 2.4.6). The work of Windle and Davis (1999:823-844) as well as Lewinsohn *et al.* (1995:1226) have identified the risk factors specific to a major depressive disorder, to substance abuse and to both disorders (see table 2.6 in section 2.4.7). Dually diagnosed adolescents are at a higher risk for lifelong dysfunction and even suicide (see 2.4.8) and therefore the early identification and treatment of these adolescents is imperative.

It is clear from this literature study that substance abusers suffering from depression pose complex diagnostic and therapeutic challenges, as do depressive adolescents abusing substances.

In conclusion, it can be stated that adolescence is a high risk period for onset of both depression and substance use disorder (see 2.5) and the relationship between the two disorders is highly complex.

5.2.2 Conclusions from the empirical study

From the general research problem, six hypotheses were developed. These are discussed separately.

(1) There is a significant relationship between adolescent depressive symptomology and substance abuse.

As the learners have more and more symptoms of depression, they tend to:

- (a) be younger when starting with drugs
- (b) have more current drug use (as indicated by their use during the 30 days preceding the questionnaire)
- (c) have a greater lifetime use.

(2) There is a significant level of adolescent depressive symptomology in the sample.

There is a significant level of 10% or more of the sample who indicate depressive symptomology, regarding the following: school anxiety, fatigue, agitation and worry, loss of interest and boredom, appetite fluctuations, sleep disturbances, the inability to concentrate, low self-esteem and feelings of helplessness, pessimism, self-criticism and somatic complaints. Feelings of anger, feelings of worthlessness and guilt, suicide ideation and aggression were experienced by more than 50% of the sample.

(3) There is a significant level of adolescent substance abuse in the sample.

The questionnaire dealt with both lifetime and current use, indicated by use during the 30 days preceding the questionnaire completion. More than 10% of the sample used cigarettes, alcohol, inhalants, and dagga for both lifetime and current use.

(4) There are significant differences in depressive symptomology among diverse groups. These groups are of diverse ages, grades, success or failure levels at school, genders, ethnicity and languages.

Significance differences in depressive symptomology are found for age, grade, success or failure at school and gender groups, but not for different ethnic or home language groups. The happiest group was the 13-14 year olds, and the least happy was the 17 years and older group. The happiest group were the grade eights, and the least happy were the grade elevens. Those who have repeated a grade are the unhappiest i.e they have the most depressive symptomology. Males are happier than females i.e. they report fewer depressive symptoms.

(5) There are significance differences in substance abuse among diverse groups. These groups are of diverse ages, grades, success or failure levels at school, genders, ethnicity and languages.

The questionnaire dealt with both lifetime and previous 30 day rates of substance abuse and thus both are discussed here.

Lifetime rates

- Age

Significant differences are found for substance abuse by different age groups for all substances, except for heroin. There seems to be a dependency between age and substance abuse. As the learners grow older, they use more substances.

- Grade

Significant differences are found for substance abuse by different grades, except for heroin and cocaine. There seems to be a dependency between lifetime use and grade. As the learners move into higher grades, they use more substances.

- Success or failure at school

Significant differences in substance abuse were found between those who had failed, and those who had not. There seems to be a dependency

between lifetime use and success or failure at school. Learners who have failed, are more inclined to use substances than those who have not failed.

- Gender

There are significant gender differences in the use of inhalants, dagga, stimulants and ecstasy. Males use significantly more of these substances than females.

- Ethnic group

There are significant ethnic differences in the use of alcohol only.

Whites (82,5%) used the most alcohol, followed by Coloureds (76,8%), Indians (73,3%), then Africans (72,4%) and Asians (71,4%).

- Language group

There are significant home language differences in the use of cigarettes and tobacco, and heroin. English speaking learners (65,2%) used more cigarettes and tobacco than African language speakers (59,7%), who used more than Afrikaans speaking learners (56,5%). The foreign language speakers (40%) used the least of these two substances. African language learners (2,2%) used the most heroin, and Afrikaans learners (0%) use the least.

Thirty day rates

- Age

Significant differences are found for substance abuse by different age groups for all substances, except for inhalants, stimulants and heroin. There seems to be a dependency between the age of the learner and the incidence of abuse. As the learners become older, there is more use of substances.

- Grade

Significant differences between grades were found for use of cigarettes and tobacco, alcohol, dagga and ecstasy. As the learners move up the grades, they use more of these substances. Alcohol use shows an increase by grade until grade 11 where it peaks (70,2%), with a marginal drop in use in grade 12 (69,5%).

- Success or failure at school

There were significant differences for use of all substances between learners who have failed and those who have not failed, except for cigarettes and tobacco, inhalants, and ecstasy. Those who repeat a grade are inclined to use more of these substances.

- Gender

There were no significant gender differences in the current use of substances as indicated by use in the 30 days preceding the questionnaire completion.

- Ethnic group

Significant differences for ethnic groups were found in the use of cigarettes and tobacco, and alcohol in the last 30 days. The use of cigarettes and tobacco during this time was as follows: Coloureds (53,6%), Whites (42,8%), Africans (33,8%), Indians (28,9%). The Asian count is too low to be significant. Coloured learners used the most alcohol (64,3%), followed by Whites (58,5%), Africans (41,7%), and Indians (37,3%).

- Language group

There are significant language group differences in the use of cigarettes and tobacco as well as alcohol. No significant differences between language groups were found for use of the other substances. Afrikaans (43,4%) and English (42,8%) speaking learners have smoked more in the last 30 days than learners speaking an African language (32,2%), or a foreign language (23,6%). English (57,1%) and Afrikaans (56,5%) speaking learners had used more alcohol in the last 30 days than learners speaking a foreign language (43,7%) or an African language (40,9%).

(6) There is a significant dependency between certain risk factors and depressive symptomology/substance abuse.

Four possibilities were examined and they were all found to be significant at the 1%-level of significance. The risk factors are as follows:

- dissatisfaction with marks and suicide ideation, and dissatisfaction with marks and alcohol use/abuse

- major stressful event and suicide ideation, and major stressful event and alcohol use/abuse
- friends' use of substances and suicide ideation, and friends' use of substances and alcohol use/abuse
- fighting with parents and suicide ideation, and fighting with parents and alcohol use/abuse.

5.2.3 Conclusions from both the literature and empirical studies

Adolescent depressive symptomology and adolescent substance abuse are discussed first, then the relationship between the two is examined.

5.2.3.1 Adolescent depressive symptomology

Adolescents experience many depressive symptoms. The level in this study approaches 33%. The literature study puts figures in the region of 20% (see 2.2.5). The happiest group was the 13-14 year old group, and the least happy was the 17 years and older group. This partly supports Golombeck and Martin's (1992:245) hypothesis that late adolescence is stressful because it is a time of change. It is noted that Lewinsohn *et al.* (1993:142) did not find this in his sample. As expected those who have repeated a grade are the unhappiest i.e they have the most depressive symptomology. As expected from the literature study (see 2.2.5), males are happier than females i.e. they report fewer depressive symptoms.

5.2.3.2 Adolescent substance abuse

The prevalence rates found in this study are similar to those discussed in section 2.3.6.1 and Owen's figures in section 1.1.3. The 'gateway theory', whereby adolescents progress from mild to harder drugs, is generally accepted and seems to have been confirmed by the results of this study. Nevertheless, according to a number of researchers (see 2.3.4), a position at one stage does not necessarily imply the user will progress to the next stage. Bukstein (1995:31) cautions that one must consider the developmental role

and context of substance abuse by the adolescent. Some experimentation may be considered normal (see 2.3.3 & 2.3.4). Kaplan *et al.* (1984:600) noted that those who abuse one substance and are depressed are more likely to progress to the next stage of substance abuse than those who are not depressed and this is possibly a factor.

Both lifetime and 30 day rates in this study are of concern. The lifetime rates are higher than the 30 day rates, as can be see in the table below, and this would seem to support the Bukstein's and Kramer's hypothesis that adolescents experiment with substances, but do not continue using.

*Table 5.1 Comparison of lifetime and 30 day rates of substance abuse
(see 4.2.5)*

Substances	Lifetime rates (%)	30 Day rates (%)
Cigarettes & tobacco	64	41
Alcohol	80	54
Inhalants	17	5
Dagga	35	15
Stimulants	8	3
Cocaine	3	1
Heroin	2	2
Hallucinogens	7	3
Ecstasy	7	4

Learners increase their consumption of cigarettes and tobacco, alcohol, dagga and ecstasy as they grow older and move up the grades. The lifetime rates showed an increase for all substances by age (except for heroin) and grade (except for heroin and cocaine). Alcohol use in a 30 day period tended to level off in grade 12 and this is possibly the result of maturation. Thirty day rates also showed this increase by age (except for inhalants, stimulants and heroin), and grade (except for inhalants, stimulants, cocaine, hallucinogens and heroin). To sum up, one could say learners who abuse substances tend to increase their consumption of substances by age and grade.

When learners have failed, they have higher lifetime rates across the board, but higher 30 day rates for cigarettes and tobacco, inhalants and ecstasy only. Failure at school would seem therefore to be a risk factor for experimentation,

and a risk factor for current use of cigarettes and tobacco, inhalants and ecstasy.

Gender differences were found in the lifetime rates for inhalants, dagga, stimulants and ecstasy. More males had used substances than females. This implies that more males experiment with substance abuse than females. No significant gender differences were seen in the 30 day rates. This suggests that males and females are equally involved in substance use in a 30 day period. If more females than males are depressed, this has not translated into substance abuse and this implies that depression has different consequences according to gender, with males turning to substance abuse more readily.

Generally ethnic and language differences were not significant. Ethnic differences were found in lifetime rates of alcohol only and language differences were found in the lifetime use of cigarettes and tobacco and heroin only.

5.2.3.3 The relationship between adolescent depressive symptomology and substance abuse

As expected from the literature study, there was a significant correlation between the number of depressive symptoms experienced by the adolescents and substance abuse. As the learners have more and more symptoms of depression, they tend to be (a) younger when starting with drugs, (b) to have a greater lifetime use, and (c) to have more drug use in the last 30 days. As stated above, there appears to be gender differences in the way adolescents deal with their depression in terms of substance abuse.

5.2.3.4 The dependency between certain risk factors and depressive symptomology/substance abuse

There are significant dependencies between, on the one hand, (a) dissatisfaction with marks, (b) experience of major stressful events, (c) friends' use of substances other than cigarettes and tobacco and alcohol, and

(d) a fighting relationship with parents and, on the other hand, suicide ideation and alcohol use/abuse.

5.3 RECOMMENDATIONS

In the light of the problem statement in Chapter one and the findings as described above, the following recommendations are made.

5.3.1 Recommendations for educational authorities

5.3.1.1 Workgroups

Given the magnitude of the problem of depression and substance abuse among adolescents, work groups should be set up by the educational authorities to improve:

- the Life Orientation programmes in the schools, focusing on information about, and prevention of, adolescent depression and substance abuse. This should motivate learners to refrain from substance abuse, offer effective drug education, warn of the consequences of substance abuse, and assist learners to develop attitudes and skills to resist substance abuse.
- awareness among learners, educators, parents and the community of the relationship between adolescent depressive symptomology and substance abuse
- the psychological support given to the schools for learners experiencing depressive symptomology or/and abusing substances
- support teams within the schools
- in-service training for all educators
- existing intervention programmes. These should be developed in conjunction with the Central Drug Authority and regional substance abuse forums.
- learners' access to a range of advice, counseling, treatment, rehabilitation and treatment centers.

5.3.1.2 School drug policies

The current educational policy on drug screening in public schools should be reviewed. There should be:

- consultation between the parents of learners identified as 'at risk' by the educators and the school-based support teams
- empowerment of educators to act in the case of suspected drug abuse by a learner, even without the support of the parents
- random drug testing should be allowed if the parents have agreed to this in a school's code of conduct and it is financially feasible. The costs should be borne by the school (if the learner tests negative) and the parent (if the learner tests positive).

5.3.1.3 Emotional support for repeat learners

Support teams in schools should focus on innovative ways to give repeat learners adequate emotional support.

5.3.2 Recommendations for further research

5.3.2.1 Research into the rise of depressive symptomology in late adolescence

The rise in depressive symptomology in the 17 year old group should be investigated further. Golombek and Marton's (1992:245) hypothesis that late adolescence is stressful because it is a time of change needs to be explored.

5.3.2.2 Research into the longitudinal paths of adolescent substance abusers

More research should be done on the longitudinal paths of adolescent substance abusers. The link between experimentation and regular use needs to be explored further.

5.3.2.3 Medical research

More medical research should be done on the complexities of the interactions between depression and substance abuse. The results of this should be published formally and in popular literature e.g. magazines and newspapers to heighten public awareness.

5.3.3 Development of adolescent depression screening instruments

Quick, accessible, screening instruments for depression in learners need be developed by researchers for South African high school learners so that those learners ' at risk ' can be identified. As stated in 5.3.1, these learners can be referred to professionals and be monitored within the school system by especially appointed educators.

5.3.4 Dissemination of research findings

Information about the significant relationship between adolescent depressive symptomology and substance abuse should be disseminated by the researcher to all interested parties (The National Drug Authority, provincial substance abuse forums, depression support groups, educational departments and other interested professionals).

5.4 LIMITATIONS OF THE STUDY

The following can be highlighted as limitations of the study.

- The complexities of adolescent depression, as a construct, are simplified to the magnitude of the depressive symptoms. As a result the study does not distinguish between different conceptualizations of depression (see 2.1).
- The sample included 96% of the learners at one school only - a middle-class, former model "C" school in Johannesburg. It is probable that the prevalence of depression and substance abuse are slightly underreported. School dropouts, absent adolescents, expelled

adolescents, and those who refused to participate were excluded. As a group, these adolescents are likely to have a higher incidence of depression and of substance abuse.

- The limitations of self-report questionnaires should be noted.
- The study did not unravel the complexities of the relationship between adolescent depression and substance abuse. This may be done by a qualitative approach.

5.5 SUMMARY

Both depression and substance abuse among adolescents are of concern in schools because of the deleterious effect of both phenomena on the adolescent. The researcher was interested in the possible connection between the two. The general research question was: *what is the relationship between adolescent depressive symptomology and substance abuse?* In order to explore the concepts in this topic fully, a literature study was undertaken. From this study, the concepts of *adolescent depression* and *adolescent substance abuse* were examined and explained. Operational definitions were developed. Six hypotheses were developed and an empirical study, undertaken in a South African high school, investigated the level of adolescent depressive symptomology and substance abuse, as well as the relationship between the two. The possible influence of various moderator variables were also examined.

In line with most international studies, the relationship between adolescent depressive symptomology and substance abuse was found to be significant. The co-morbidity of adolescent depressive symptomology and substance abuse affects the psychosocial functioning of the adolescent and is linked to suicide ideation. This research has shown that adolescent depressive symptomology is significantly correlated with earlier age of onset of substance abuse and higher lifetime and current use. There appear to be gender differences in the way adolescents deal with their depression in terms of substance abuse. Certain risk factors for depression and substance abuse

were confirmed. In addition, recommendations have been made and the limitations of the study highlighted.

This study has important implications for the educational authorities and all those actively involved with adolescents.

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Appendix A**QUESTIONNAIRE**

- This questionnaire is **anonymous** and for research purposes only.
- There are no right or wrong answers.
- Please do not write anything on the questionnaire.
- Write down the number of your response in the **middle column** of the answer sheet **ONLY**.
For example, if you are 14 years old, you write 2 in the middle column for question 1.
- Please ensure that the number of your answer corresponds with the number of the question.
- Please complete **ALL** the questions as honestly as possible.
- **DO NOT** leave any question out.

SECTION A

OFFICE USE ONLY

1 Age in years				
	Less than 13 years	=	(1)	V2
	13-14 years	=	(2)	
	15-16 years	=	(3)	
	17 years and older	=	(4)	
2 Present grade				
	grade 8	=	(1)	V3
	grade 9	=	(2)	
	grade 10	=	(3)	
	grade 11	=	(4)	
	grade 12	=	(5)	
3 Have you ever repeated a grade?				
	No	=	(1)	V4
	Yes	=	(2)	
4 Gender				
	male	=	(1)	V5
	female	=	(2)	
5 Ethnic group				
	African	=	(1)	V6
	Asian	=	(2)	
	Coloured	=	(3)	
	Indian	=	(4)	
	White	=	(5)	
6 Home language				
	English	=	(1)	V7
	Afrikaans	=	(2)	
	African language	=	(3)	
	Foreign language	=	(4)	

SECTION B

Read the statements and then choose the number that best describes how you usually feel and mark this on the answer sheet.

Strongly disagree	Disagree	Unsure	Agree	Strongly agree
(1)	(2)	(3)	(4)	(5)

7	I feel happy	V8
8	I worry about school	V9
9	I feel tired	V10
10	I have lots of friends	V11
11	I feel cross	V12
12	I feel relaxed	V13
13	My parents like me	V14
14	I feel bored	V15
15	My appetite stays the same	V16
16	I sleep well	V17
17	I feel guilty	V18
18	I find it hard to concentrate	V19
19	I think about killing myself	V20
20	I enjoy other people	V21
21	Most people are better than me	V22
22	Things turn out fine	V23
23	I feel good about my abilities	V24
24	My body works as it should	V25
25	Bad things happen to me	V26
26	I often want to hit people	V27

SECTION C

Indicate your use of the following:

Answer as follows:

Never used	Used
(1)	(2)

27	Cigarettes and tobacco	V28
28	Alcohol	V29
29	Inhalants eg glue, thinners	V30
30	Dagga / Hashish	V31
31	Stimulants e.g. amphetamines, speed, ravers	V32
32	Cocaine / crack (snow, coke, rocks)	V33
33	Heroin / opiates e.g pinks or wellconal	V34
34	Hallucinogens e.g. acid, LSD, buttons, mal pitte, PCP, Angel's dust	V35
35	Ecstasy	V36
36	Another drug not mentioned here	V37

If you have answered a 2 for 'used', specify name of drug on the line alongside the Column for question 36.

If you have used, indicate age of first use?

Answer as follows:

Not applicable/ never used	Before 13 years of age	13-14 years of age	15-16 years of age	17 years and older
(1)	(2)	(3)	(4)	(5)

- | | |
|---|-----|
| 37 Cigarettes and tobacco | V38 |
| 38 Alcohol | V39 |
| 39 Inhalants eg glue, thinners | V40 |
| 40 Dagga / Hashish | V41 |
| 41 Stimulants e.g. amphetamines, speed, ravers | V42 |
| 42 Cocaine / crack (snow, coke, rocks) | V43 |
| 43 Heroin / opiates e.g pinks wellconal | V44 |
| 44 Hallucinogens e.g. acid, LSD, buttons, mal pitte, PCP,
Angel's dust | V45 |
| 45 Ecstasy | V46 |

What was your use in the last 30 days?

Answer as follows:

Not applicable/ never used	2-5 times this last month	6-10 times this last month	More than 10 times this last month
(1)	(2)	(3)	(4)

- | | |
|---|-----|
| 46 Cigarettes and tobacco | V47 |
| 47 Alcohol | V48 |
| 48 Inhalants eg glue, thinners | V49 |
| 49 Dagga / hashish | V50 |
| 50 Stimulants e.g. amphetamines, speed, ravers | V51 |
| 51 Cocaine/crack (snow, coke, rocks) | V52 |
| 52 Heroin/opiates e.g. pinks , wellconal | V53 |
| 53 Hallucinogens e.g. acid, LSD, buttons, mal pitte, PCP,
Angel's dust | V54 |
| 54 Ecstasy | V55 |
| 55 Another drug not mentioned here | V56 |
- If you have used another drug, specify name of drug on the line
alongside the Column for question 55.**
-

Section DAnswer **yes (1)** or **no (2)** to the following questions:

- | | |
|--|-----|
| 56 Do either of your parents use substances, other than cigarettes
and alcohol? | V57 |
| 57 Do your friends use substances other than cigarettes and alcohol? | V58 |
| 58 Have you had a strong craving (strong desire) for alcohol or drugs? | V59 |
| 59 Have you been referred to your grade tutor for physical fighting or
vandalism? | V60 |

Answer **yes (1)** or **no (2)** to the following questions:

- | | |
|--|-----|
| 60 Have you been called to a disciplinary hearing or been asked to leave a school? | V61 |
| 61 Have you been caught or charged by the police for anything e.g. shoplifting, public vandalism, underage drinking, drug use/possession | V62 |
| 62 Have you ever been diagnosed with clinical depression by a professional? | V63 |
| 63 Have you ever attempted suicide? | V64 |
| 64 Do you have Attention Deficit Disorder (ADHD or ADD)? | V65 |
| 65 Have you had a <u>major</u> stressful thing happen to you in the last 12 months? | V66 |
| 66 Do you fight with your parents a lot? | V67 |
| 67 Are you satisfied with the marks you get at school? | V68 |
| 68 Are you often absent from school (more than 5 days a month) | V69 |
| 69 Are you often late for school (more than once a month)? | V70 |

Appendix B**SUMMARY OF THE VARIABLES IN THE QUESTIONNAIRE**

- **Independent variable: Depressive symptomology**

In section 2.2.3 a comparative table of adolescent depressive symptoms was compiled from the sources used in the literature study. Of these items, 20 concepts were chosen as being representative of the field from all the surveyed sources. Twenty questions were then developed, 10 positively worded and 10 negatively worded, assigned in a random order. (See appendix A - numbers 7-26 in the questionnaire).

Concept	Question number	Positive or negative wording	Wording
Sadness, loss of pleasure	7	+ ve	I feel happy
School anxiety	8	- ve	I worry about school
Fatigue	9	- ve	I feel tired
Loneliness/social withdrawal	10	+ ve	I have a lot of friends
Anger	11	- ve	I feel cross
Agitation/worry	12	+ ve	I feel relaxed
Devalued by parents	13	+ ve	My parents like me
Loss of interest/ Boredom	14	- ve	I feel bored
Appetite fluctuations	15	+ ve	My appetite stays the same
Sleep disturbances	16	+ ve	I sleep well
Worthlessness/guilt	17	- ve	I feel guilty
Can't concentrate	18	- ve	I find it hard to concentrate
Suicidal thoughts	19	- ve	I think about killing myself
Irritability	20	+ ve	I enjoy other people
Low self-esteem	21	- ve	Most people are better than me
Pessimism	22	+ ve	Things turn at fine
Self-critical	23	+ ve	I feel good about my abilities
Somatic complaint	24	+ ve	My body works as it should
Helplessness/pessimism	25	- ve	Bad things happen to me
Aggression	26	- ve	I often want to hit people

These statements were scored on a 5 point Likert scale: strongly agree, agree, undecided, disagree, strongly disagree.

- **Dependent variables: Substance abuse**

The data from the questionnaire will yield both lifetime (once or more in a lifetime) and 30 day rates (last 30 days) for 10 classes of drugs.

CONSTRUCT	VARIABLE	QUESTION NUMBERS
Frequency rates	Lifetime use	27,28,29,30,31,32,33,34,35,36
	30 day use	46,47,48,49,50,51,52,53,54,55
Age of onset	Age of first use	37,38,39,40,41,42,43,44,45
Class of drug	Cigarettes & tobacco	27,37,46
	Alcohol	28,38,47
	Inhalants	29,39,48
	Dagga	30,40,49
	Stimulants	31,41,50
	Cocaine/crack	32,42,51
	Heroin/opiates	33,43,52
	Hallucinogenetics	43,44,53
	Ecstasy	35,45,54
	Other	36,46,55

- **Moderator variables**

Variables	Variable	Question number/s
Moderator variables	Age	1
	Grade	2
	School success or failure	3
	Gender	4
	Ethnic group	5
	Home language	6
Common risk factors	Current depressive levels	7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26
	Interpersonal conflict	20,26,60
	Parent conflict	66
	Dissatisfaction with grades	67
Drug risk factors	Externalising behaviour	61,62,63
	Parent use	56
	Peer use	57
	Addiction	58
	Tobacco use	46
	Alcohol use	47
	ADHD/ADD	64
	School absenteeism	68
	School lateness	69
	Dissatisfaction with grades	67
Externalising behaviour	59,60,61,	

Depression risk factors	Major life events	65
	Suicidal ideation & previous suicide attempts	19,63
	Past depression	62

SURVEY RESPONSE SHEET

V1

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Question number	Number of answer i.e. 1,2,3,4 or 5	OFFICE USE ONLY Variable
1.		2
2.		3
3.		4
4.		5
5.		6
6.		7
7.		8
8.		9
9.		10
10.		11
11.		12
12.		13
13.		14
14.		15
15.		16
16.		17
17.		18
18.		19
19.		20
20.		21
21.		22
22.		23
23.		24
24.		25
25.		26
26.		27
27.		28
28.		29
29.		30
30.		31
31.		32
32.		33
33.		34
34.		35
35.		36

Question number	Number of answer i.e. 1,2,3,4 or 5	OFFICE USE ONLY Variable number
36.		37
37.		38
38.		39
39.		40
40.		41
41.		42
42.		43
43.		44
44.		45
45.		46
46.		47
47.		48
48.		49
49.		50
50.		51
51.		52
52.		53
53.		54
54.		55
55.		56
56.		57
57.		58
58.		59
59.		60
60.		61
61.		62
62.		63
63.		64
64.		65
65.		66
66.		67
67.		68
68.		69
69.		70