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Suicide and suicidal risk in a rural context – social and psychological factors.

Leslie Ronald Pollock

A thesis submitted in fulfilment of the regulations for the degree of

Doctor of Philosophy

in the

University of Wales

1999.

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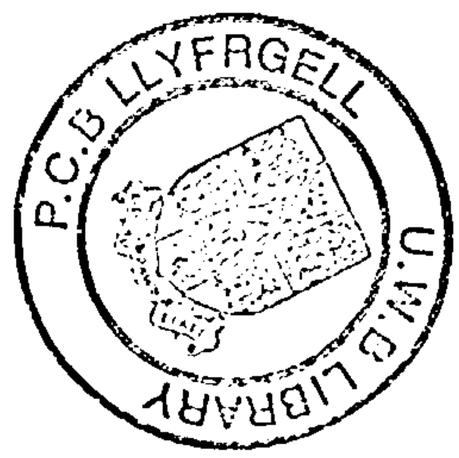

Summary

In a series of studies, rural and urban suicides were compared and the psychological factors underlying suicidal behaviour investigated.

In the first study suicides in a Mid-Wales county were examined and contrasted with a group of urban suicides. The pattern of rural suicides was found to differ from the urban suicides. Rural suicides were more evenly spread through the age bands, mostly married and used more violent means of death. Farmers comprised a large proportion of rural suicides and seem to differ from rural suicides in general in that 88% were over 45 years of age, most died of hanging, only 13% left notes and they had no record of previous suicide attempts. The factors that might cause farmers stress were examined. This showed that farmers found form filling and adjusting to government policy most stressful. Isolation was relatively unimportant as a stressor.

In the third study the role of mood and problem solving in suicidal behaviour was investigated in three matched groups (suicidal, psychiatric control and non-psychiatric control). The suicidal group was found to display a careless and impulsive problem solving style and unique deficits in decision making and generation of alternative solutions. They were also more depressed, angry and confused. The problem solving deficits remained even when the effects of the mood differences were removed.

The last study investigated the relationship between autobiographical memory and problem solving and found the suicidal group to be significantly more overgeneral in their memories, they produced fewer means and less effective problem solving solutions and these deficits were found to persist over time. These results were interpreted as support for these factors being trait features or alternatively requiring more time to recover. The findings were incorporated into a revised version of the "Cry of Pain" model of suicidal behaviour (Williams, 1997).

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CHAPTER 1

Suicide and Attempted Suicide.

Introduction.

The aims of this thesis are to investigate rural suicide, and, the cognitive processes underlying suicidal behaviour. The investigation covers two main areas. Firstly, a study is conducted to investigate the profile of suicides occurring in Powys, one of the least densely populated rural areas in Wales and the United Kingdom. These suicides are then compared with those occurring in Manchester, a densely populated urban area, as some studies have noted differences in rural versus urban suicides. Secondly, an empirical study investigates cognitive correlates and deficits of suicidal behaviour in a group of rural individuals who have made a suicide attempt. The first two chapters provide a background to the study of suicidal behaviour in the United Kingdom and Wales. Chapter one examines definitions and theories of suicidal behaviour and some background to the problem in the United Kingdom. Chapter two reviews urban versus rural suicide, official statistics and the role of the coroner and some background to the problem in Wales and Powys.

Definitions and terms.

Numerous influential researchers in the field of suicidology have highlighted the obfuscation and inadequacy surrounding the definitions and terminology used to describe the various aspects of suicidal behaviour (Moscicki, 1999;

Soubrier, 1997; Linehan, 1997; Silverman, 1997; O'Carroll et al., 1996; Diekstra and Garnefski, 1995; Schneidman, 1993; Maris, 1992; Hawton and Catalan, 1987).

For example, Silverman (1997) maintains that after more than 25 years of discussion and debate there is still no universally accepted set of definitions and classifications of suicidal behaviour for studying individuals are who at risk of self-destructive behaviour.

O'Carroll et al., (1996) have drawn attention to what they call an

> " almost incredible reality: Despite hundreds of years of writing and thinking about suicide, and many decades of focussed suicide research, there is to this day no generally accepted nomenclature for referring to suicide-related behaviours - not even at the most basic conversational level."

Linehan (1997) maintains that the use of ambiguous terminology when referring to intentional self-injurious behaviour without the intent to die is more often the rule than the exception. She points out that researchers frequently label behaviour by its form or method, for example self-mutilation, self-poisoning, overdosing, self-injury or self-harm. The assumption in using these terms is that the behaviour is not accidental. Often the term self-harm is used even more broadly to refer to any behavioural pattern that results in psychological or physical harm to the individual

including fast driving and abusive relationships. Linehan claims that little effort is made to measure suicidal intent in a systematic and reliable manner and that many researchers do not define their terms.

The implication of this ambiguity and the imprecise definitions is that it confounds the interpretability of research on suicidal behaviour. It makes it difficult to compare findings across studies of parasuicidal individuals in particular as so few researchers actually define the terms they use. Furthermore, Linehan (1997) asserts that using terms that imply intent to die or absence of intent to die, without a valid or reliable assessment of the actual intent, confounds intent and action and can lead to the misclassification of the behaviour in question. (Pursuing this line of argument , it would seem that when it is possible to assess intent reliably, we will be in a position to discriminate more clearly between the various classes of suicidal behaviour.)

Maris (1992) has suggested that there is a continuum that includes suicidal ideation, indirect suicides, partial self-destruction, suicidal gestures, non-fatal suicide attempts and completed suicides. Although these self-destructive acts may have elements in common (Blumenthal and Kupfer, 1990), Maris maintains that they are also sufficiently different from each other to require different explanations. He also makes the point that in addition to the continuum from suicidal ideation to completed suicide, there is also a degree of variation within each of these catergories. What emerges is an enormously complex picture, which if the field of suicidology is to progress, requires

radical reconceptualisation (Schneidman, 1985), a generally accepted nomenclature (O'Carroll et al., 1996) and very careful and precise definitions.

What exactly is meant by the terms "suicide" and "attempted suicide"? As Berman and Maris (1991) have declared: " Only recently have researchers focused on more primary and atheoretical questions such as that of operationally defining terms" (Soubrier, (1993) p 38.)

Several reseachers have proposed definitions and these are reviewed next. Schneidman (1985) proposed the following definition which has been widely used and referred to in the literature:

" Currently in the Western world, suicide is a conscious act of self-induced annihilation, best understood as a multidimensional malaise in a needful individual who defines an issue for which the suicide is perceived as the best solution".

Several comments can be made about this definition. Firstly, Schneidman intends it to be a culturally specific definition believing that it is not necessarily applicable to other cultural contexts. What about suicide in other parts of the world? This limits its usefulness. Secondly, suicide is described as a 'conscious act'. This term is used to imply conscious intentionality. I would argue that there are some cases of suicide in which the individual has reached a point where he no longer cares about or is unable to visualise a

future and so may indulge in risky behaviour but decides to leave the outcome of events up to fate. In this situation suicidality is not so much conscious as subintentioned. Suicide is described as a 'multidimensional malaise'. This is an extremely broad term which tells us nothing about what dimensions may be involved and to some extent is redundant in the definition, as is the term 'needful'. All individuals have needs which drive them and the use of this word in the definition does not convey any further information on what these needs may be. 'Who defines an issue' suggests that the individual thinks rationally about the situation and makes a rational and decisive decision about it. We do not know from this definition which issues are important. We know from cognitive studies that suicidal individuals are often ambivalent and indecisive and feel that 'they don't know what to do in the situation' (Bancroft, et al., 1979; Hawton and Catalan, 1987; Williams, 1986). They often act by default rather than making a definite decision. In the same vein the phrase 'suicide is perceived as the best solution' suggests that the person has carefully evaluated the situation and made an active decision about it. As said earlier this behaviour does not necessarily characterize all suicides.

Thus, while Schneidman's definition is comprehensive and contains important elements, it is also imprecise and contains assumptions and redundancies.

Soubrier (1993) has suggested this:

" Suicide is the final act of despair of which the result is not known, occurring after a battle between an unconscious death wish and a desire to live better, to love and be loved".

This definition is based on dynamic theory. Soubrier suggests that the outcome is 'not known'. This seems to be at odds with Schneidman's definition where the aim is clearly 'self-induced annihilation'.

Mayo (1992) has offered the following definition:

"To commit suicide is to end one's own life intentionally".

This is very similar to Erwin Ringel's definition:

"Suicide is the intentional tendency to take one's own life" (Ringel, 1968).

And Motto's definition:

"Suicide is self-inflicted, self-intentioned, noncoerced death" (Motto, 1989).

All of these definitions contain three elements. Firstly, suicide is an act which ends in death. Secondly, it is self-inflicted. Thirdly, it is an intentional act. In general the above definitions are theory-laden and make inferences about intention. As suicide is such a complex event it is unlikely that a point has been reached where there will be agreement on one definition of suicide. As the field evolves there will be a constant refining of the definitions of suicide.

With regard to the terms used to describe non-fatal self-injury, Hawton and Catalan, (1987) have pointed out that the term 'attempted suicide' has often been used to describe behaviour that lacks any serious suicidal intention. Kreitman et al., (1987), as an alternative, proposed the term 'parasuicide' to describe all nonfatal, self-injurious behaviour with clear intent to cause bodily harm or death, but Hawton and Catalan suggest that the drawback of this definition is that it implies that suicidal intentions are always present, which is not necessarily the case in practice. The WHO/Euro parasuicide study has defined parasuicide in the following way:

It is " an act with nonfatal outcome, in which an individual deliberately initiates a non-habitual behaviour that, without intervention from others, will cause self-harm, or deliberately ingests a substance in excess of the prescribed or generally recognised therapeutic dosage, and which is aimed at realizing changes which the subject desired via the actual or expected physical consequences, p99 (Platt et al., 1992).

Platt et al., (1992) draw attention to the fact that with this definition the motivation of the suicidal act is not taken into account when the diagnosis of parasuicide is made. Parasuicide seems to be a heterogeneous category for both self-injurious behaviour with and without intent to die. Linehan (1997) suggests that many clinicians in the United States understand the term parasuicide to mean an intentional self-injury that is not a suicide attempt

and points out that this is a misreading of the definition of Kreitman and others.

O'Carroll et al. (1996) noting the problems described earlier, have proposed a nomenclature for suicidology in the hope of improving the clarity and precision of communications and advancing research in this field. Moscicki (1999), Rudd (1997) and Dear (1997) have referred to these proposals with approval.

The proposed nomenclature for suicidal behaviour is shown in Table 1. O'Carroll et al. (1996) have started their categorization with the superset: Self-injurious thoughts and behaviours. This is broken down into Risk-taking thoughts and behaviours and Suicide-related thoughts and behaviours. Risk-taking thoughts and behaviours is made up of two subsets - with immediate risk and with remote risk. The subsets of Suicide related thoughts and behaviours are - suicidal ideation and suicide-related behaviours. Suicidal ideation comprises Casual ideation and Serious ideation which in turn is subdivided into the subsets Persistent and Transient. Suicide-related behaviours is subdivided into Instrumental suicide-related behaviour (ISRB) which consists of Suicidal threats (Passive or Active), Other Instrumental suicide-related behaviour and Accidental death associated with ISRB, and, Suicidal acts which is made up of Suicide attempts (With no injuries or With injuries) and Completed suicide.

1. Self-injurious thoughts and behaviours

A. Risk-taking thoughts and behaviours

1. With immediate risk (e.g. motorcross, skydiving)

2. With remote risk (e.g. smoking, sexual promiscuity)

B. Suicide-related thoughts and behaviours

1. Suicidal ideation

a. Casual ideation

b. Serious ideation

(1) Persistent

(2) Transient

2. Suicide-related behaviours

a. Instrumental suicide-related behaviour ISRB

(1) Suicide threat

a. Passive (e.g. ledge sitting)

b. Active (e.g. verbal threat, note writing)

(2) Other instrumental suicide-related behaviour

(3) Accidental death associated with ISRB

b. Suicidal acts

(1) Suicide attempt

a. With no injuries (e.g. gun fired, missed)

b. With injuries

(2) Completed suicide

Table 1. *An Outline Indicating Superset/Subset Relationships of the Proposed Nomenclature for Suicide and Self-Injurious Thoughts and Behaviour.* (O'Carroll et al. (1996).

For the purposes of this research the definitions of suicide and attempted suicide proposed by O'Carroll et al (1996) have been accepted. These are

Suicide: Death from injury, poisoning or suffocation where there is evidence (either implicit or explicit) that the injury was self-inflicted and that the decedent intended to kill himself/herself.

Attempted suicide: A potentially self-injurious behaviour with a non-fatal outcome, for which there is evidence (either explicit or implicit) that the person intended at some (nonzero) level to kill himself/herself. A suicide attempt may or may not result in injuries.

Theories of suicide.

Despite suicide and attempted suicide being serious mental health problems there is a paucity of literature focussing specifically on the theoretical underpinnings of this behaviour. Most theorists have proposed broad theories of psychopathology or personality which mention suicide in passing, however certain theorists have addressed suicide specifically, e.g. Schneidman. In the following brief review the main tenets of the major theoretical positions are described.

Biological approaches to suicide.

Despite the fact that no specific theoretical framework for understanding the biological basis of suicidal behaviour exists (Asberg, 1997), remarkable advances have been made in furthering knowledge in this area. Two main

strategies have been employed in studying the neurobiological substrates of suicide. These comprise studies focusing on the functioning of the neuroendocrine system and studies focusing on the action of neurotransmitters, serotonin in particular. Neuroendocrine systems have not been investigated as intensively as neurotransmitters, but these studies are noteworthy as they were part of the initial efforts to identify the biological correlates of suicide.

The earliest reports related to findings showing metabolic abnormalities and adrenocortical dysfunction in a seriously suicidal patient with Cushings Syndrome (Trethowan and Cobb, 1952). Subsequent studies also suggested endocrine abnormalities in suicidal patients with Cushings Syndrome (a disorder which commonly manifests itself in emotional and mental disturbances, Spillane, 1954). Starkman et al., (1981) investigated 35 individuals with this disorder and found that 17% had recurrent suicidal thoughts and 7% had made suicide attempts since the onset of hypercortisolism. Those with the most severe depressive clinical presentations had persistently and significantly elevated ACTH levels. These data support the hypothesis that suicidal behaviour, in a subgroup of patients with hypercortisolism, may be associated with dysregulation of the hypothalamic-pituitary-adrenal axis. The possibility of this association was initially suggested by Bunney and Fawcett (1965) and Bunney et al. (1969). However, subsequent research has produced mixed results. For example, Bunney and Fawcett (1965) reported raised measures of urinary 17-

hydroxycorticosteroids (an indirect measure of cortisol) in patients who later committed suicide. However, Levy and Hansen (1969) failed to find this association. Furthermore, related studies investigating the relationship between suicidal behaviour and plasma cortisol levels, before and after administration of dexamethasone, have also yielded contradictory results. The majority of studies have reported higher rates of non-suppression on the dexamethasone suppression test in suicide attempters or completers compared to controls.Contrary to these findings some studies report no association between recent suicidal behaviour and non-suppression on the dexamethasone suppression test (Stoff and Mann, 1997).

The majority of the research endeavours into the neurobiology of suicidal behaviour have focussed on the serotonin system. Asberg et al., (1976) have advanced work in this area by looking at the relationship between serotonin levels and suicidality. Depleted levels of serotonin were found in people who had completed suicide and in patients who had attempted suicide. They noted that a history of serious suicide attempts was associated with low CSF 5-HIAA concentrations, in particular when violent methods were employed.

Other studies by Delgado et al., (1990, 1993) have examined the effect of decreasing plasma levels of tryptophan, the amino acid precursor of serotonin, in depressed patients who had responded to an SSRI. Many of the patients suffered a rapid relapse in the symptoms of depression which was attributed by inference to a decrease in serotonin levels.

Parallel neurochemical studies of suicide completers involved measuring monoamines and their metabolites in brain tissue. The results have been similar to those found in suicide attempters, that is that serotonin levels were reduced (Stoff and Mann, 1997). Since the initial work in this area the association between suicide attempts and low serotonin levels has been reported in over 20 studies. Asberg (1997) has hypothesized that low levels of serotonin in suicide attempters may predict increased risk of completed suicide.

Although considerable progress has been made in clarifying the role of the serotonin system in suicide, the basic neurobiology of suicidal risk has still to be explained and a distinct and complete constellation of neurochemical and/or neuroanatomical deficits is yet to be identified. Most 5-HT studies of suicide attempters have demonstrated abnormalities in 5-HT related indices, leading to the hypothesis that reduced serotonergic activity is associated with increased risk (Stoff and Mann, 1997).

Sociological theories.

Durkheim's theory of suicide.

Durkheim (1897/1951) in his classic work, *Suicide: A study of sociology,* defined suicide as " the termination of an individual life resulting directly

from a positive or negative act of the victim himself which he knows will produce this fatal result".

He argued that it was the strength of an individuals integration into society and the degree of social regulation, that determined whether or not he or she would succumb to suicide. This sociological theory remains one of the most powerful for predicting suicide rates. He identified four types of suicide that reflected the individual's relationship to society. The first type was egoistic suicide which stemmed from a lack of integration into society. These people are also typically poorly integrated into their own families and may have their own rules for conduct which are expressed in terms of private interests. The second type he identified as altruistic suicides. These individuals are insufficiently individuated or overly integrated into society and their behaviour is largely determined by the customs of the group. Examples are the Japanese kamikaze pilots in the Second World War and the suicide raids of the Islamic fundamentalists. The third type is the anomic suicide. This type occurs when society has failed in its regulation and integration of its members. It occurs when there are changes in equilibrium, when limits are upset, without clear guidelines on how to behave. The fourth subtype, fatalistic suicide, was only mentioned briefly by Durkheim in a footnote and he said that it was difficult to cite examples. However, some contemporary authors suggest that this type may be more common now than in Durkheim's time. This was seen as being caused by excessive societal regulation that

fundamentally restricts an individual's freedom. Victims feel that they have no viable alternative.

Modern sociologists have argued for combining the dimensions of 'the degree of social integration' and 'the degree of social regulation' as they are so difficult to measure (Johnson, 1965). They have consequently proposed that the relationship between suicide rates and the degree of social integration/ regulation is linear and inverse. That is, as social integration/regulation increases in a society, the suicide rate should decrease (Lester and Abe, 1998). However, Lester and Abe (1998) have presented evidence suggesting that this modern reformulation of Durkheim's theory may be inappropriate for non-European nations.

Williams (1997) has summarized some of the criticisms of Durkheim's approach. Firstly, he failed to operationalise the concept of social integration. Modern sociologists have devised clearer definitions of terms. For example, 'status' may be measured in terms of the variety of roles and statuses a person has in society. A person may be female and black in society, a mother and wife in the family, a doctor and financial manager at work. In this way it is possible to compare individual patterns of statuses with other combinations common in society. Secondly, Durkheim based his conclusions on studies of western society and there is evidence that in other societies risk factors are different. As Lester and Abe (1998) have shown, some Eastern societies do not conform to predictions derived from Durkheim's work. For example,

Lester (1995) found that in Taiwan divorce rates are negatively associated with suicide while birth rates were more positively associated with suicide rates - both associations opposite to those expected on the basis of modern interpretations of Durkheim's theory. In Japan Lester and Abe (1998) also found that measures of family social integration were not consistently associated with the suicide rate in the manner predicted by Durkheim's theory. Thirdly, Durkheim argued for a separation of melancholic suicide from depressive suicides. He believed that in melancholic mental illness the person's depression was not related to external factors whereas in depressive suicides there was an external cause. This analysis has not stood up to modern scrutiny. There is no clear-cut difference between different types of depression on the basis of some being preceded by negative life events and others arising for no apparent reason.

Maris (1997) has also highlighted some of the difficulties with Durkheim's theory. In particular, he asserts that the relationship of age and gender to the suicide rate, is more complex than Durkheim realised. Furthermore, Durkheim seriously underestimated the role of alcoholism, mental and physical health, race, biological factors, contagion and individual psychological factors on suicide.

Maris (1981) has extended Durkheim's work by focussing on developing the concept of suicidal careers. Maris' empirically based theory moves away from a static, structural focus to emphasize a dynamic developmental model of

suicide. His thesis is that the suicidal individuals career or life history establishes a vulnerability to suicide. His theory has moved traditional sociological theory and research toward a broader integration with a more psychological focus.

Psychological Theories of Suicide.*[1]

Psychoanalytical perspectives on suicide.

Although Freud never wrote a paper specifically about suicide, much of his early thinking is contained in the influential 1917 paper *Mourning and Melancholia* in which he explored the psychodynamics of depression. In particular, he was concerned with comparing severe depression with the normal experience of mourning following loss. Freud proposed that while most individuals coped with the loss of a loved object through the process of mourning, there were other certain vulnerable individuals in whom the loss experience was unbearable and generated enormous anger. The individual experiences ambivalence but preserves the mental representation of the loved object by internalization and it becomes part of the ego. Angry reproaches towards the lost loved object are not possible and so they are transformed into self-reproaches and the wish to harm oneself. When these feelings reach a critical pitch, they lead to urges of self destruction.

[1] Some parts of this chapter have been published as Williams, J.M.G. and Pollock, L.R. (1999). The Psychology of Suicidal Behaviour. In K. Hawton and K.van Heeringen (Eds.), The International Handbook of Suicide and Attempted Suicide, (pp. 89-103). London: Wiley.

This was not Freud's definitive statement on suicide and in later writings he addressed this topic again. He proposed that all individuals were closed energy systems and believed that there was a limit on the amount of psychic energy that each person had available to them at any time. He termed this energy, libido. Furthermore, he proposed the presence of two major forces which are in constant dynamic balance - Eros and Thanatos. Eros is the life force driving us towards survival. It can be seen as consisting of the positive influences in life such as altruism, compassion and humour. In contrast to this is Thanatos, the death instinct, driving us towards a return to the stability of the inorganic state. Thanatos consists of the negative traits that prevent us reaching our potential, for example, anger, jealousy, guilt. There is a constant interplay between these forces during an individuals life. Freud also hypothesized that threatening thoughts or experiences are repressed in the unconscious, using libidinal energy. As a result of the energy being used in this way the individual system may experience disequilibrium, with less energy available for growth and development. In this situation the person risks the life force being overwhelmed by the death force. Essentially, Freud saw suicide as the outcome of an intrapsychic struggle.

Psychoanalytic theory has had a powerful influence on our understanding of suicidal behaviour. It was only with the publication of Freud's (1917) "Mourning and Melancholia" that the focus was turned to the psychology of suicide. The influence of this paper was so strong that it affected psychodynamic studies of suicide for the next forty years. This work and

subsequent studies were important because they focussed attention on, and helped develop our understanding of, the inner forces at work in suicidal people.

Later psychoanalytic theorists developed Freud's original ideas. Zilboorg (1937) was critical of the view that the death instinct explained suicide. He argued that revenge, fear, spite and fantasies of escape are often the psychological triggers for suicide. He also suggested that most suicides are impulsive acts. His work expanded the focus on internal mechanisms to include external factors. Menninger (1938) suggested that suicides had three psychological components, the wish to kill, the wish to be killed and the wish to die. He also extended Freud's work by emphasizing the primary role of the death instinct. Litman (1967) concluded that the psychodynamics of suicide involved more than hostility. Feelings of abandonment, helplessness and hopelessness are important, as well as the emotional states of guilt, rage, anxiety and dependency.

The Behavioural Perspective.

The behavioural perspective has its origin in the early experimental work of Thorndike, Pavlov and others. They showed that by studying learning in animals it was possible to extrapolate the results to theorize about the principles of learning in humans. In 1898 Thorndike investigated the principles of operant conditioning and this was later developed and extended by Skinner (1938). They were interested in studying how voluntary responses

could be modified by reward and punishment. Pavlov's (1927) work with dogs was concerned with the other major strand of learning theory - classical conditioning, in which responses are not voluntary. This work was later shown to be applicable to a range of complex human behaviour (see Stillion and McDowell, 1996 for a review). There have been suprisingly few attempts to apply behavioural principles to suicidal behaviour. However, one aspect of behavioural theory which has been used to understand suicidal behaviour is social learning theory.

Social learning theory was a progression and development of this earlier work which began to incorporate social factors into understanding the learning process in humans. Bandura and Walters (1963) developed this approach which places weight on modelling and imitation as important factors in learned behaviour. Bandura (1977) introduced a modified version of learning theory which included the principles of modelling and self-efficacy as they interact within a social context. He believed that the modelling effect or observational learning is a function of three factors:

(1) characteristics of the model,

(2) attributes of the observer and

(3) reward characteristics of the behaviour.

Rogers and Carney (1994) in discussing Bandura's work point out that the power of the modeling effect is enhanced when the model and observer are similar in certain characteristics e.g., age and gender; but for other characteristics such as, power, status and competence, a difference between

the model and observer will prove optimal. There are also certain observer attributes that are hypothesized to influence modelling. These are self-esteem, motivation, level of dependency and prior reward history for conforming behaviour. Behaviours that do not produce the desired reward (e.g. environmental responses) will not be learned through modelling.

The forms of suicidal behaviour to which this model has been applied are cluster suicides and anniversary suicides. A suicide cluster refers to an excessive number of suicides occurring in close temporal and/or geographical proximity, whereas imitation is the process by which one suicide becomes a compelling model for successive suicides, as occurs in anniversary suicides (Gould, 1990).

Williams (1997) and Gould (1990) have reviewed evidence from a wide range of such studies and concluded that there is evidence for behavioural modelling of suicidal behaviour, that is, suicidal behaviour that was imitative. For example, Phillips (1974) examined the monthly suicide rates in the United States for the years 1947-1968 and found that the suicide rates were heavier after a widely publicized suicide story. Schmidtke and Hafner (1988) found convincing evidence for a media effect on completed suicides. Following a television series which included the fictional portrayal of a young male student suicide on a railway line, there was an increase in suicides in Germany.

In a very recent British study Hawton et al (1999) investigated the effects of a drug overdose in the medical television drama, '*Casualty*', on the number of people presenting to hospital with self-poisoning. They collected data from 49 accident and emergency departments in the United Kingdom. They found the number of patients presenting with self-poisoning increased by 17% in the week after the broadcast and by 9% in the second week. 15% of the patients who had seen the drama said the episode had influenced their decision to take an overdose and a further 15% said it had influenced their choice of drug.

Media effects on suicide have been found in American, European and Japanese samples. The patterns appear to be similar with both celebrity and ordinary peoples' suicide generating imitation if they are sufficiently publicized. In addition, age effects have been found, with the age groups who are not fully integrated into social life, the young and the elderly, showing most susceptibility to imitative suicide (Stack, 1997). However, despite evidence that imitation is a factor in increasing risk of suicide there is little evidence that such effects occur in isolation of other vulnerability factors.

The Cognitive Perspective.

There are a number factors which differentiate behavioural perspectives of suicidal behaviour from cognitive models. In behavioural models emphasis is placed on the effectiveness of positive reinforcement as a maintaining factor of the behaviour under question. Most behavioural theories focus on overt

behaviour as being ineffective in obtaining rewards or on the responses of others offering poor rewards. By contrast cognitive theories focus on the importance, not of rewards, but of the contingency between actions and reinforcements. These models emphasize the importance of attitudes, self-statements, images, memories and beliefs. The major early proponents of the cognitive approach as related to depression and suicidal behaviour were Seligman and Beck.

The important work by Seligman (1975) on learned helplessness is based on learning principles derived from experiments on animals. Seligman and Maier (1967) found that dogs that had received a pretreatment of inescapable shock performed poorly in a subsequent experiment requiring them to escape a shock when placed in a shuttlebox. These dogs seldom tried to escape. They made an initial struggle and then lay down and whined, seeming to give up and accept the shock passively. They performed more poorly than dogs who had received a pretreatment of escapable shock and dogs who had received no pretreatment. It seemed when faced with uncontrollable shock the animals learned helpless behaviour.

Seligman claimed that learned helplessness could be produced across species and in a variety of situations. He identified the main behavioural features of learned helplessness as deficits in response initiation and in the ability to learn that responding produces reinforcement and argued that these occurred as a result of the expectation that responding and reinforcement are independent. He argued that these features were similar to those found in

depression and proposed that this learned helplessness phenomenan could be a model of reactive depression in humans. In the same way that animals exposed to inescapable stress showed later motivational, cognitive and emotional changes which undermined effective instrumental responding, so reactive depression may have resulted from stress perceived as uncontrollable which would lead to the expectation that future reinforcements would be out of the person's control. It was hypothesized that this would lead to the passivity, negative expectations and affective disturbance seen in depression. This was a cognitive theory (even for animals) and different from behavioural theories in that it made inferences about cognitive processes (i.e. expectation of response reinforcement independence). It focussed on two main aspects of stress: its aversiveness and its uncontrollability. These are important elements or themes which occur again and again in clinical literature on suicidal behaviour.

However, there were several features of depression in humans that this theory was unable to explain. These were the loss of self-esteem in helpless subjects, the generality of depression across situations and the individual differences in the persistence of depression. These inadequacies in the model resulted in a reformulation of the helplessness theory. In 1978 Abramson, Seligman and Teasdale presented a reformulation of learned helplessness as applied to humans, in attributional theory terms. They suggested that simply being exposed to uncontrollable stimuli is insufficient for deficits in cognitive, motivational and emotional functioning to occur; they proposed that persons

must expect that personally important future outcomes are uncontrollable in order for helplessness to be induced. Under these circumstances attributions for events would make a difference. These attributions were seen as varying along three dimensions; internal versus external locus of control, stable versus unstable conditions and global versus specific attributions.

In 1989 Abramson, Metalsky and Alloy revised the reformulated helplessness theory to produce their 'hopelessness theory' of depression. In essence the focus of this theory suggested that depression results from the expectation that desirable outcomes will not occur or undesired outcomes will occur and that no responses in one's repetoire will change this. Abramson et al. suggested that there were three types of inferences one could make about the negative event that could trigger a bout of depression. Firstly, if one attributes negative life events to stable, global causes, hopelessness depression may occur. Secondly, when an individual sees the negative consequences of an event as important but unchangeable and affecting many areas of life hopelessness depression may occur. Thirdly, the negative event needs to be important to the individual in the way it affects their self-image, self-esteem and personality. Individuals develop a sense of hopelessness in proportion to their sense of their controllability of a situation. They postulate that individuals who show these features have a 'depressogenic attributional style'. Another feature of this theory is that there are people who display 'domain specific' vulnerability to depression. That is there are certain areas of their lives which are more vulnerable than others to depression.

Clearly this model can be applied to suicidal behaviour in that if an individual facing a problem situation views it as aversive and uncontrollable and believes there is no escape and that it occurred due to some shortcoming in themselves, it is likely to induce in them a sense of hopelessness which will make them vulnerable to suicide.

The influential research by Beck is another mainstay of cognitive theory. Beck's cognitive theory of depression was developed from clinical observations rather than empirical studies. Beck (1976) outlined three major components of emotional disorders which comprised his cognitive model. Firstly, he described the presence of negative automatic thoughts which he had observed in his patients over the years. They were automatic in that they seemed unprompted by events and were accepted unchallenged by the patient. Their effect is to disrupt mood and draw the individual into a downward spiral of negative thought. Beck described a negative triad that characterised depressive thoughts. These were a negative view of the self, the world and the future. Secondly, he described the presence of systematic logical errors that characterised depressive thinking. These errors included arbitrary inference, overgeneralization, selective abstraction, magnification and minimization, personalization and dichotomous thinking. Thirdly, Beck proposed the presence of depressogenic schemas. These are general, long-lasting attitudes or assumptions about the world which represent the way in which the individual organizes his past and current experience. It is this

system which is used to classify all incoming information. Beck proposed that these schemas develop over the years and although they may not be readily evident, they lie dormant ready to be activated by a combination of stressful events.

Beck suggested that the cognitive triad represents the patient's negative view of the self, world and future. His work has demonstrated the importance of hopelessness, as associated with a pessimistic view of the future and as reflected in a low self-concept, as a precursor of suicidal ideation (Beck 1972; Beck and Stewart, 1989). Within the cognitive framework, a sense of hopelessness has been found to be one of the most important variables implicated in suicdal behaviour. Weishaar and Beck (1992) conceptualise hopelessness as a state of negative expectancies and describe a number of studies in which a relationship was found between hopelessness and a wish to die (Lester, Beck and Mitchell, 1979) and hopelessness and an increase in suicidal wishes (Nekanda-Trepka et al., 1983). Other work has found a stronger relationship between hopelessness and suicidal intent than depression, for suicidal ideators (Bedroisan and Beck, 1979) and suicide attempters (Beck, Weissman and Kovacs, 1976; Minkoff et al., 1973; Petrie and Chamberlain, 1983). Beck, Kovacs and Weissman (1975) found that hopelessness mediated the relationship between depression and suicidal intent in suicide attempters. A large number of studies have supported hopelessness as a risk factor for suicide in in-patients and outpatients (Beck et al., 1989; Beck, Steer, Kovacs and Garrison, 1985). Beck and colleagues have

also engaged in longitudinal studies which have demonstrated the usefulness of hopelessness as predictor of suicidal intent, (Weishaar and Beck, 1992). For example, they followed up a group of suicidal ideators and found that those who eventually committed suicide had significantly higher hopelessness scores than the group of suicide attempters (Beck et al., 1985; Beck and Steer, 1989). Beck's cognitive theory views hopelessness as a stable schema including negative expectations. Although hopelessness may fluctuate during episodes of depressive illness the level of hopelessness in one episode of illness is an indicator of the levels in subsequent episodes (Beck, 1988). He argues that hopelessness seems to have trait qualities in some people and they may be prone to chronic suicidal behaviour. Despite this Beck remains optimistic that hopelessness is a risk factor which can be treated with cognitive techniques (Weishaar and Beck, 1992).

Integrative Theories.

Although the dynamic, behavioural and cognitive theories reviewed above are important background frameworks, they only apply to suicidal behaviour in a general way. In this section the focus turns specifically to suicide and three theories are considered: Schneidman (1993), Leenaars (1996) and Williams (1997).

Schneidmans (1993) theory of suicide.

Schneidman (1993) has proposed a theory of suicide which is an elaboration and development of some of the elements of the cognitive position. It is based

on the presence of the following fundamental elements: intense, unbearable psychological pain related to thwarted psychological needs, self-denigration, constriction of the mind, a sense of isolation, an overwhelming feeling of hopelessness, and, a conscious decision to end life as the only possible solution to the problem of unbearable pain. Schneidman sees these elements combining to result in suicide. The key element in Schneidmans theory is the sense of intense and unbearable pain, "psychache", that the individual feels in the situation and the suicidal act is designed to stop that pain. This position has led to Schneidman (1985) proposing ten commonalities of suicide. These are:

1. The common purpose of suicide is to seek a solution.
2. The common goal of suicide is the cessation of consciousness.
3. The common stimulus in suicide is intolerable psychological pain.
4. The common stressor in suicide is frustrated psychological needs.
5. The common emotion in suicide is hopelessness - helplessness.
6. The common cognitive state in suicide is ambivalence.
7. The common perceptual state in suicide in constriction.
8. The common action in suicide is egression.
9. The common interpersonal act in suicide is communication of intention.
10. The common consistency in suicide is with lifelong coping patterns.

A number of criticisms can be levelled at Schneidman's commonalities of suicide. Firstly, some of the terms he employs are too broad, for example, 'to seek a solution', 'cessation of consciousness', 'frustrated psychological needs'.

Such broadness of concept makes the meaning of the terms unclear and it is difficult to test these statements empirically. Secondly, important concepts are not defined, for example in the third commonality, the 'stimulus' in suicide is not defined. In the seventh statement he refers to the common perceptual state in suicide being constriction. Whether this is a perceptual state is open to debate and once again these terms are not defined. The common action in suicide is described as 'egression' defined in the Oxford dictionary as "going out or way out". Does Schneidman mean to convey a sense of escape? This is not clear. Thirdly, it not clear how some of the concepts mentioned would be measured, for example, 'frustrated psychological needs' and 'ambivalence'. Schneidman suggests that the common cognitive state in suicide is ambivalence, yet is this present in all suicides? It could be argued that in some elderly suicidal people with a terminal illness, for example, there is little ambivalence present. In the tenth statement Schneidman suggests that the common consistency in suicide is with lifelong coping patterns. He does not consider that the main consistent feature may instead be a massive "state" effect rather than lifelong coping patterns.

Schneidmans theoretical model on suicide is based on the presence of three elements: pain, perturbation and press (pressure). Pain refers to the subjective experience of unbearable psychological pain, perturbation is reflected in agitation and impulsivity, and, press refers to the pressures and influences that affect an individuals feelings thoughts and behaviours. When an individual experiences high levels of these elements they are at risk for

suicide. However, it is not clear how one would distinguish between these three elements in a practical sense. Furthermore, in Seligman's model described earlier emphasis was placed on the presence of two important and critical elements, uncontrollability and inescapability. Schneidman does not address these elements in his formulation.

Schneidman's theoretical model of suicide seems too generic a theory to be useful. The terms he uses are broad, not defined and it is unclear how these elements would be measured. The model is important in the context of the history of suicidology in the sense that it is one of the fuller and more robust attempts to describe a model of suicidal behaviour. However, although its weaknesses outweigh its strengths it forms a stepping stone to the development of more focussed and robust models which can be empircally tested.

Leenaars (1996) theory of suicide.

Leenaars (1996) has proposed a theory of suicide which is based on the presence of intrapsychic and interpersonal factors. The essential intrapsychic elements are unbearable psychological pain, cognitive constriction, indirect expressions (which consists of complications and concomitant ambivalence feelings and attitudes), inability to adjust and weakened ego function. The essential interpersonal elements are impaired interpersonal relations, an ambivalent sense of abandonment and self-directed aggression, and, intense identification with a lost or rejecting person, which, if this emotional tie

cannot be restored, results in egression (a term borrowed from Schneidman). This theory focusses on the presence of both internal and external factors.

Leenaar's theory again seems too broad to be useful. Terms are used which seem to overlap in meaning, for example, are 'cognitive constriction', 'inability to adjust' and 'weakened ego function' different independent variables? Is an 'ambivalent sense of abandonment' always present? His terms are not defined and it is unclear how these elements would be measured. Although Leenaars does take some vulnerabilty and precipitating factors into account in his theory, his consideration of maintaining and alleviating factors, such as social support, financial situation etc, is limited. Furthermore, like Schneidman he does not consider the role of elements such uncontrollability or inescapability. This theory is a development from Schneidman's model incorporating some features of the psychodynamic approach, but it remains too broadly described to be of practical clinical and experimental use.

The Cry of Pain Theory (Williams, 1997).

Williams (1997) has proposed a theory of suicide which is closely based on research findings in cognitive psychology. He argues that in the past suicidal behaviour was seen as a 'cry for help' but that this idea has outlived its usefulness because it was sometimes interpreted as a lack of genuineness on the part of the attempter and used in a perjorative manner. Although suicide

attempts may result in communication in some form this may not be the main motive of the attempt. Williams suggests that suicidal behaviour is elicited by a situation in which the person feels trapped and it is more constructive to view the basic dimension of suicidal behaviour as a sense of "entrapment and helplessness in the face of actual or threatened loss" (Williams, 1997, p151).

Adopting this view enables one to conceptualise all suicidal behaviour as occurring along a continuum. For example a low intent suicide attempt can be seen as the early stages of the protest response against loss of rank or threatened entrapment. At this stage people are more ambivalent and use less lethal methods. As these people suffer repeated exposure to situations in which they fail or feel they are failing , self-denigration, worthlessness and despair take hold leading to more seriously suicidal behaviour.

Williams sees the process of suicidal behaviour as occurring in the following way. An individual finds themselves facing a problem or series of problematic situations which result in feelings of stress. As this continues the person becomes aware of important areas in their life over which they lack control. The 'cry of pain' initially manifests itself as feelings of anger as a protest response to the feelings of entrapment. As negative experiences continue the anger becomes mixed with escalating feelings of hopelessness and despair. Under this pressure the person becomes more cognitively rigid and normal escape routes are overlooked. Offers of help are rejected and alienation increases together with apathy and a sense of hopelessness.

Alternative escape routes are considered. The likelihood of suicide occurring depends on how overwhelming these feelings are, whether there are models of such behaviour among family members or in the media, the support available, whether there are easily available means, the individual's level of impulsivity and whether there are drugs or alcohol involved which would reduce the persons fear of death, impair their judgement and release their normal inhibitions.

The strengths of this model are that it is derived from, and closely based on, research studies on suicidal people. It takes into account both the sense of uncontrollability and inescapability that the individual feels. It regards internal and external factors as important and focusses on the sense of entrapment that the suicidal person feels. However, there are several areas which the model does not address in detail.

Firstly, it is suggested that weaker or stronger motivation to die is determined by internal and external stresses yet details of these stresses are not defined or described. This seems too general and it may be useful to include more details of what these stresses may be. For example, in a recent study of suicides in Brighton and Hove precipitating stresses were categorized as, bereavement, physical illness or pain, HIV positive, impending court case, relationship breakdown,, child taken into care, redundancy (Clow, 1998). Categories of internal and external stresses could be developed from existing studies.

Williams suggests that the escape potential from a situation ranges from possible to impossible. The escape potential is evaluated by the person in the stressful situation. Yet it is unclear how researchers would measure, assess or determine this component of the theory.

Thirdly, Williams suggests that at important points in the pathway to suicide the individual makes judgements about the situation based on the aversiveness of the stress involved, its controllability and social support available. He argues that this judgement is affected by memory bias and memory deficit. However, there is a large body of evidence which demonstrates that suicidal individuals also have deficits in problem solving and this element should be given more weight in this theory.

The theory described by Williams (1997) highlights two important features: firstly, the view that suicide results from a sense of entrapment and secondly, that the same theory can be used to explain both attempted and completed suicides. Despite the criticisms above this model remains a potentially important contribution to our understanding of suicidal behaviour, particularly because it is based so closely on established suicide research findings.

Concluding remarks.

This chapter has considered definitions of suicide and suicidal behaviour and chosen those of O'Carroll et al. (1996). Biological, sociological and psychological theories of suicide have been reviewed. Each has some advantages but definitions of terms is a problem. Furthermore, whilst each theory of suicidal behaviour reviewed above succeeds in varying degrees in identifying what elements contribute to making individuals vulnerable to suicidal tendencies, clearly a different approach needs to be employed to understand the factors which will lead individuals to actually commit suicide or harm themselves. In other words, there needs to be a move from research on risk factors to research that identifies the risk mechanisms. This thesis focuses on social and psychological issues. One of the most consistent social 'facts' to emerge about suicide over the last few years is the increased risk for those living in rural areas. This study examines suicide trends in Powys, the largest and most rural county in Wales. Secondly, rural suicide trends in Powys are contrasted and compared with suicide trends in Manchester, a densely populated urban area. Thirdly, some specific risk mechanisms for suicide are examined. These are the role of mood, problem solving and autobiographical memory in non-fatal suicidal behaviour. Fourthly, the persistence of deficits in these psychological variables over time is considered in relation to suicidal behaviour.

CHAPTER 2.

Epidemiological and sociodemographic factors in suicidal behaviour.

In order to place rural suicides in context, national trends in suicide in the United Kingdom need to be considered. Suicide, although a relatively rare event, is one of the major causes of death and accounts for 1% of all deaths annually (Sainsbury, 1986b). It is the second most common cause of premature death in men aged 15 - 34 (after motor vehicle accidents) (Platt, 1992). In 1996 there were 4872 suicides in England and Wales (Kelly and Bunting, 1998).

Gender.

Kelly and Bunting (1998) have reviewed the official suicide deaths data from the Office of National Statistics for England and Wales, for the period 1982 - 1996. Their report shows that males are more vulnerable to suicide than females. They report that although male rates of suicide for England and Wales have decreased from 19.1 per 100 000 in 1982 to 17.4 per 100 000 in 1996 - a fall of 9%, over the same period, the suicide rate for women has fallen further. For women , the suicide rate has fallen from 9.8 per 100 000 in 1982 to 5.6 per 100 000 in 1996 - a fall of 56%. This fall in female suicides is particularly marked in the North West Thames region and in Wales (Charlton et al., 1992). Currently the male to female ratio is 4 : 1. This represents a

gradual change over the last twenty years as the ratio of male to female suicides has increased steadily from around 2 : 1 in the 1970s. In adolescents the ratio is even higher at 5:1.

When methods of suicide are examined by gender there seem to be clear differences. Violent means (e.g. hanging and firearms) are more frequently employed by men, while women tend to use nonviolent methods (e.g. drug overdose). Further discussion on the means of suicide is included later.

Age and suicide.

Lester (1997), surveying the changes in the UK suicide rate, reported that over the decade 1980 - 1990 total male suicide rates rose by 10%, youth suicides increased by 83%, while rates for the elderly decreased by 10%. Between the years 1982 and 1992 suicides have increased by 57% amongst men between 15 -24 and 13% for men 25 - 34 (Hawton, 1992; Pritchard, 1992). The highest rate of all age groups was in elderly men (Cattell and Jolley, 1995) at 22 per 100 000 (ONS, 1992).

Rates amongst young females declined by 21% between 1980 and 1990, whilst rates in the elderly decreased by 44%. Female vulnerability tends to rise linearly but very slightly with increasing age, male vulnerability rises markedly for ages 15 - 24, is at its highest for ages 24 - 44, falls between ages 55 - 74 and then rises again for men over 75. This increase in the elderly is

likely to be due to the loss of loved ones suffered by men in this age group as well as the increased likelihood of physical illness, (Cattell and Jolley, 1995).

However, the most recent comments come from Kelly and Bunting (1998) who have reviewed suicide trends in England and Wales for the period 1982 - 1996. They report that for men in the age groups 55 - 64, 65 - 74 and 75 - 84 the suicide rate has decreased by 30 - 40%. For the 45 - 54 age group rates have fallen by 15% and for the 15 - 24 and 35 - 44 age groups rates peaked in 1988 and have since fallen by about 10%. In contrast, in the 25 - 34 age group there was a 30% increase in suicides. Amongst males the age group with the highest suicide rate is the 85+ group followed by the 25 - 34 age group.

The rates for women over the same time period fell for nearly all age groups by amounts ranging from 45 - 60% for women aged 45 - 54, to 6% for women aged 25 - 34. However, in the 15 - 24 age group rates rose by 16%.

These lastest figures are consistent with Williams (1997) predictions, based on the idea that a major contribution to the fluctuations in suicide rates over this century has been cohort effects. Specifically, the reduction in elderly suicides is explained by a more vulnerable cohort eventually 'dying' out.

Marital status.

Married couples with children are at reduced risk for suicide. Suicide is more common in those who are single, separated, divorced or widowed (Buda and Tsuang, 1990). The highest rates are amongst divorced and widowed men (Kelly and Bunting, 1998). The loss of a spouse increases the risk and this risk is greatest in the first year after the loss (Macmahon and Pugh, 1965). Widowed men have higher rates than divorced men in every age group (Williams, 1997). Kelly and Bunting (1998) have found that suicide rates for women have decreased in all marital groups except for those who are single. People living alone lack the support that is provided by partners and families.

Ethnic Group.

There is very little research on suicides of different ethnic groups in the United Kingdom. Williams (1997) reports that some studies have found that the suicide rate for Asian women in the United Kingdom is almost double that for other women of the same age.

Raleigh and Balarajan (1992) conducted a study examining trends and levels of suicide in first generation immigrants to the United Kingdom. They found that standardised mortality ratios for men born in Russia, South Africa and France were more than double the national levels. A statistically significant

excess was also apparent for men born in Australia, Canada, Poland, Germany, Scotland, and Africa. In contrast suicide levels were significantly low among men born in the Indian subcontinent, the Mediteranean and the Caribbean. The patterns for women were broadly similar. In general , they found that the patterns displayed in the immigrants reflected the patterns of suicide in their countries of origin.

International studies show that suicide rates vary across different ethnic groups. In the United States rates for white Americans are twice those of non-white Americans (Buda and Tsuang, 1990). Native American people have a particularly high rate of suicide, with the effect greatest in those tribes undergoing the greatest and fastest cultural assimilation (Williams, 1997). In a South African study Flisher and Parry (1994) report that the highest rates for suicides were amongst white South Africans followed by Asians and then people of mixed race. Australian studies report that the suicide rate for Aboriginal and Torres Strait youth is higher than the general youth population (De Vaus, 1996).

Religious affiliation.

Suicide rates have been found to vary according to religious affiliation. In general the rates are higher among Protestants than Catholics or Jewish people. In a study carrrried out by Cross and Hirshfeld (1985) into suicide rates in New York the highest rates were found amongst Protestants (31.4 per

100 000) and the lowest rates amongst Catholics (10.9 per 100 000). The rate for Jewish individuals was 15.5 per 100 000. In Ireland, the Catholic religion has been associated with low levels of suicide (Kelleher, Corcoran and Keeley, 1997). An examination of the WHO international figures for suicide reveals that the Catholic countries of Ireland, Spain, Portugal, Greece and Poland have fairly low rates.

Economic conditions and unemployment.

In general, suicide rates increase in difficult economic times and decrease in times of prosperity. However, studies examining the impact of economic conditions and unemployment on the suicide rates have produced conflicting results. MacMahon et al. (1963) studied economic conditions and suicide rates and found that the two corresponded closely, especially in the white male population. In a study of unemployed men aged 15 - 64, which controlled for social class, it was found that the unemployed men had a standard mortality rate of 169 when compared with men in work (Moser, Fox and Jones, 1984). In a study by Boor (1980) unemployment and suicide rates were compared for eight countries: United States, Canada, Sweden, France, Great Britain, Germany, Italy and Japan. Positive correlations were found in all countries except great Britain and Italy and these correlations held true for both men and women. However, the relationship between unemployment and suicide is complicated by the possibility that some individuals may be vulnerable

both to becoming unemployed and to suicide (Platt, Micciolo and Tansella, 1992).

Social class and occupation.

The risk of suicide is greatest amongst professionals (Social class I) and unskilled (ClassV) manual workers. Unskilled workers are most affected by changes in economic circumstances in society. However, there are some specific categories of employment which are also particularly vulnerable. See Table 2.1 which gives the Proportional Mortality Rate and number of suicides for occupations with the significantly highest ratios of suicide to all-cause mortality for men 20 - 64, in descending order of lower confidence interval. "This method of ordering the PMRs has the advantage of taking account of both the magnitude and level of statistical variability" (Kelley and Bunting, 1998, p 34).

Occupation	PMR[1]	Confidence Interval	No. Suicides
Dental Practitioners	249	(161 - 367)	25
Vets	324	(148 - 615)	9
Farmers, farm managers, horticulturists	144	(124 - 166)	190
Sales representatives	151	(122 - 184)	97
Medical practitioners	147	(115 - 185)	71
Garage proprietors	155	(112 - 208)	43
Pharmacists	171	(111 - 252)	25
Other motor drivers	124	(108 - 141)	221
Painters, decorators and french polishers	119	(108 - 132)	389
Publicans	128	(108 - 152)	129
Builders	119	(106 - 132)	332
Cleaners, window cleaners, road sweepers	122	(105 - 139)	204

Table 2.1 *Proportional mortality rate by occupation, men aged 20 - 64, 1992-1996. (Adapted from Kelly and Bunting, 1998).*

Dental practitioners, vets and farmers had the three highest PMRs. Of the twelve occupational groups listed all except one showed a decrease between a 1982 - 1987 analysis and the present analysis. The exception was dental practitioners who showed an increase of 30% between the two time periods.

[1] The PMR is a ratio of how much more or less likely a death in a given occupation is to be from suicide as opposed to other causes of death. A PMR of 100 means that there is no difference in the ratio of suicide deaths to all deaths in the given occupation. A PMR of 200, for example, means the the occupation being referred to has double the proportion of all deaths certified as suicide compared to other occupations in England and Wales.

It is relevant to note that a high proportion of these suicides occur in occupations which are medically related and have access to, and, knowledge of medication.

The occupational groups with the highest suicide rates for women are shown in Table 2.2 below.

Occupation	PMR	Confidence interval	No. suicides
Medical practitioners	285	(185 - 421)	25
Domestic housekeepers	247	(141 - 402)	16
Veterinarians	500	(136 - 1279)	4
Waitresses	187	(132 - 258)	37
Nurse admin., nurses	137	(121 - 156)	240
Prof. education, welfare & health	183	(119 - 268)	26
Students	139	(117 - 165)	132
Cleaners	138	(112 - 169)	95
Hospital orderlies	130	(109 - 153)	139

Table 2.2 *Proportional mortality rates by occupation, women aged 20 -59, 1991 - 1996. (Adapted from Kelly and Bunting, 1998).*

As with men, the highest ranked occupations for women are those related the medical and associated professions. This again seems to provide some support for the argument that there is a link between occupations that have access to means of suicide and the level of suicides for those occupations.

Psychiatric status.

The psychiatric status of individuals at risk for suicide is an important factor as Appleby (1992) has described psychiatric patients as "the group above all others at high risk of suicide". He points out that there is evidence to suggest that most and perhaps all suicides, have had some history of psychiatric disturbance. Harris and Barraclough (1997) suggest that there is a strong association between mental disorder and suicide and that psychological autopsy studies show that some 90% of suicides have a psychiatric disorder when they kill themselves. Buda and Tsaung (1990) suggest that as many as 95% of people who complete suicide have a psychiatric illness. Tanney (1992) reviewed 15 studies concerning overall mortality and deaths by suicide in psychiatric patient populations and found that 4.75% of all psychiatric patients will eventually die by suicide. All diagnostic categories of psychiatric illness carry an increased risk of suicide, but the diagnostic categories which are considered high risk diagnoses are: affective disorders, schizophrenia, alcohol dependence and personality disorders. For many years the accepted lifetime risk for individuals with these disorders for suicide was quoted as 15% for affective disorders, and alcohol dependence

and 10% for schizophrenia (Guze and Robins, 1970). Recently , however, these levels of risk have been challenged by Blair-West et al.,(1997) and Inskip, Harris and Barraclough, (1998) who argue convincingly that the lifetime risk of suicide for patients with these diagnoses is considerably lower. Inskip, Harris and Barraclough (1998) surveyed 79 studies using sophisticated computer modelling techniques and suggest that more appropriate levels of lifetime risk are 6%, 7% and 4% respectively. Blair-West et al., (1997) argue that the lifetime risk of affective disorders may be as low as 3.5%.

Mood disorders are the most common mental illness diagnosed in retrospect among 45 - 70% victims of suicide following psychological autopsy studies (Nordstrom et al., 1995). 64% of people who kill themselves have an affective illness and this figure increases to 77% when alcohol dependence is the primary diagnosis (Barraclough, 1974). Barraclough and Pallis (1975) found that those who had completed suicide had made attempts ten times more frequently than living depressed patients and that the course of depression was longer in those who had completed suicide than in controls. Harris and Barraclough (1997) conducted a meta analysis of twenty three studies involving subjects with a diagnosis of major depression and found that the associated risk of suicide was twenty times greater than expected.

In a study by Tsuang (1978) it was found that there was an increased rate of suicide in male patients shortly after discharge from hospital. Appleby (1992)

suggests that in individuals with a psychiatric illness the periods of greatest risk are at the beginning of an acute phase of illness and after in-patient discharge particularly during the first three months.

After affective disorders, alcohol dependence carries the greatest risk of suicide. Alcohol abuse is present in 15 - 25% of all suicides (Henriksson et al.,1993; Williams and Pollock, 1993; Morgan et al., 1994). Appleby (1992) suggests that the timing of alcohol dependent patients' suicide is dependent to a large extent on concurrent depression. Barraclough et al.(1974) found that 75% of alcoholics committing suicide suffered from a major affective disorder. Personality problems may also play a role. Many alcoholics have no social support, default on treatment, are unmarried or divorced and isolate themselves prior to suicide (Buda and Tsuang, 1990). Murphy and Robins (1967) studied a group of 31 alcoholic suicide victims and found that at least half had experienced a loss in a significant relationship in the year preceding the suicide compared to fewer than 20% of depressed patients who committed suicide. They also noted that 33% of the alcoholic patients had experienced a close personal loss within six weeks of the suicide. In a later study Murphy et al. (1979) found that 26% of suicide victims had experienced a personal loss within six weeks of the suicide.

The largest proportion of schizophrenic individuals who die of suicide tend to be unmarried males who are unemployed and have been functioning at a fairly high level prior to the onset of the illness. The co-occurrence of alcohol

or drug abuse in this group also contributes to the suicide risk. Most of these people are not accepted in their families, felt inadequately understood and hopeless about the future. They often have previous attempts and use more violent methods (Blumenthal, 1990). According to Schaffer et al. (1974) the number of previous attempts is a most important risk factor associated with suicide in schizophrenics. A longitudinal study by Allebeck and Allgulander (1990) found a diagnosis of schizophrenia to hold the greatest risk of death by suicide. Allebeck et al. (1987) in an earlier study concluded that many schizophrenic suicides were impulsive rather than mood-related. Appleby (1992) summarises the findings of various studies by suggesting that the schizophrenics most at risk are young men with a short illness, a history of parasuicide, features of affective illness and hopelessness. They may be unemployed , unmarried and alone. The period of greatest risk is shortly after discharge.

Personality disorders are also contributory risk factors for suicide. Borderline and antisocial personality disorders are particularly associated with suicidal behaviour in adults (Blumenthal, 1990). Miles (1977) has suggested that 5% of those with antisocial personality disorder eventually complete suicide, whilst Tanney (1992) has declared a figure of 6.5% for those with a diagnosis of borderline personality disorder. Henriksson et al. (1993) reviewed 229 cases of suicide and found that 31% were diagnosed as suffering from a personality disorder. In 9% of the patients the diagnosis of personality disorder was the primary diagnosis. Tanney (1992) has argued that studies may have

underestimated the prevalence of suicidal behaviour in those with a personality disorder since personality disorders do not appear as the principal diagnosis in most patients.

Co morbidity.

Henriksson et al. (1993) highlight the importance of comorbidity in suicide and suggest that the contribution of comorbid depression and alcohol dependence is on the increase. In their study of 229 psychiatric patients they found that 93% of suicide victims received at least one diagnosis on Axis 1 whilst 44% had two or more diagnoses on Axis 1. Only 12% had an Axis 1 diagnosis without comorbidity. Comorbidity was significantly more common among males than females. These researchers also found that among individuals with a diagnosis of depression, 24% had concurrent alcohol dependence. Among victims with alcohol dependence, 22% had a major depression and 26% had a depressive disorder not otherwise specified. A personality disorder was diagnosed in 42% of the cases with alcohol dependence. Heikkinen et al. (1997) studied a sample of 56 suicides with a diagnosis of personality disorder. They found that 27% of the group had a major depression and 48% had concurrent alcohol dependence. Henriksson et al. (1993) recommend that comorbidity is an important factor in the relationship between suicide and specific mental disorders and should not be overlooked.

Previous attempts.

A previous suicide attempt places an individual at very high risk of suicide and is the best single predictor of whether a person will go on to complete suicide. Despite this only 1% will go on to kill themselves in the following year (Hawton and Catalan, 1987). However, if this follow-up period is extended a higher percentage will eventually kill themselves. In a Danish study employing a five year follow-up period the figure was 11.6% (Nielsen, Wang and Bille-Brahe, 1990) and in a recent Swedish study where the follow-up was conducted for a period of 5-8 years the overall mortality figure was 11% (Nordstrom et al., 1995). Men are at particular risk after attempted suicide. In Nordstrom et al's study 17% of the young men who attempted suicide eventually killed themselves.

Research studies suggest that certain psychiatric disorders are associated with suicide attempts. People who make a non-fatal suicide attempt are more likely to have personality disorders, chemical dependence and situational disorders (Blumenthal, 1990).

Access to means of injury - controlling the environment.

The effect of access to lethal means of injury on suicide rates is an unresolved question. Evidence suggests an association between availability of means

and the suicide rate and this has been shown for three methods, domestic gas, barbiturate poisoning and firearms (Marzuk et al. 1992).

Domestic Gas.

Stengel (1964) was one of the first researchers to propose controlling the environment as a means for decreasing the rate of suicide. He noted that the detoxification of domestic gas might have played a role in reducing the suicide rate in countries where the change had taken place. Kreitman (1976) conducted a study which was the first convincing evidence that the drop in the English suicide rate was the result of the detoxification of domestic gas. Kreitman noted that percentage of carbon monoxide in coal gas declined from 13% in 1955 to 0% in 1975. When examining the suicide rate over this time period he found a concurrent decline in the rate of deaths by this method for all ages groups and both sexes. For example, between 1948 and 1950, poisoning by domestic gas accounted for 41% of male suicides and 60% of female suicides. By 1970 the rates had fallen to 16% for males and 9% for females. Suicide by domestic gas poisoning had completely ceased by 1990. Deaths by other means of suicide rose over the same period but not enough to prevent an overall decline in the suicide rate. Clarke and Mayhew (1988) examined this same phenomenan in greater detail. They were able to show that the curve for the gradual detoxification of domestic gas followed the curve for the declining suicide rate using domestic gas and overall, extremely closely. In 1958, there were 2637 suicides using domestic gas out of 5298

suicides (49.8% of the total). By 1977 the percentage had dropped to 0.2%; only 8 suicide deaths by domestic gas out of a total of 3944 suicides.

Lester and Abe (1989a) examined the effects of the detoxification of domestic gas on suicide in Japan from 1969 to 1982. They found a similar pattern with suicide deaths by domestic gas and the production of toxic gas. There was an increase in both until the early 1970's and then a rapid decrease. They concluded that as the availability of toxic domestic gas declined, the use of domestic gas for suicide also decreased. Comparing all methods of suicide over the same time period they found a gradual rise in the suicide rate. However, as toxic gas became less available, there was a slower concurrent rise in the suicide deaths by other methods and they concluded that displacement to other methods did not take place.

Lester (1990b) then examined the detoxification of domestic gas in the United States which occurred during the 1950's. He found that as domestic gas was detoxified there was a corresponding decrease in suicide deaths by domestic gas. However, he noted that an increase in car ownership and suicide deaths by car exhaust gas over the same period suggests that men may have changed from domestic gas to car exhaust fumes for suicide.

In a further analysis on this theme, Lester (1990e) examined the effects of the detoxification of domestic gas in Switzerland. Here he found a decline in the rate of suicide by domestic gas and an overall corresponding decline in the

total suicide rate. He concluded that in this country people did not appear to have switched to other methods of suicide. Summarizing his findings on the effects of the detoxification in six countries, Lester (1995b) concluded that the effect of detoxification was beneficial on the overall suicide rate only in those countries where the use of domestic gas as a means of suicide was common.

The detoxification of car exhaust emissions and its relationship to the suicide rates has been examined in a number of studies. In order to improve air quality the USA introduced emission control measures for motor vehicles in 1968. As a result the carbon monoxide content in car exhaust emissions decreased from 8.5% to 0.05% by 1980. Lester (1998) suggests that this has made it more difficult to commit suicide by this method. Poisoning takes much longer due to reduced toxicity of the gas, increasing the risk of intervention by others and changes of mind in the suicidal individual. Clarke and Lester (1987) found that the use of car exhaust gas for suicide in the USA levelled off and perhaps declined slightly after 1968. In England and Wales, where emission controls had not been imposed on cars, the use of car exhaust gas for suicide rose dramatically after 1970.

Lester (1989g) investigated gender differences in the the use of car exhaust gas for suicide following the introduction of emission controls in the USA. He found that the male rate dropped immediately, whereas the female rate rose for another eight years before it began to decline. Lester and Abe (1989c) studied suicide by car exhaust gas in Japan between 1965 and 1982. The

suicide rate using car exhaust gas rose until 1975 and then levelled off perhaps as a result of emission controls that were introduced in 1975. The suicide rate by all methods rose concurrently up to 1973 suggesting that with the introduction of emission controls there was little evidence of switching to other methods. A study by Curran and Lester (1991) in Northern Ireland found similar results. As the use of car exhaust gas as a method of suicide increased, suicide by all other methods did not become less common.

Barbiturates.

Some researchers have shown an association between the availability of barbiturates and the suicide rate. Oliver and Hetzel (1973) examined the relationship of changes in the suicide rates in Australia with the availability of sedatives, and found that when sedatives were restricted in the 1960's their use for suicide declined without there being an increase in other methods. Lester (1990f) found that in the United States the suicide rate using barbiturates was associated with the level of annual sales of barbiturates. Lester and Abe (1989b) studied the use of barbiturates in Japan. Prior to 1961 barbiturates were available over the counter without prescription. In 1961 the Pharmacy Act S.49 introduced the requirement of prescriptions for barbiturates and meprobamate. Lester and Abe examined the use of these medications for suicide prior to and following the introduction of this act. They found that from 1958 the use of sedatives and hypnotics were already on the decline but that the rate of the decline increased after the introduction

of the Pharmacy Act. They examined the suicide rate by all other methods and found that these rates were also on the decline. They concluded that there was no evidence that people switched to other methods once prescriptions were required for sedatives and hypnotics.

Firearms.

In the USA a number of studies have suggested a relationship between the strictness of state gun control laws and the suicide rate in those states, with states with strict laws having lowest firearm suicide rates, and, lowest total suicide rates (Lester and Murrell,1980). They found that states with stricter gun control laws and lower firearm suicide rates did not have higher suicide rates by poisoning, hanging/strangulation, although the suicide rate for 'other' methods was higher, leading them to conclude that switching to an alternative method of suicide did not occur to any great extent. Lester (1984) in a further analysis of this data was able to show that the restrictions on the selling and purchasing of handguns were the most critical characteristics of the laws in the association with lower firearm suicide rates. Restrictions on carrying firearms were not related to firearm suicide rates. Lester (1987b) studied the relationship between church attendance and suicide rates and found that the strictness of the handgun control laws and the percentage of citizens attending church accounted for 46% of the variation in the states' suicides rates. Lester and Frank (1988) examined types of firearms and the suicide rate and found that states with stricter handgun control laws in 1980

had a lower percentage of suicides using handguns and a higher percentage of suicides using long guns. Markush and Bartolucci (1984) studied estimates of gun ownership in the nine regions of the USA and found that there was an association with the total suicide rate, and the suicide rate by firearms, but not with the non-firearm suicide rate.

Rich et al. (1990) have reported on the gun control regulations in Canada and their relation to the suicide rates. They found that the stricter gun control laws in Toronto led to a decrease in the percentage of suicides using firearms, but a corresponding increase in the percentage of suicides by jumping to their death (primarily in front of subway trains). These results suggest that the suicidal individuals may have switched to another method when the availability of firearms was made more difficult. Leenaars and Lester (1998) have criticized this study on the basis of its small sample size, and suggested that the results are unreliable. They examined the effects of introducing stricter gun control laws in Canada (Leenaars and Lester, 1993; 1998 and Lester and Leenaars, 1994) and concluded that tightening the gun control laws in Canada in 1977 had resulted in a decreased use of firearms for suicide in Canada, and there was no definitive evidence that people switched to alternative methods. However, they conceded that displacement to other methods of suicide may have taken place for certain subpopulations. They reported the following age effects after the passage of Bill C-51. The percentage of suicides using firearms declined for those aged 15 - 64 but increased for those aged 65+. This suggests that restricting the means

available may be less effective with the elderly, who may be more determined and less ambivalent and impulsive than the young, in their attempts at suicide.

Access to other lethal means.

Marzuk et al. (1992) conducted a study examining the effect of access to lethal means of injury on the suicide rates in the counties of New York. Their results supported the notion that differences between communities in their access to specific lethal means, to a large degree, accounts for differences in their overall suicide rates. They suggest that certain subsections of the population are more likely to commit suicide impulsively and in these cases restricting access to lethal means of injury would have a beneficial effect. Other individuals, more determined to die, may plan their suicides very carefully and are therefore more likely to substitute other methods if deprived of access. Restricting access to lethal means may reduce the risk of suicide for some groups but not others.

In the United Kingdom, Kelly, Charlton and Jenkins,(1995) examined the method of suicide in the 10 highest risk occupations and showed that poisoning by solid or liquid substances was the method favoured by men in the medical and allied professions, vets and chemical scientists and engineers. They note that all of these occupations have easy access to drugs and other substances. Amongst farmers suicide by shooting accounted for

38% of deaths. This compares with with only 5% of all male suicides using a firearm. Firearms were also used in 21% of vets suicides. Both farmers and vets are likely to have easy access to shotguns. Self-poisoning is the method used for suicide by almost half of all female suicides. Self-poisoning was the method used by 83% of pharmacists, 58% of nurses and 56% of medical practitioners. All of these occupations have relatively easy access to drugs (Kelly, Charlton and Jenkins, 1995).

Lester (1998) notes that research findings in the area of access to means are not altogether consistent and different investigators have drawn different conclusions. However, in general results seem to indicate that reducing the availability of a means of suicide leads to a reduction in its use for suicide and may reduce the overall suicide rate particularly if the method restricted is commonly used and a lethal method.

Concluding Remarks.

The studies reviewed above reveal certain common features and vulnerability factors in people who commit suicide. We know that suicide is more common in people who are widowed, divorced, separated and single than married. The elderly, and males in the 25 - 34 age group are particularly at risk. In general there seems to be an association between unemployment and suicide and rates of suicide are highest in professional groups and manual workers. Psychiatric patients are the group most at risk and a history of a previous

attempt increases the risk of suicide. Co-morbidity places individuals at greater risk, particularly diagnoses of depression and alcohol abuse. Access to lethal means also places suicidal people at elevated risk. Recent studies of suicide in England and Wales show that suicide rates for young men aged 25 - 34 increased 30% between 1982 - 1996 and continue to rise. Amongst women the rate in those aged 15 - 24 has increased by 16% over this time period and also continues to rise.

Our understanding of suicide has been enriched by these studies yet how do they inform our understanding of rural suicides? There are few studies of suicide in rural areas, particularly in the UK, yet we know that people living in rural areas, particularly farmers, are at elevated risk for suicide. Is the profile of rural completed suicides similar to suicides in urban areas? Is the rural population older, subject to more cultural changes and economic pressures? Are they more isolated and more likely to have a psychiatric illness? In other words, when considering the rural population are we examining a population that has increased risk factors or is the critical factor that they have easier access to lethal means? Since Powys is one of the largest and most rural counties in the UK with a high proportion of farmers, we have an opportunity , in the current study to examine this issue more closely.

Chapter 3.

Rural suicide.

The limited number of studies that have examined suicide in rural areas have produced results which suggest that the profile, pattern and determinants of suicide in rural areas may differ from suicides in urban areas (Isometsa et al., 1997; Roberts, Simpson and Wilkinson, 1996; Lyster and Youssef, 1995; Gallagher and Sheehy, 1994; Gabriel, Paschalis and Beratis, 1993; Lester, 1991). These differences are important as most national healthcare stategies are based on the results of largely urban data which may be inappropriate in rural areas. It would seem that strategies for dealing with suicide in rural areas may be more clearly focussed if the underlying patterns and determinants were more clearly understood.

Lester (1991) has noted that there is a lack of association between urban and rural suicides and has proposed that the suicide rates in urban and rural areas may have different social determinants. Cullen and Connolly (1997) suggest that the experience of suicide in rural Ireland is different from that in the rest of the country and that there has been a high level of underreporting in rural Ireland. Gabriel, Paschalis and Beratis (1993) studying urban and rural suicides in Greece concluded that quite different factors lead to suicide in rural as opposed to urban areas. They suggest that the exact nature of these adverse conditions remains unknown and warrant further investigation.

Gallagher and Sheehy (1994) argue that the limited but growing number of research studies in the area suggest that there is evidence of a real increase in the incidence of suicide in rural areas. Pasewark and Fleer (1981) in a study of suicide in Wyoming, a large rural state, between the years of 1960 -75 noted that the pattern of suicides was different to those reported in other US studies, which were largely conducted in urban areas. They found a fairly uniform distribution throughout the social classes, self-inflicted gunshot deaths were common, elevated male rates (ratio 5:1) and no apparent relationship with changes in population growth.

Kelleher and Daly (1990) studying suicide in Cork and the Republic of Ireland noted that there was an increase in both urban and rural suicides in the years 1970 - 1985, but after 1978 the rural suicide rate rose more sharply than did the rate for urban suicide. Stallones (1990) reporting on suicide in Kentucky farmers found high rates of suicide and attributed this to the farmers changing economic environment and to social conditions (isolation and lack of mental health facilities) and to exposure to neurotoxic chemicals.

Lester (1991) made a study of urban and rural suicide in the USA taking into account a number of social variables. He found that rural suicide rates were higher than urban rates and that the social correlates for urban and rural rates were different. Rural suicide rates were higher in states that were more urban and wealthy and in states where indices of social disintegration were higher.

He found that rural suicide rates were higher in 40 states and lower in 8 states.

Dudley et al., (1992) studied urban-rural trends in youth suicide over the years 1964 - 1988 in New South Wales, Australia. They found that there was a substantial rise in suicide deaths by firearms and hanging in the 15 - 19 year old males and poisoning suicides had declined in both males and females over the past fifteen years. The suicide rates in urban areas had remained fairly stable whilst in rural areas the rates in 15 - 19 year old males had increased more than fivefold. There was no significant change in the rates for young women. Clearly, rurality alone was an insufficient explanation - interactions with this factor must be responsible since suicides by firearms in the rural areas had also increased by at least fivefold. They were able to attribute the dramatic increase in rural suicide to easy access to firearms, together with the common concurrent use of alcohol and drugs due to increasing socioeconomic, health and identity problems in rural youth.

Gabriel, Paschalis and Beratis (1993) compared suicides in urban and rural Greece and found that there was a significantly higher rate of suicide in the rural areas, particularly in the 45 -64 age group. They also found that the characteristics of rural suicides were not necessarily consonant with the profile of urban suicides. In their study it seemed that quite different determinants of suicide operate on women in urban and rural areas yet the exact nature of these adverse factors was unclear.

Gallagher and Sheehy (1994) report studies showing an increase in rural suicide in Denmark and Sweden. They also report a study by the Samaritans (1992) which suggests that farmers and farm workers were the second highest occupational risk group after medical practitioners. Kelly, Charlton and Jenkins (1995) indicate that farmers are at high risk of death by suicide and Charlton (1995) reported that between 1990-92 farmers made up 1% of the total male deaths by suicide with 103 deaths over the three year period. Kelly and Bunting (1998) in the most recent report on suicides in England and Wales (1991 - 1996) currently available show that farmers are the group with the third highest proportional mortality rate for suicide after dental practitioners and vets.

Roberts, Simpson and Wilkinson (1996) conducted a study of suicides in a rural area over a ten year period. They examined 120 deaths in a farming area of Yorkshire. They defined rural as less than 0.6 persons per hectare. They found that the rural parts of the district had a higher suicide rate than the less rural areas although this difference was not significant. In addition when compared with the national rates, there was a higher use of firearms among males and a higher use of hanging/strangulation or suffocation in females.

Duckworth and McBride (1996) carried out a study to identify urban-rural differences in elderly suicide in Ontario, Canada. They examined coroners records for all suicides over 65 years old that occurred between 1989 and

1991. They found that the rural sample was older and had a higher number of men (ratio 4 : 1). Rural suicides were found to have significantly higher rates of medical illnesses in each organ system and the presence of illness correlated with death by gunshot. Rural individuals had made fewer suicide attempts, used more violent methods, were more affected by death and loss and showed more marked monthly and seasonal variation. They rarely received psychiatric referrals or treatment. Duckworth and McBride conclude that these differences need to be taken into account in order to identify individuals at risk and to plan effective treatment programs.

Hawton and colleagues (Hawton, Simkin, Malmberg, Fagg and Hariss, 1998; Hawton, Fagg, Simkin, Hariss and Malmberg, 1998; Simkin, Hawton, Fagg and Malmberg, 1998) have carried out a series of studies into stress and suicide in farmers. They found that firearms and hanging were the most common methods used and that in most cases there was a clear intent to die. A quarter had a family history of suicide and lack of social support seemed relevant to suicide with many of the farmers who died lacking close friends and they seemed more likely to live alone. Hawton et al. found that a mental disorder was definitely or probably present in 82% of the farmers who died. Other stresses that seemed to contribute to the suicides were occupational and financial difficulties, legal, physical health and relationship problems. Indeed, physical problems were common in the working farmers with over a third having some sort of physical disorder at the time of their deaths.

Gallagher and Sheehy (1994) point out how difficult it is to identify those who will commit suicide but suggest a number of factors which consistently appear to be relevant in rural suicide. A history of psychiatric illness, working as a farmer or farm worker, being unemployed, male and living alone are all risk factors. They suggest that farmers may be at high risk as they have easy access to potentially fatal means, but point out that few studies have examined the method of suicide for urban - rural differences.

Gallagher and Sheehy (1994) also consider a number of other factors related specifically to rural living. They suggest that the increased mechanization of farm work in the 1980's caused employment opportunities in rural areas to decline sharply. Furthermore, the changes that will result from the Common Agricultural Policy in Europe and the General Agreement on Trade and Tariffs is likely to contribute to the continuation of this process. In 1992 the Rural Development Commission reported that between 1978 and 1988 the numbers engaged in agriculture fell by 94 000. The National Economic Development Council estimates that between 1988 and 1998 there will be a further reduction of 55 000 - 87 000 full-time farmers and employees. In the light of these figures, Gallagher and Sheehy (1994) suggest that it would be reasonable to predict 100 000 job losses in agriculture between 1990 and 2000.

Since the increase in the suicide rate amongst those living in rural areas seems to be highest amongst agricultural workers they infer that suicide and rural decline are related. Crombie (1990) provides some support for this view by

hypothesizing that the increase in the suicide rate in Scotland may be related to social change, in particular social deprivation.

Isometsa et al., (1997) agree that the current body of knowledge about psychiatric disorders and other characteristics of suicide victims is derived predominantly from studies of urban populations. In order to extend this knowledge base into the area of rural suicides Isometsa and colleagues examined a Finnish sample of 229 suicides, 143 urban and 85 rural suicides. They found that in urban patients psychoactive substance use, personality disorders (antisocial/borderline/histrionic/narcissistic) and psychiatric co-morbidity were more common than in the rural sample. Physical disorders were more prevalent in the rural sample. There were no differences between the two groups with regard to treatment settings or suicide method. Rural patients with depression were treated more frequently in a primary care setting. No differences were found with regard to reported recent life events. When social interaction was considered it appeared that living alone was more common in the urban sample, although having no companion of the opposite sex was more common in the rural sample. Isometsa and colleagues conclude that promoting suicide prevention by improving the recognition and quality of treatment of depression is relevant whether the setting is urban or rural, although the role of primary health care in prevention may be more important in rural areas.

There is some evidence to suggest that in rural areas where healthcare services may be sparse or inaccessible psychological and psychiatric disorders may go unrecognised or when they are diagnosed, are not treated rigorously and effectively (Kelleher and Daly, 1990; Isaacson, Boethius and Berghman, 1992; Pollock et al., 1996; Duckworth and McBride, 1996). Rapid economic changes and the financial pressures associated with managing a farm may be another factor which could precipitate a sense of hopelessness about the future. Farmers have a functional attitude to death and Gallagher and Sheehy (1994) hypothesize that this may desensitize them to death. It is sometimes suggested that rural residents are more conservative and less flexible than urban individuals and this may make it difficult to adjust to their changing circumstances in a constructive way. Three further factors are relevant, farming is a socially isolated and lonely activity particularly with increased mechanisation. Secondly, farmers make increasing use of dangerous chemicals, in particular, organophosphates, which have been shown to detrimentally affect cognitive functioning and problem solving; such cognitive deficits have been shown to be related to suicidal behaviour (Rosenstock et al, 1990; Davies, 1995). Thirdly, Gallagher and Sheehy, (1994) suggest that the religious decline across Europe may make individuals more vulnerable to suicide since the support from such a community and the fear of religious disapproval will have been removed.

Lester (1991) concludes that we are far from understanding the determinants of rural suicide, " If the macrosocial studies of urban-rural differences in

suicides rates could be supplemented by sound studies of urban and rural individuals, we would be better situated to formulate appropriate suicide prevention strategies for rural areas. Mental health services would be better able, therefore, to focus on the social and personal stressors which are suicidogenic in rural areas", (p25).

The above review agrees with this conclusion. We have seen that there appears to be a higher rate of suicide in rural areas, with elevated male rates and more frequent use of firearms. Rural suicides are more likely to have a medical illness and a lack of social support. There remains a need however, to clarify the extent to which urban and rural suicides are due to , for example, lacking contact with the services versus increased availability of lethal means.

Suicide in Wales.

Wales covers an area of 20 640 square kilometres and has a population of 2,913,000 (OPCS, 1994). It is sub-divided into nine counties, of which Powys is the largest, and 22 local authority areas. Agriculture and forestry account for 87% of land use. It is a largely rural area with pockets of high population density concentrated in the south east. The average population density is 1.4 persons per hectare compared to a figure of 3.4 persons per hectare for England and Wales as a whole. 18.5 % of the population are Welsh speakers and are concentrated in the west and north west.

Data sources.

Data from a variety of sources were used in this study. The origins of the data were the Office of Population Census and Surveys (OPCS), the Welsh Office (WO), the World Health Organisation (WHO), the Office of National Statistics (ONS), the Public Health Department of the Powys Health Authority and the records of the Powys Coroners Office.

Suicide trends in Wales.

Every year in Wales around 250 people die by suicide (1991 - 245; 1992 - 262). This figure is greater than the annual deaths due to 'Motor vehicle accidents' (1991 - 232; 1992 - 221). Suicide is the second most common cause of death in the 15 - 34 year old age group following 'Accidents, poisonings and violence' (OPCS, 1994). It should be noted that the category 'Accidents, poisonings and violence' includes all injuries whether accidentally or purposely inflicted'. This is a category which researchers have shown to include a proportion of suicides (Cooper and Milroy, 1995).

Figure 3.1 shows deaths by suicide (ICD E950 - 959) for Wales for the years 1980 to 1991 (OPCS).

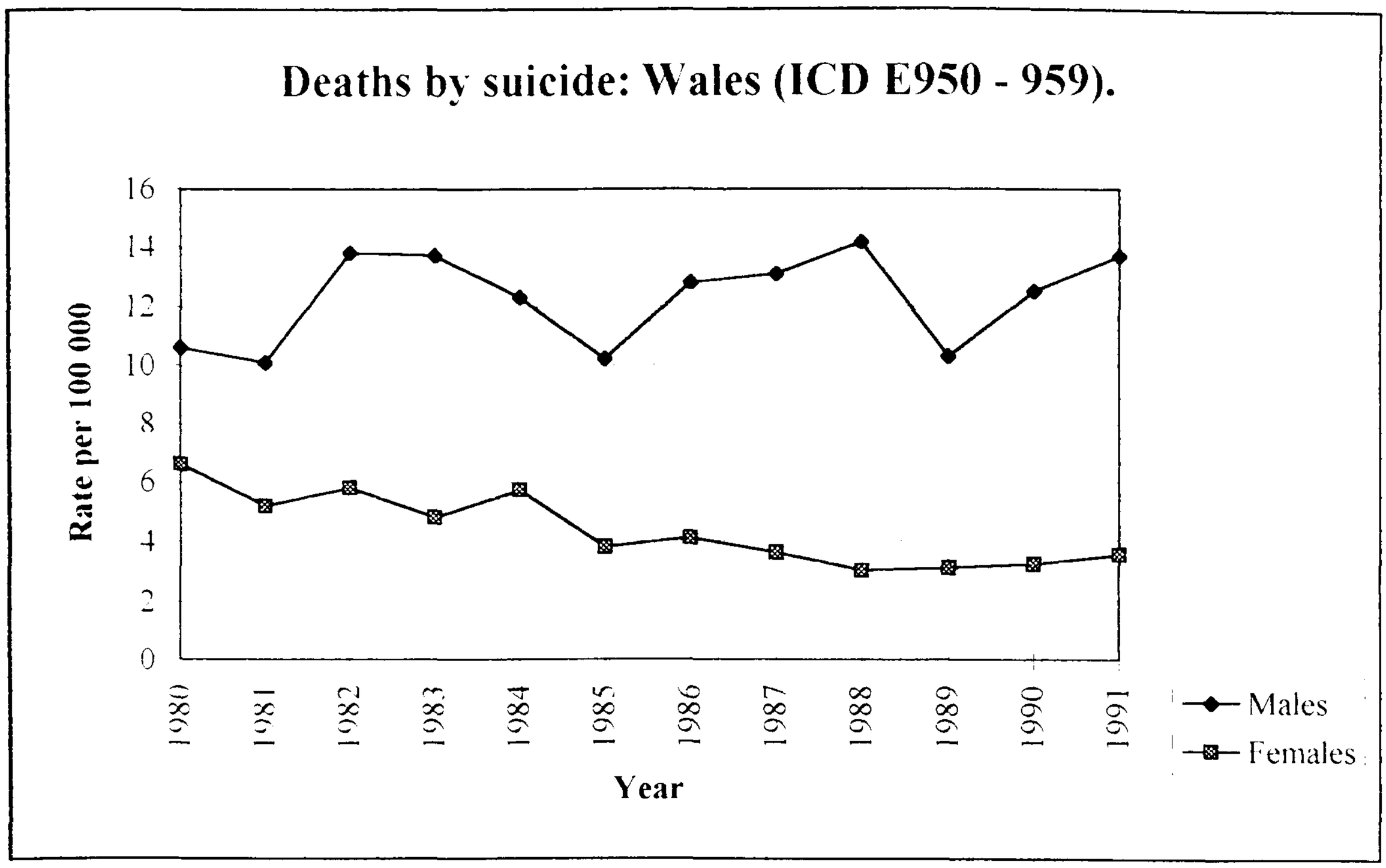


Figure 3.1

This reveals a steady general decline in the overall rate of suicide for women over this decade. This decline is from rates of 6.6 per 100 000 in 1980 to 3.5 per 100 000 in 1991. This corresponds with a similar general decline in the national rates. The rates for males have been fairly stable over this period, ranging between 10.1 per 100 000 (lowest) in 1981 and 14.2 per 100 000 (highest) in 1988. From 1988 there was a slight decline, but the figures then increased again to a figure of 13.7 per 100 000 by 1991. If these figures are compared with the figures for suicide and self inflicted injury for the UK

(WHO) over the same period, the Welsh rate for males exceeds the UK rate in eight of the twelve years under examination.

Figure 3.2 shows the Welsh figures for deaths by suicide and undetermined injury for males and females for the years 1990 - 1996.

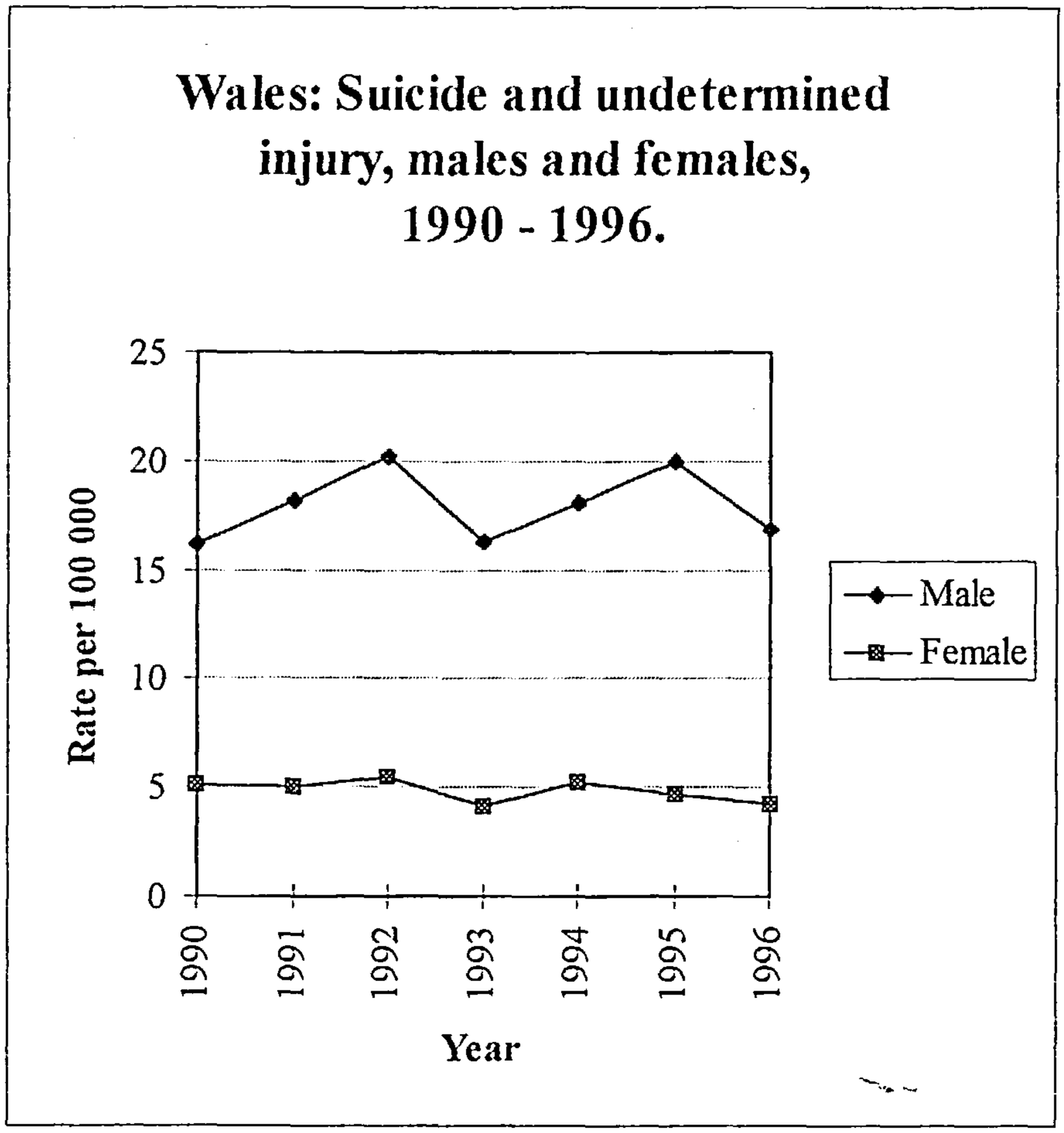


Figure 3.2

The rates for females over these seven years ranged from 5.5 per 100 000 (highest) to 4.1 per 100 000 (lowest). The general trend is a steady gentle decline in rates from 5.1 per 100 000 in 1990 to 4.2 per 100 000 in 1996. By contrast the rates for males over this period have remained fairly stable

ranging from 20.2 per 100 000 (highest) to 16.2 (lowest). The rate for 1996 was 16.9 per 100 000.

In order to examine the suicide trends for separate age groups, three year rolling averages were employed to smooth out the individual differences between years and more clearly reveal the trends in the prevailing rates.

Figure 3.3 shows the Welsh rates per 100 000 for suicide and undetermined injury for males and females of all ages.

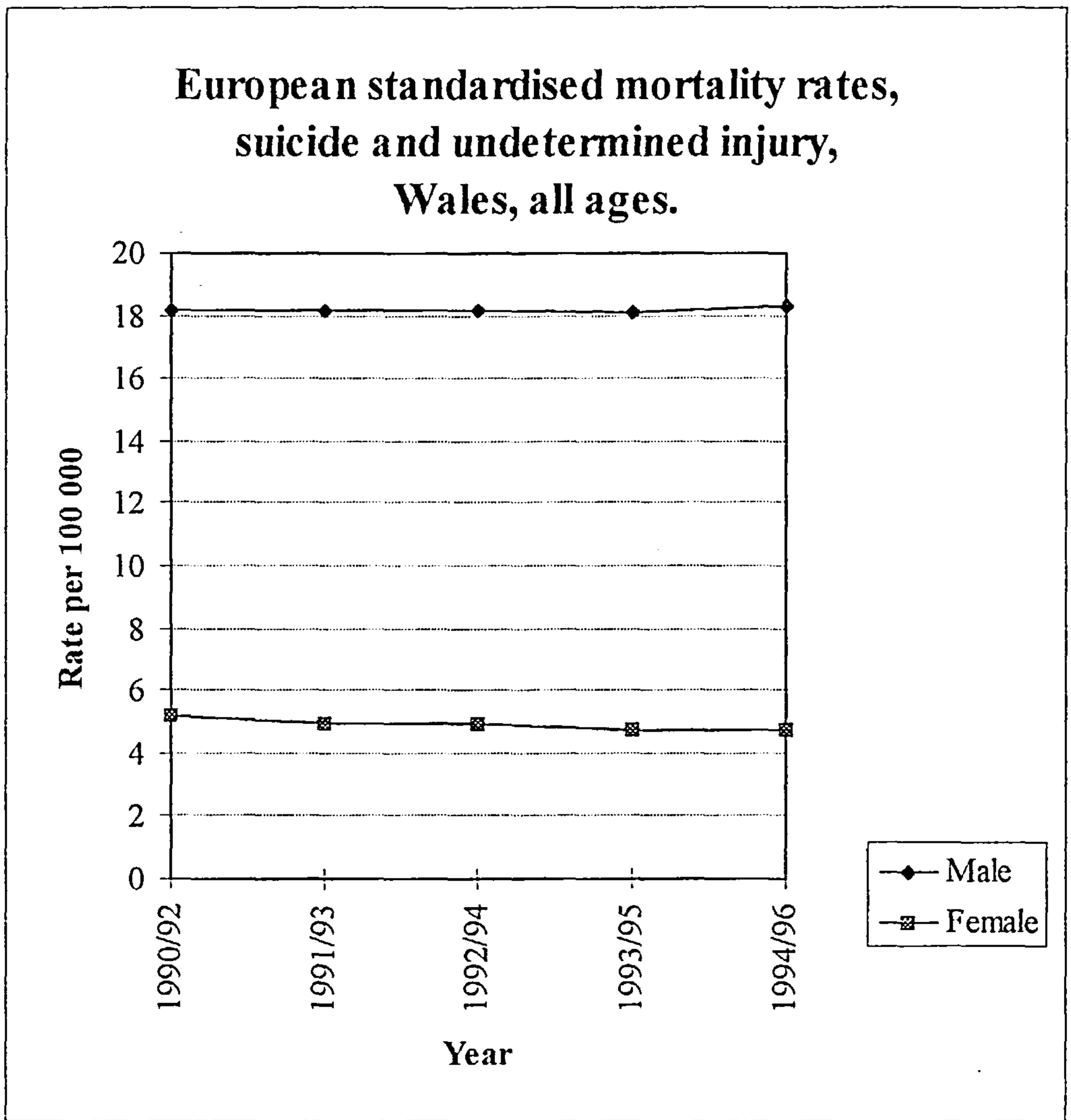


Figure 3.3

The rates for females reveal a gentle decline over the seven year period. By contrast the rates for males are remarkably stable until 1993/95 when a gradual increase becomes evident. The source of this increase and the degree to which the various ages groups are at risk is revealed by examining the trends for the different age groups.

Figure 3.4 shows the suicide and undetermined injury rates for males and females under 45 years of age.

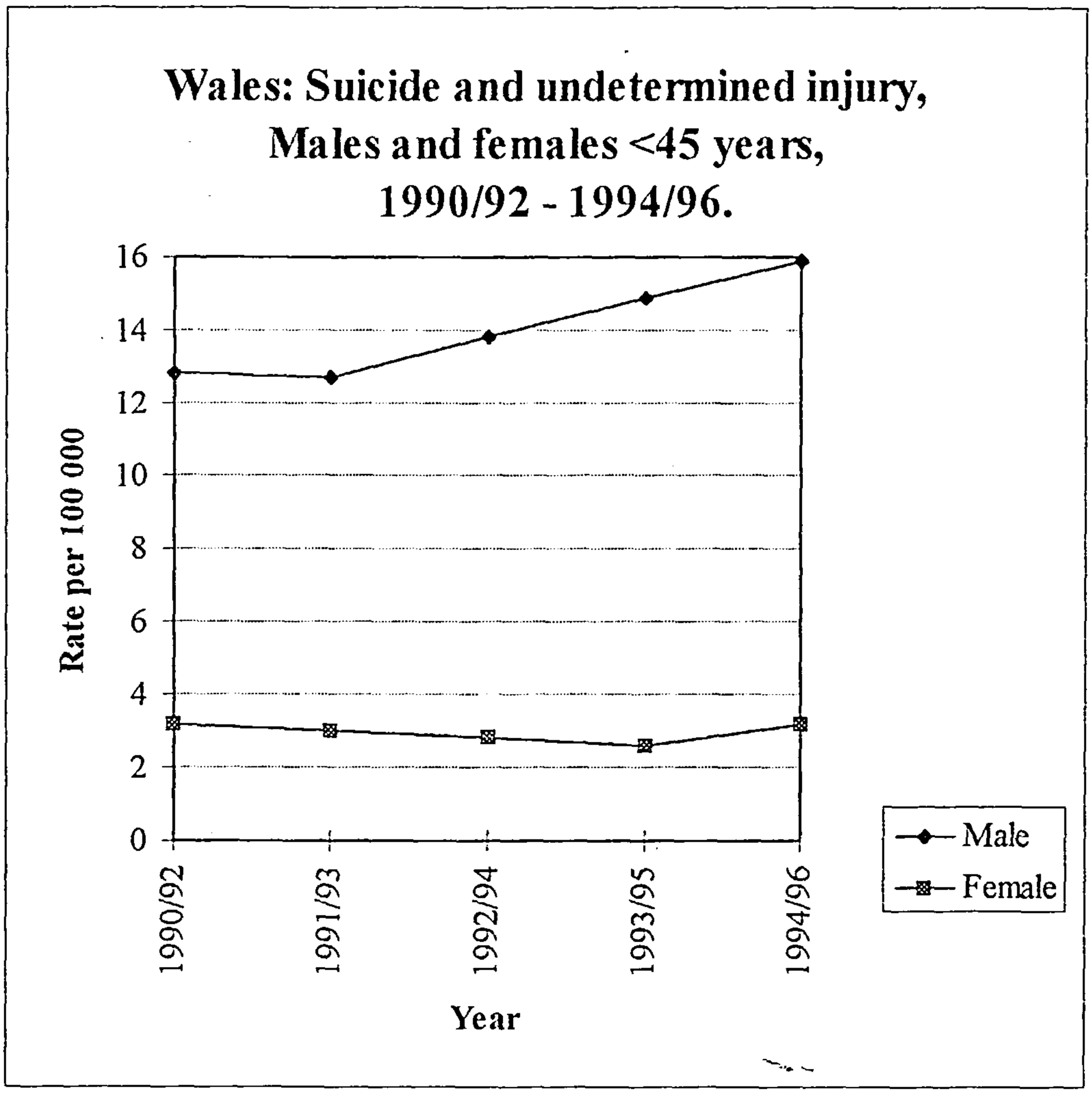


Figure 3.4

The rates for females show a gradual decline between 1990/92 and 1993/95 and then a slight increase to 3.2 per 100 000 in 1994/96. In contrast the rates for males show a steady increase from 12.7 per 100 000 in 1991/93 to 15.9 per 100 000 in 1994/96.

Figure 3.5 shows the rate of suicide and undetermined injury for males and females over 44 years of age.

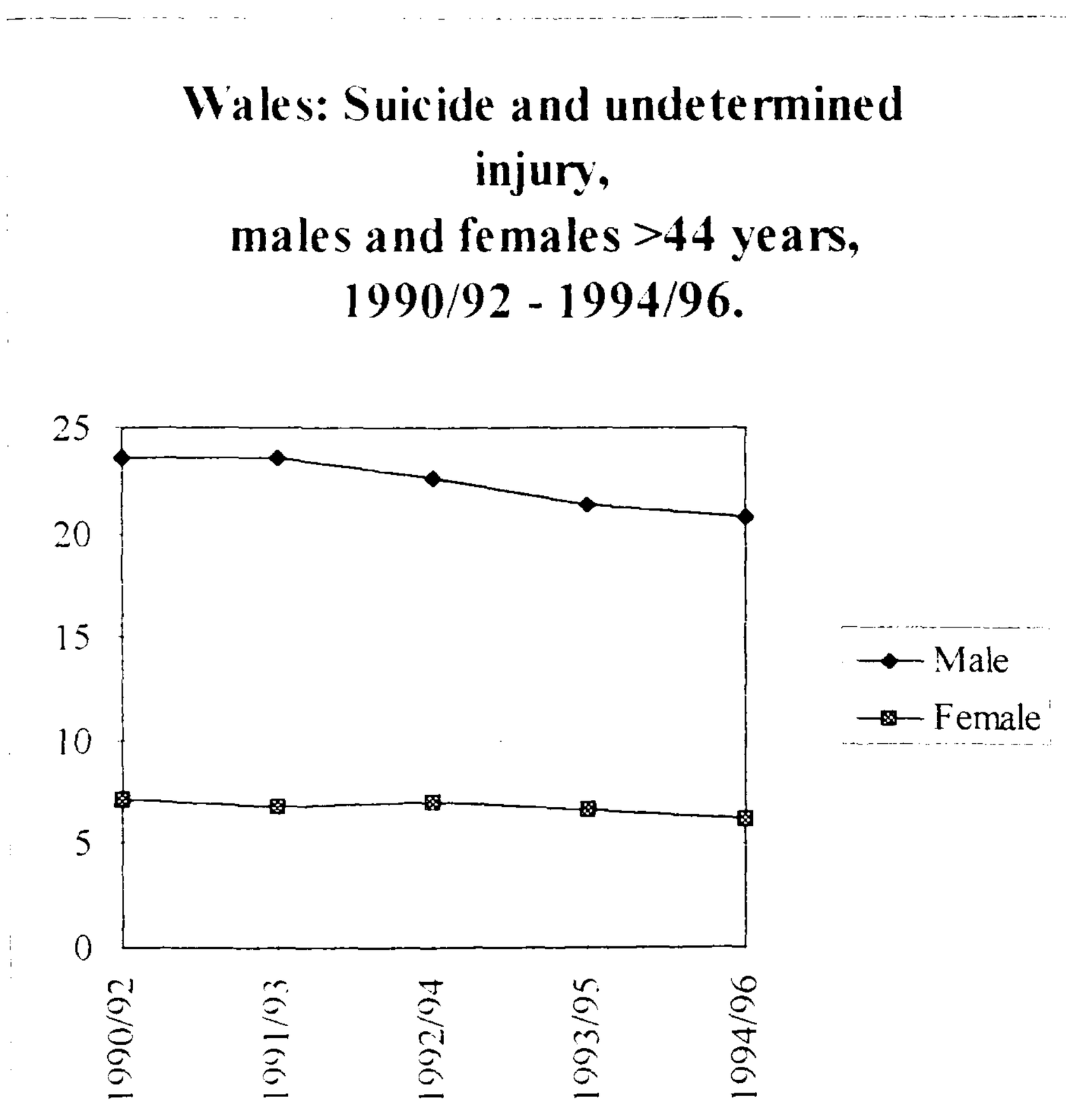


Figure 3.5

The rates for females in this age group show a slight decline from 7.2 per 100 000 in 1990/92 to 6.2 per 100 000 in 1994/96. Similarly the rates for males in this age group show a decline over the seven years from 23.6 per 100 000 in 1990/92 to 20.8 per 100 000 in 1994/96. Whilst these rates for males represent a decline they are still above the rates for males of younger ages.

In summary, the Welsh rates for suicide and undetermined injury in females of all ages have shown a gradual decline over the last seven years. The Welsh rates for suicide and undetermined injury in males of all ages has shown a steady increase since 1991/93. This increase is due to rising rates in men under the age of 45 years. By contrast the rates for men aged over 44 years is decreasing but is still at levels above those of the younger men. How far are these trends present in the most rural of Welsh counties? Are the rates in Powys high - and higher than Wales, which is itself fairly rural?

Suicide in Powys.

Powys is one of the largest and most sparsely populated counties in Wales and the United Kingdom. It extends over an area of 507,400 hectares (one quarter the total area of Wales) and has a population of 119,200 (1992). With 80% of the land more than 600 feet above sea level, farming and forestry account for 84% of land use. It is a rural area with an average population density of 0.2 persons per hectare (2.471 acres) compared with the figure of 1.4 persons per hectare for Wales or 3.2 persons per hectare for England and Wales as a whole. These figures show clearly how sparsely populated Powys is. On average there are 12 acres for every Powys resident, whereas in England and Wales there are 15 people in every 12 acres. There is no major population centre and less than a third of the population live in towns of more than 5000 people. The majority live in remote villages and farms. Powys has no district general hospital.

If one compares the Powys suicide rates (Deaths by suicide ICD 950 -959 (OPCS)) for males for the decade 1982 - 1991 with the Welsh National rates we find that the Powys rate is particularly high, exceeding the Welsh national rates in nine of the ten years. Only the Powys male rates for 1987 fell below those of the Welsh national average rates for males. For females, the Powys rate exceeded the Welsh national rate in five of the ten years, 1982, 1984, 1987, 1989, 1991. The rate of male suicides in Powys also exceeded the UK national figures for suicide and self-inflicted injury (WHO) in all but two years, 1985 and 1987.

In order to examine more recent trends, figures for 'suicide and undetermined injury' (ONS) for the years 1990 - 1996 were consulted (Figure 3.6).

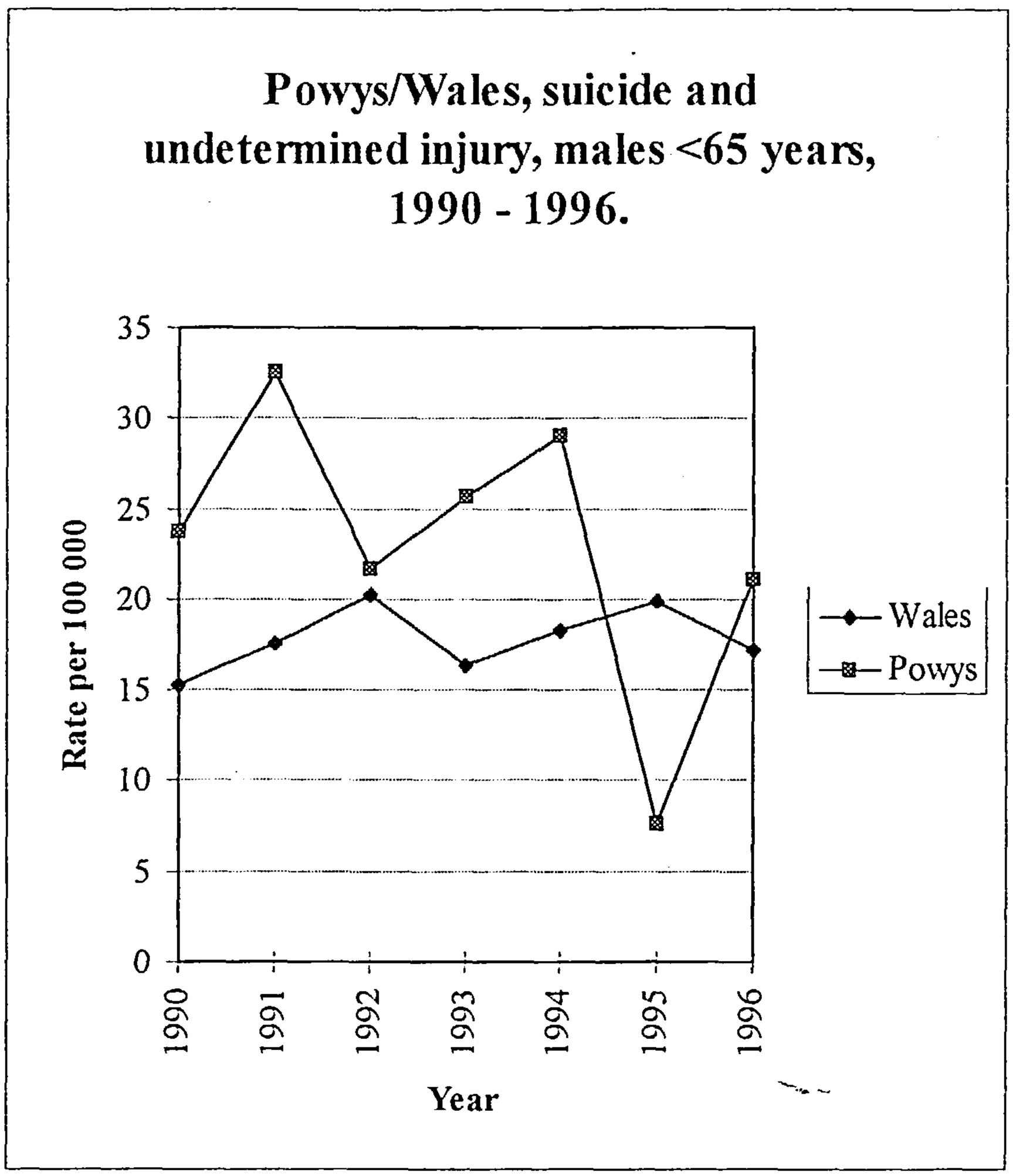


Figure 3.6

This shows that in all years except 1995, the Powys rates for males exceeded the Welsh national rate. Whilst the Welsh male rates remained relatively stable over this period, the male rates for Powys seemed to show a gradual decline from a high of 33.3 per 100 000 in 1991 to 21.6 per 100 000 in 1996. In

1995 the Powys rate showed an uncharacteristic dip to 7.9 per 100 000 but soon returned to the more usual level in 1996.

In contrast, the rates for females (Figure 3.7) showed a steady decline to 1994 (to 4.9 per 100 000) and then peaked uncharacteristically in 1995 at a level of 14 per 100 000, returning to the more characteristic but still higher than usual level of 7.2 per 100 000 in 1996. The Powys rate for females exceeded the Welsh national rates in four of the seven years of interest. In 1990, 1991 and 1994 the Powys rates dipped very slightly below the Welsh rate.

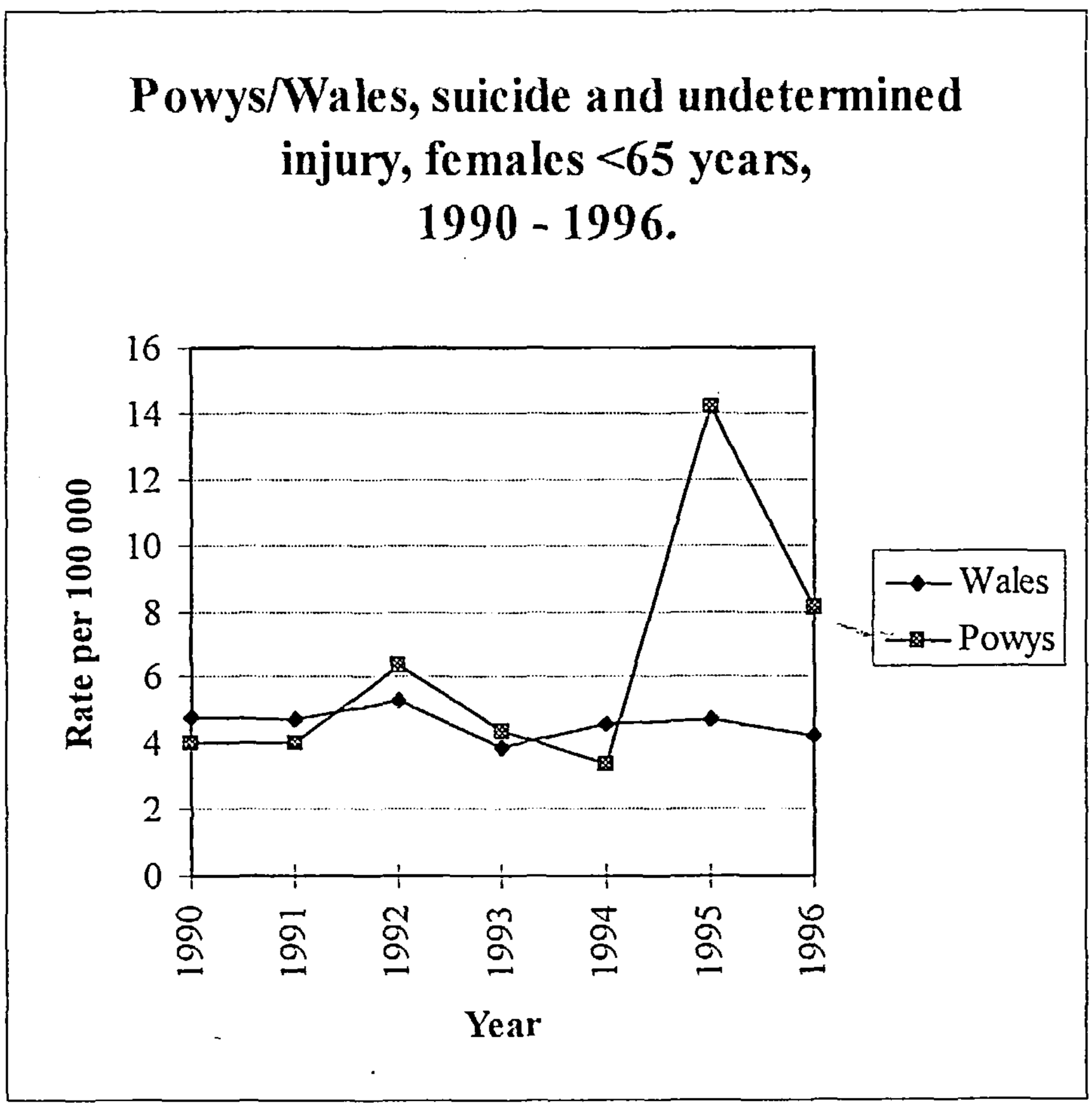


Figure 3.7

Three year rolling averages are designed to smooth out some of the inconsistencies in individual years (particularly when numbers are fairly small) to reveal trends more clearly.

Figure 3.8 shows three year rolling averages for suicide and undetermined injury for all persons for Wales and Powys.

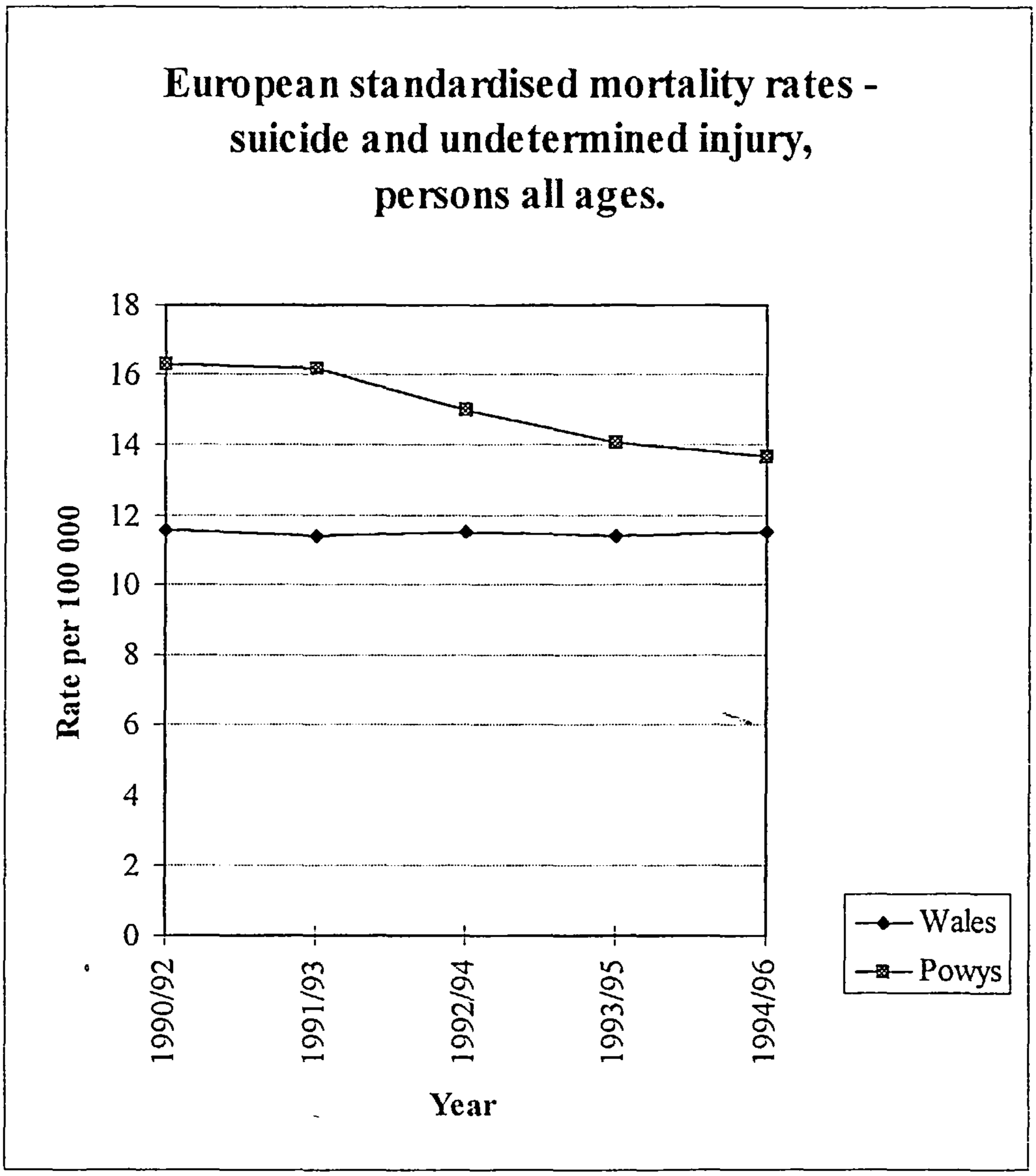


Figure 3.8

It is clear that the rates for Wales have remained stable over this period whilst the rates for Powys, although consistently higher than those for Wales , have shown a steady decline over this period. If these rates are examined by gender a different picture emerges.

Figure 3.9 shows the rate for males declining steadily over this period to almost meet the rate for Wales in 1994/96.

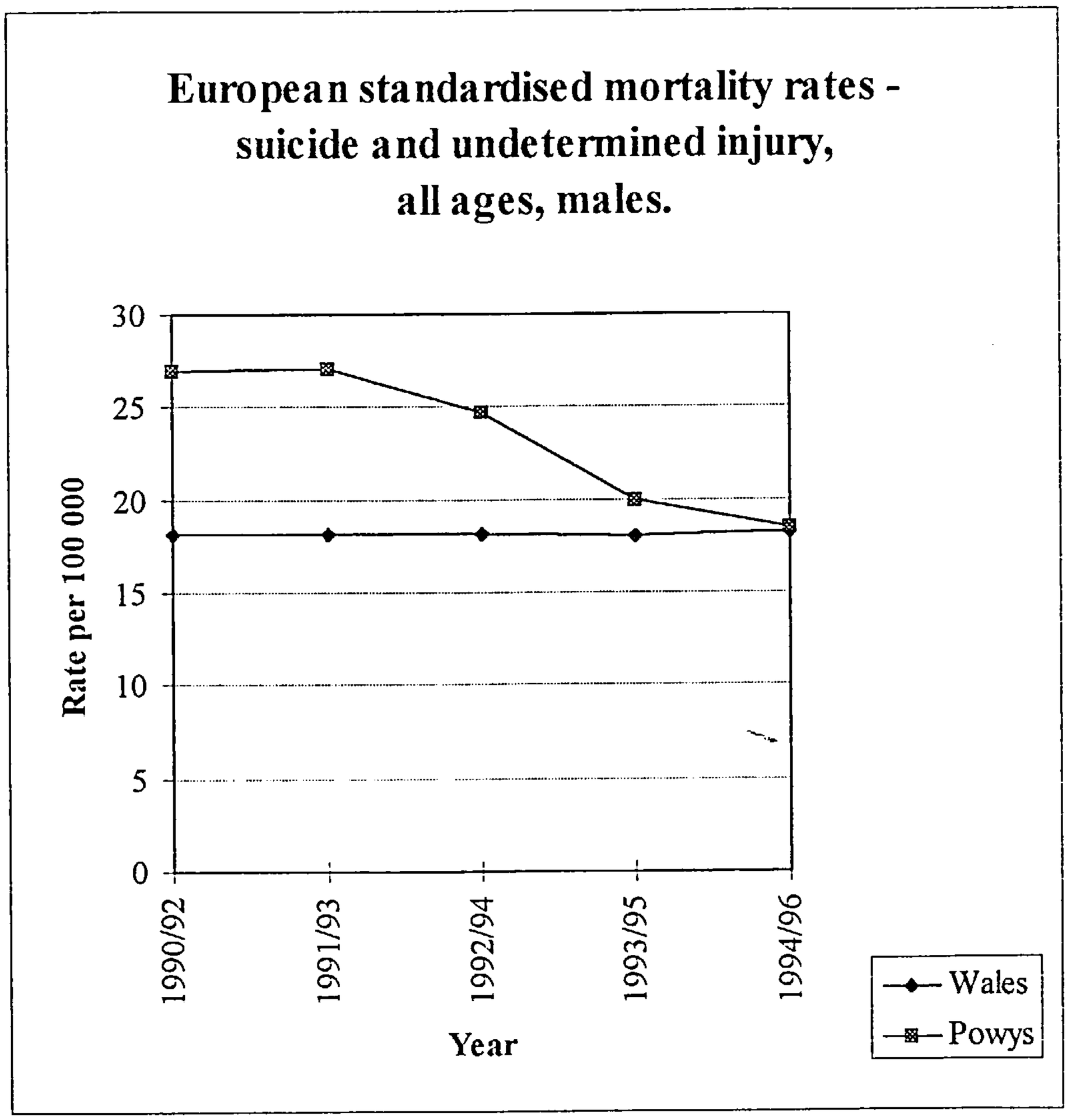


Figure 3.9

However, for females (Figure 3.10) there has been a steady and dramatic reversal in the declining trend of previous years. From 1992/94 there has been an increase in the rates to 8.7 per 100 000 in 1994/96.

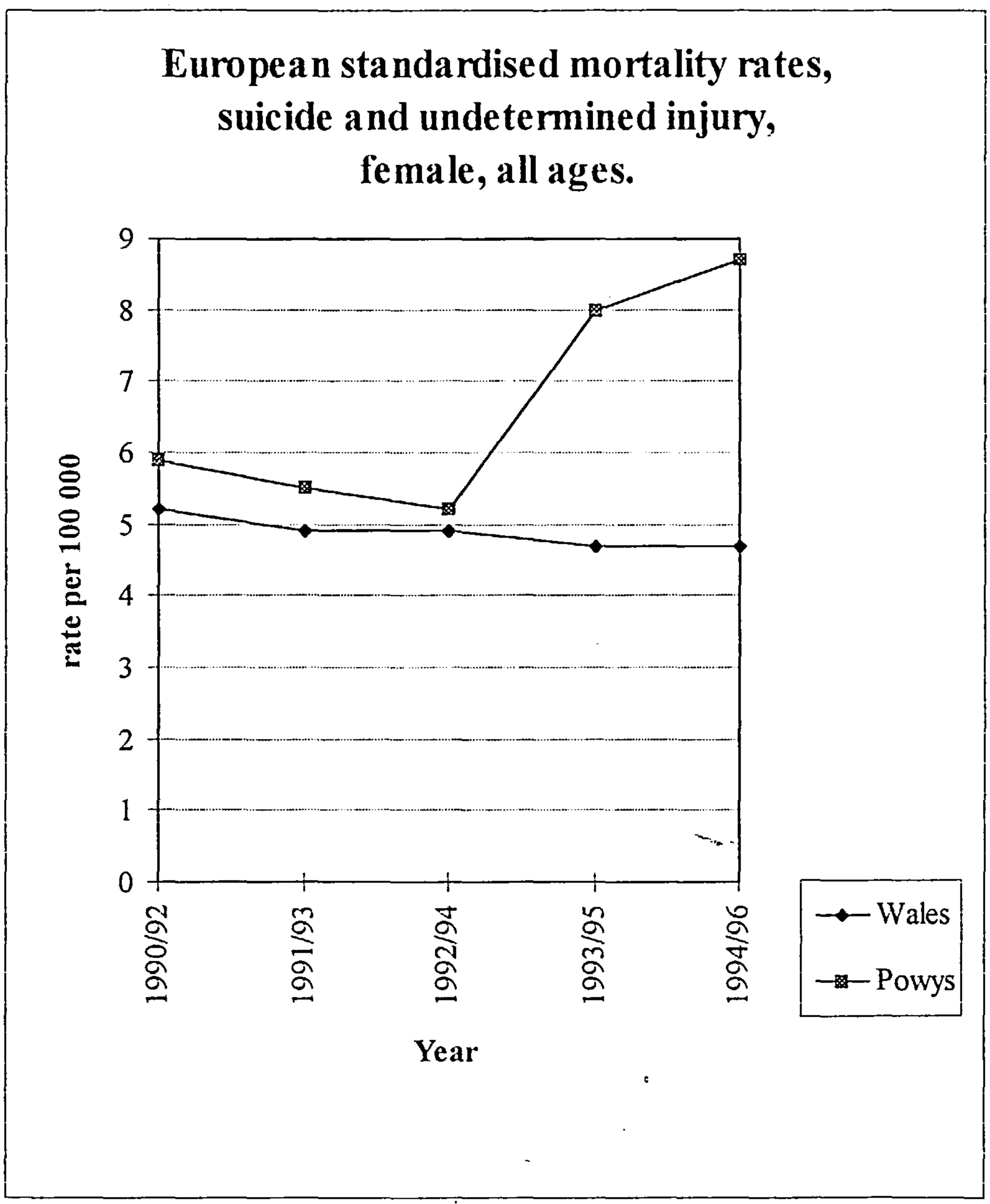


Figure 3.10

A closer examination of the rates for specific ages ranges shows the vulnerable groups more clearly.

Figure 3.11 shows the suicide and undetermined injury rates for males under 45 years of age.

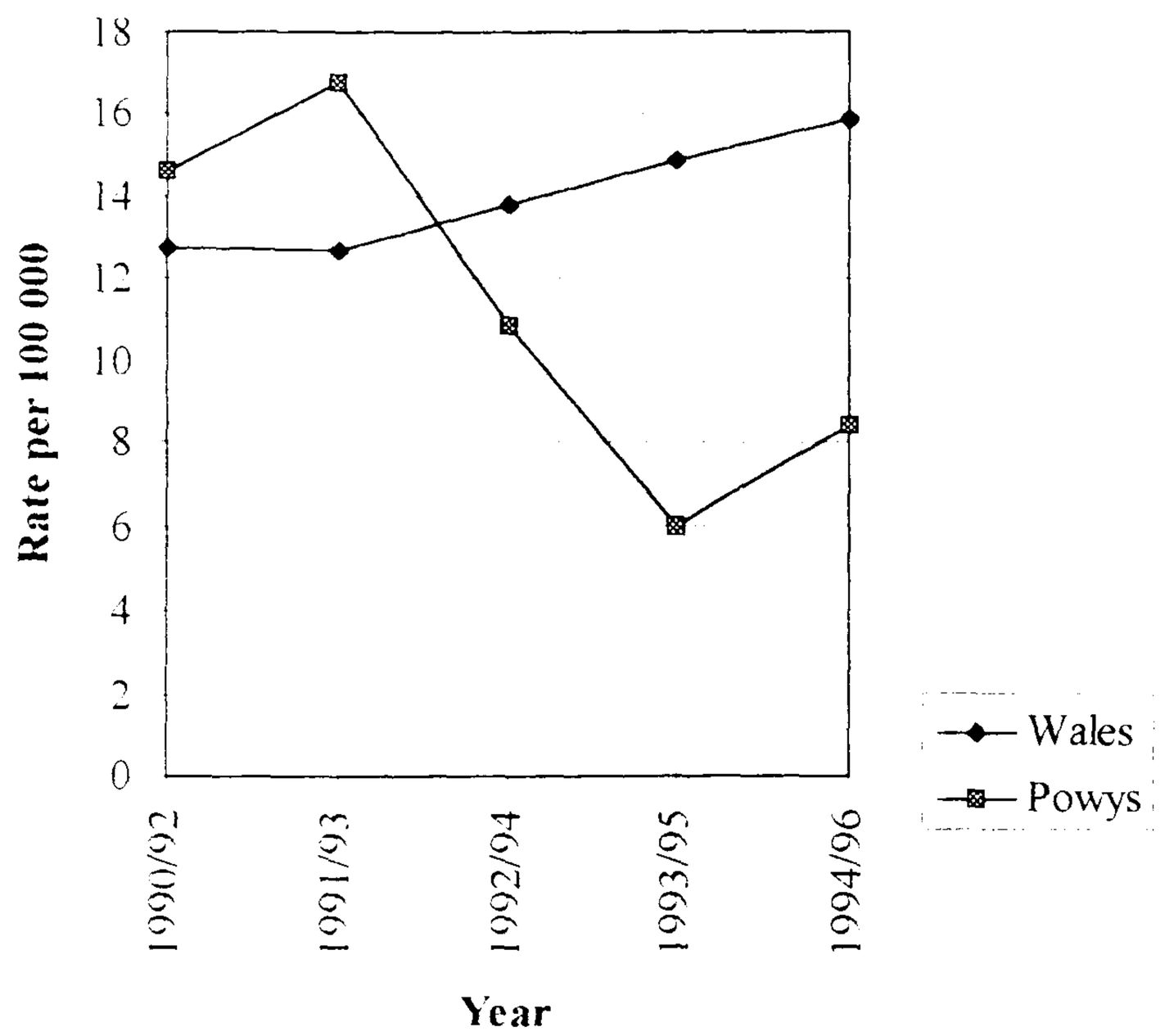


Figure 3.11

The rates for Wales have shown a steady increase from 1991/93 to 1994/96. In contrast, the Powys rates have declined since 1991/93 and since 1992/94 have fallen below the Welsh national rates.

For females, a different pattern emerges (Figure 3.12). The rates for Powys females have shown a dramatic increase over this period whilst the rates for Wales declined gently to 1993/95 and then showed a modest increase to 1994/96.

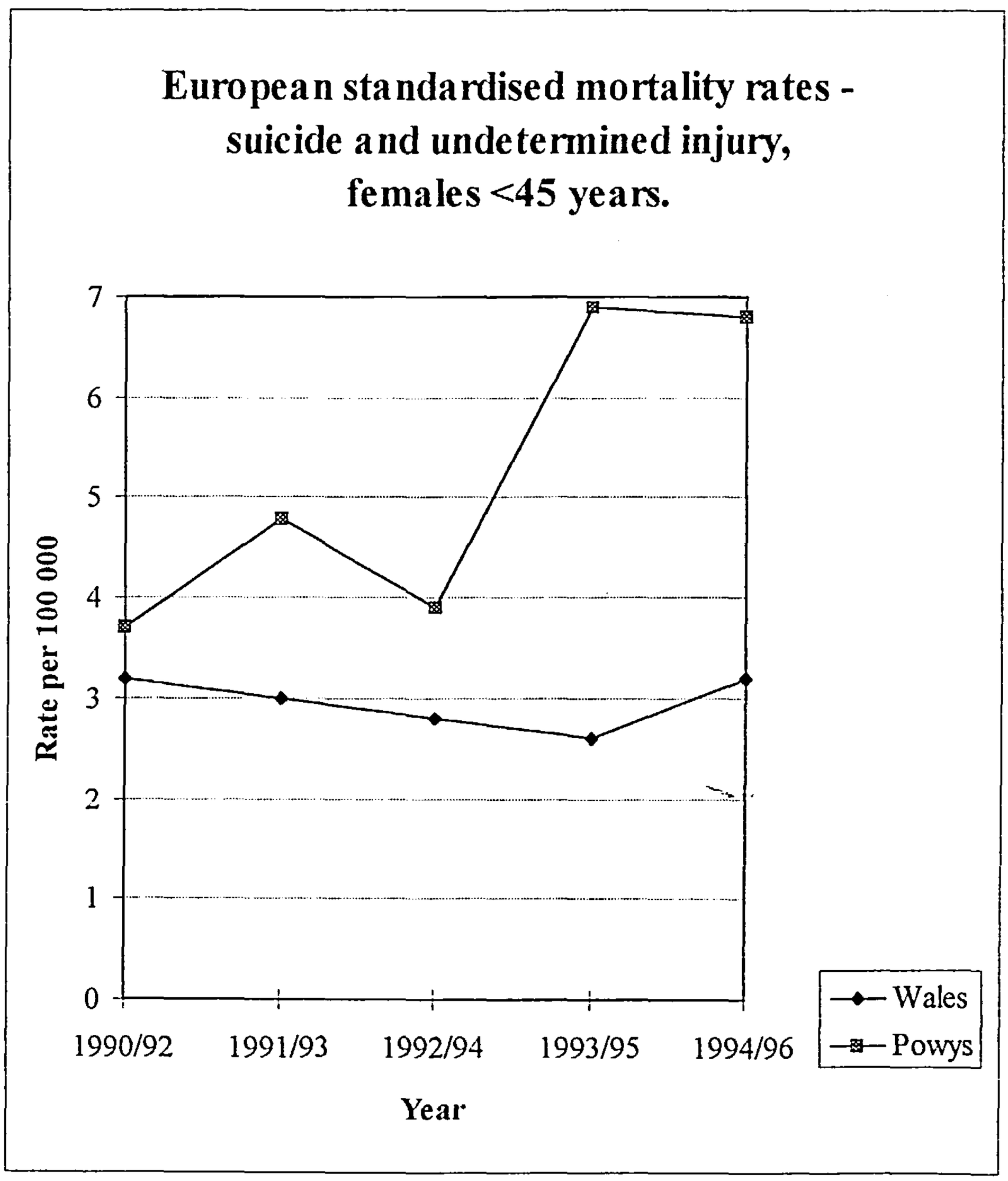


Figure 3.12

The suicide and undetermined injury rates for males over the age of 44 years (Figure 3.13) show a steady decline for both Powys and Wales over this period. However, the rates for Powys are still consistently higher than those for Wales.

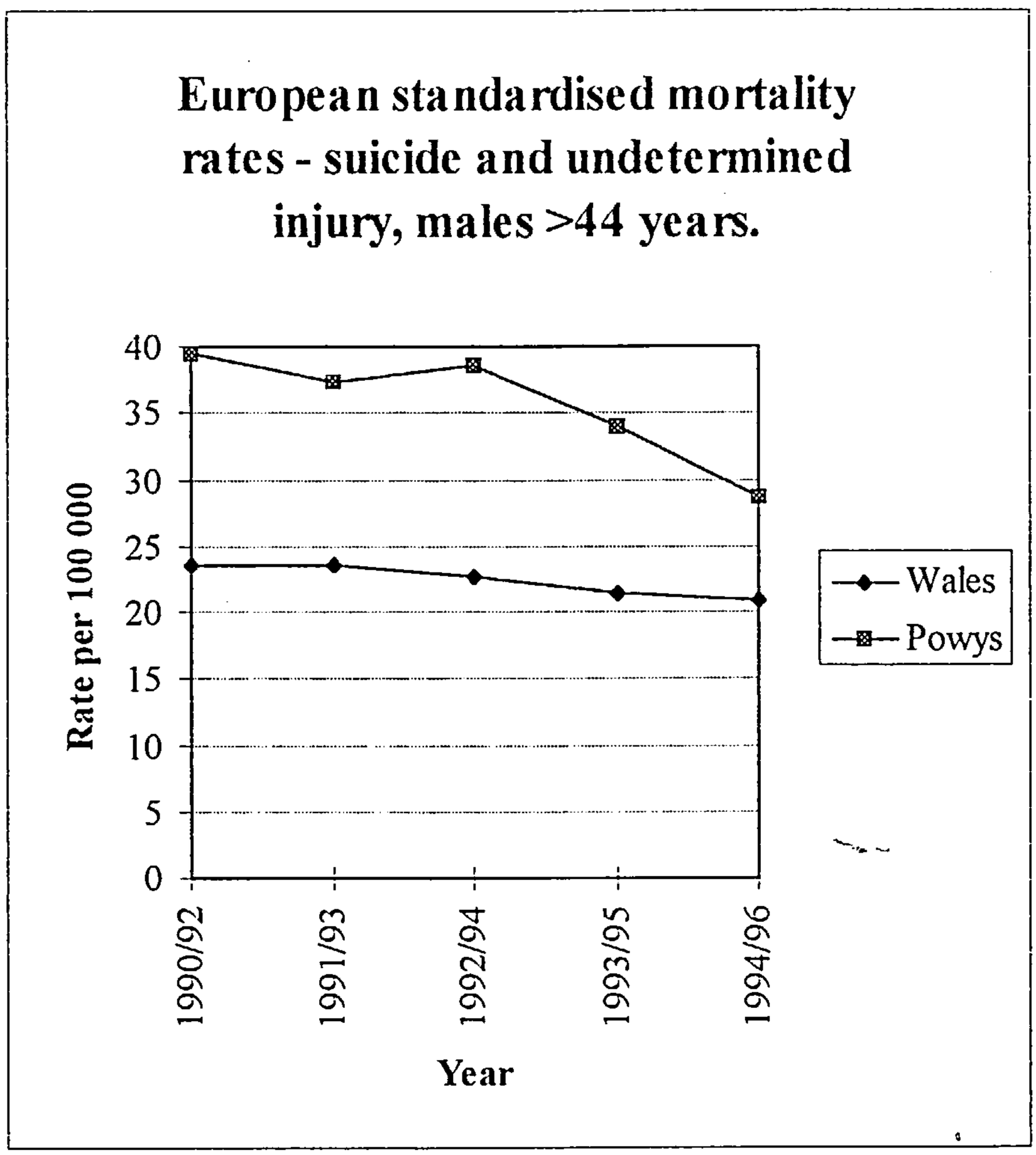


Figure 3.13

The rates for females over 44 years of age decreased until 1992/94 and since then have shown a steady increase. (Figure 3.14). In most years the Powys rates have been above the Welsh rates and have increased between the years 1992/94 and 1994/96, while the overall Welsh rate has shown a very gentle decline.

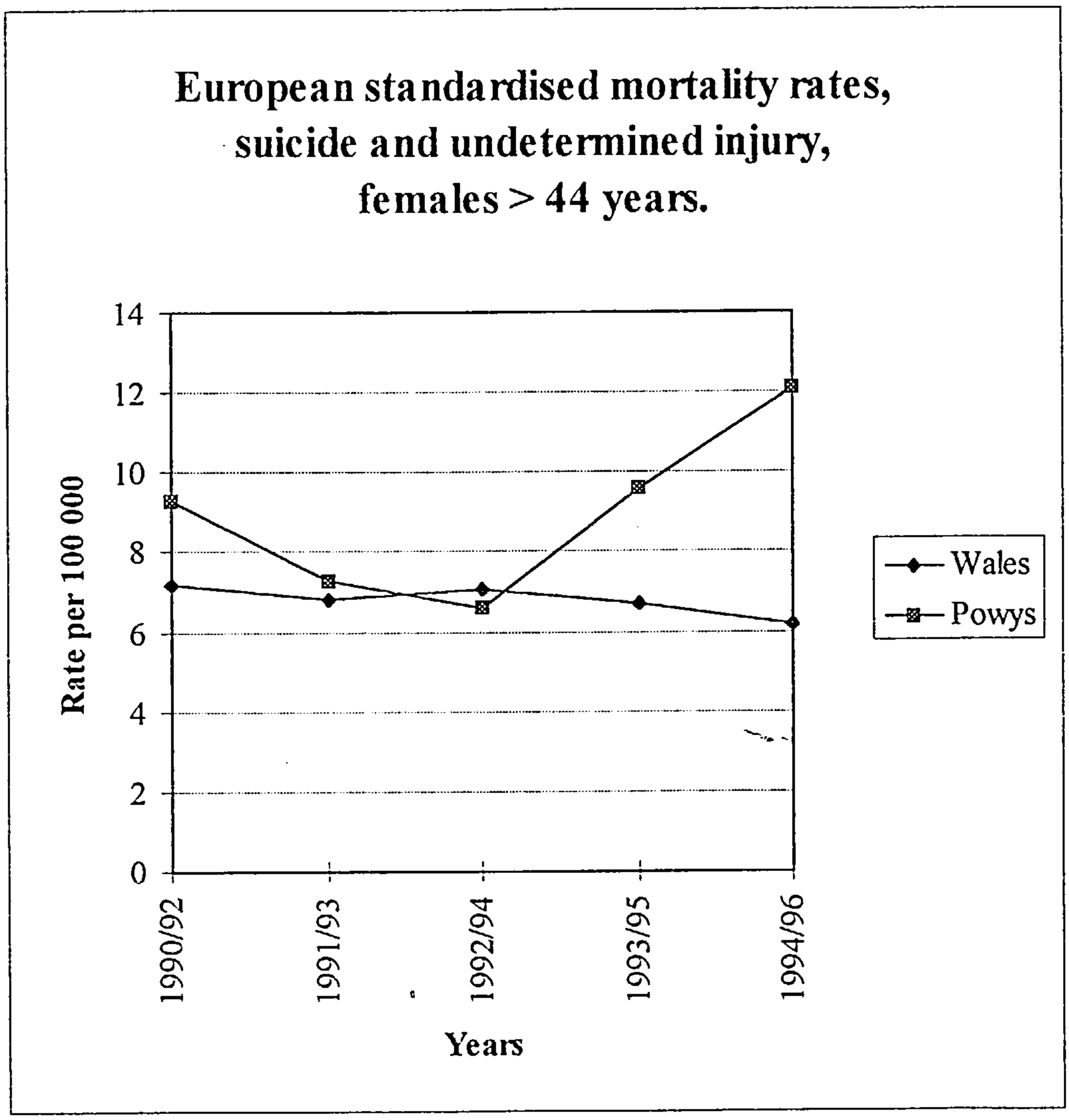


Figure 3.14

Discussion.

The aim of this chapter was to review rural suicide, examine suicide trends in Wales and then to consider the pattern of suicide in Powys.

Our review has revealed a small literature of rural suicide studies, with very few studies based on British groups. The work we have discussed suggests that the profile, pattern and determinants of suicide in rural areas may be different from urban suicides. Some researchers argue that there is an increasing incidence of suicide in rural areas with high rates amongst males. The use of firearms and hanging as means of suicide are common and some researchers have suggested that this group lacks social support and are less likely to make use of the healthcare services. It seems clear that an examination of these trends in the British rural population is urgently required.

A consideration of the Welsh rates for suicide and undetermined injury for the years 1990 - 1996 shows a gradual declining trend for females of all ages. Similarly the rates for older men, while still higher than those for younger men, show a decreasing trend. By contrast the rates for younger men are increasing. How far do the Powys rates follow the Welsh national trends?

In general the Powys suicide rates still remain at levels above the Welsh national rate, but the pattern of change is different to the national pattern. The suicide and undetermined injury rates for Powys males in all age groups, show a declining trend, over the seven years 1990 - 1996. In contrast, the rates for Powys females show an increasing trend, most dramatically for those under 45 years of age. How can this be explained?

A possible explanation may be related to the awareness campaign which was started in the early 1990's. Members of the health services and community had expressed concern about the number of suicides among males, and farmers in particular, and so an awareness campaign was started to address the problem. This resulted in a number of initiatives such as a multidisciplinary conference, the release of an information pack detailing relevant resources being distributed to all mental health teams and doctors surgeries; a telephone helpline for farmers being set up and a Samaritan's awareness campaign being carried out at markets and other places frequented by farmers. The thrust of these efforts were particularly aimed at young men and from the evidence it could be argued that this campaign has had some success in targeting this group. But has this been at the expense of women and are we now in danger of neglecting young women?

In the light of the earlier review of urban/rural differences, what factors might account for the the excess of suicides in Powys? We saw in the review that in general a higher rate of suicide was found in rural areas with the use

of firearms being more common. Some studies found that older men and farmers were particularly at risk and other studies reported the concurrent use of alcohol and drugs and medical illnesses as being risk factors. These studies attributed the elevated suicides rates to factors such as changing economic conditions, isolation, lack of mental health facilities and easy access to dangerous means. (However, many of these studies have not compared urban and rural settings in a detailed way, often reporting only on the phenomenon of rural suicide and relating these results in a general way to the relevant national figures.)

The role that rurality plays in determining this rate of suicides is unclear. There are no studies which have examined suicide in Powys and very few studies which have considered suicide in rural areas within the UK. Clearly, it is important to examine the profile of suicides in this area, as it may be different to the pattern of suicides in urban areas; indeed some studies reviewed above have reported such differences in rural areas (Lester, 1991; Gabriel, Paschalis and Beratis, 1993; Kelly, Charlton and Jenkins,1995). These differences could have important practical implications for the design and delivery of appropriate rural healthcare services. In the following chapter we turn to examining the differences in the pattern of suicides in Powys and Manchester.

Chapter 4.

Suicide in Powys and Manchester : a rural - urban comparison.[1]

Introduction.

Chapter Three reviewed the small number of studies which have suggested that there may be differences in the profile of suicides in rural areas when compared with suicides in urban areas (Lester, 1991; Gabriel and Paschalis, 1995; Isometsa et al., 1997; Malmberg, Hawton and Simkin, 1997; Hawton, Simkin, Malmberg, Fagg and Hariss, 1998). These differences may be important in determining specific and more appropriate healthcare strategies in rural areas, since currently most strategies in these areas are based on the results of large urban studies. The limited research available has concluded that suicide in rural areas is poorly understood and warrants further investigation (Lester, 1991).

This study aims to examine suicides in Powys, one of the most rural areas of the United Kingdom, to provide a clear profile of the suicides in this area, as this has not been done before. Secondly, these rural suicides will be compared with suicides that have taken place in Manchester, a densely populated urban area, over the same period of time as it is suspected that there are differences in the patterns of urban and rural suicide. Thirdly, the

[1] Parts of this chapter have been published as Pollock, L.R.; Vesey, P.; Williams, J.M.G. and Hollis, J. (1996). Suicide in rural Britain, The Lancet, 347, 403-404.

pattern of suicide in Powys farmers will be examined as they are hypothesized to be the group who are particularly at risk for suicide.

Method.

With the assistance and cooperation of the Powys coroner we examined consecutive inquest files for the period 1992 - 1996[2]. Only cases in which the verdict was suicide were included. We did not consider cases in which the verdict was 'open' or 'accidental death'. (The number of these cases in Powys is extremely small, typically less than 10% of the annual total). The coroners function is to examine the causes of all unnatural deaths that are reported to him by the police. In order to do this the coroner compiles a considerable amount of information. The basic demographic information includes the age, gender, address, marital status, previous occupational status and previous living arrangements. The location and method of suicide are recorded. Statements from the spouse or nearest relative or neighbour are included in the record. These statements often describe the concerns and problems of the person in the period immediately prior to the suicide. In most cases there is a statement from the deceased's GP describing the most recent consultation. This often contains information about the persons previous medical history and their most recent difficulties, diagnosis and treatment. Where the person has been in contact with a hospital service a report from the doctor concerned

[2] Whether coroners' verdicts are valid and reliable indications for suicide has been much debated. Although beyond the scope of this discussion a brief account of the issue has been included as Appendix A.

sometimes provides details of their physical and mental condition and their diagnosis and treatment. The record always contains a post-mortem report. Any suicide notes are included in the record.

All of the information collected from the coroners records was transcribed onto standard forms designed specifically for this purpose. (See appendix E). In Manchester, the coroners files were examined over roughly the same time period, 1993 - 1995, and data was collected from all consecutive cases in which the inquest verdict was suicide. For the Manchester data access to the inquest statements was not possible and therefore only the following data were available: date of death, age, sex, marital status, occupation, mode of suicide, psychiatric diagnosis, date the GP was last seen (if available). The Powys files yielded some additional information. This was recorded under the following headings: employment, location of suicide, note, reported suicidal ideation, previous attempts. This information was gleaned from statements and reports supplied to the coroner. One of the problems in relying on the coroner's reports is that missing data may be because it was not asked for, rather than it being a 'No' response. However, the basic age, sex, marital status, occupation and method data is reliable and as long as caution is excercised in making inferences from the other data, it may perhaps help to reveal a fuller picture of the profile of rural suicides. In addition it may highlight areas which should be examined more systematically in future research.

Results.

In total we examined the files of 91 consecutive suicides in Powys. However, 20 of these cases were non-Powys residents who had presumably entered the county with the intention of taking their lives, (14 of the 20 (70%) died of car exhaust gas poisoning). These cases are not included in the official Powys suicide figures and so were excluded for the purposes of this study. Thus the following results are based on the remaining 71 suicides. In Manchester 171 consecutive files of coroners data over the period of 1993 - 1995 were examined. From this dataset all files that had received a verdict of suicide were extracted. For the purposes of this investigation, these resultant 89 consecutive suicides were examined.

Geographical distribution, age and gender.

56% of the Powys suicides took place in the south of the county and 44% took place in the north. These are the expected proportions based on the distribution of the population. The Manchester suicides took place in the Greater Manchester city area. The Powys sample was made up 55 men (77.5%) and 16 women (22.5%), a male to female ratio of 3.4:1. The mean age was 48 years and the age range was 17 - 84 years. The Manchester sample comprised 71 men (79.8%) and 18 women (20.2%). The male to female ratio was 3.9:1, the mean age was 41 years and the age range was 16 - 88 years.

	Powys	Manchester
Males	55 (77.5%)	71 (79.8%)
Females	16 (22.5%)	18 (20.2%)
M:F ratio	3.4:1	3.9:1
Mean age	48 years	41 years
Range	17 - 84 years	16 - 88 years

Table 4.1. *Summary data for Powys and Manchester.*

Men aged 15 - 44 made up 73.2% of male suicides (or 58% of all suicides) in Manchester and 50% of male suicides (or 35% of all suicides) in Powys. Compare this with current research which suggests that around 40% of all suicides are in this group (Williams, 1997). In Powys, in the elderly group aged 70 - 80 years, the proportion of men (12.7%) was higher than the proportion of women (4.2%), which is consistent with expected national suicide rates for the elderly. However, in Manchester there were no gender differences in the proportion of suicides over 70 years of age (3.4% for both males and females).

Age Band	Powys (%)	Manchester (%)
15 - 34	25	39
35 - 54	38	40
55 - 74	27	15
75+	10	6

Table 4.2 *A comparison of age distribution of suicides for Powys, Manchester and England and Wales.*

In each of the analyses that follow we first make comparisons within the Powys data. Next we make comparisons within the Manchester data and finally the Powys and Manchester data are compared (the rural - urban comparison).

Powys comparisons.

To examine the distribution of suicides within the age bands we first compared Powys males and females. For the purposes of the analysis age bands were collapsed into four categories: 15-34; 35-54; 55-74 and 75+(See Table 4.3). There no significant gender differences for Powys suicides (chi - squared = 0.70, df = 3, $p < 0.87$).

Manchester comparisons.

Similarly, we compared Manchester males and females. This comparison almost achieved significance (chi- squared = 6.84, df = 3, $p < 0.07$) with males tending to be bunched together in the two lower age bands while females were more evenly distributed throughout the age range.

Powys versus Manchester.

Next a comparison of rural and urban males by age was made. This revealed a significant difference between the two groups (chi - squared = 8.84, df = 3, $p < 0.03$), with more urban suicides in the 15 -34 age range while rural suicides were spread more evenly through the age bands. Similarly, we

compared rural and urban females by age and found no significant differences between the groups (chi - squared = 0.17, df = 3, p < 0.98).

Age Band	Powys (%)		Manchester (%)	
	Males	Females	Males	Females
15 - 34	23	33	42	28
35 - 54	41	27	42	33
55 - 74	27	27	13	22
75+	9	13	3	17

Table 4.3 *Comparison of Powys and Manchester suicides by age by gender.*

Marital status

To examine marital status individuals were allocated to one of three categories: Married; Single; and, Divorced/Widowed/Separated.

Powys comparison.

When the marital status data were examined for Powys no significant gender differences were found (chi - squared = 2.36, df = 2, p< 0.30). Of the Powys suicides 44% were married, 32% had never been married and 17% were divorced, widowed or separated.

Manchester comparison.

Similarly, with the Manchester data no gender differences in marital status were found (chi-squared = 2.70, df = 2, p < 0.25). Of the Manchester suicides 18% were married 37% had never married, and 41% were divorced, widowed or separated.

Powys versus Manchester.

Comparing the marital status of males in Powys and Manchester revealed a significant difference between the groups with more rural males married and more urban males single, divorced or separated, (chi squared = 16.99, df = 2, $p<0.0002$). Are these results an artefact of the age distribution of suicides? The significant difference between the two groups of males (Powys and Manchester) may have been due to the larger proportion of Manchester males in the lower age groups (and thus less likely to be married). To check this a further comparison was carried out using only Powys and Manchester males under 45 years of age. The result remained significant, chi-squared = 10.23, df = 2, $p<.005$. Comparing the marital status of females in the two locations revealed no significant differences between the two groups (chi squared = 2.37, df = 2, $p<0.30$). See Table 4.4.

	Married %		Never married %		Divorced, separated, widowed %	
Location	M	F	M	F	M	F
Powys	51	44	35	25	14	31
Manchester	18	22	43	22	39	56

Percentages rounded.

Table 4.4 *Marital status figures for Powys and Manchester.*

Occupation.

The distribution of suicides in the occupational groups differs for Powys and Manchester in some categories. These differences reflect the nature and concerns of the areas in which these individuals live and provides some support for the idea of developing specific, focussed strategies for prevention in different areas, taking into account their unique characteristics.

Powys and Manchester suicides by occupation

Occupation	Number of suicides		
	Powys (%)	-	Manchester (%)
Farm owners and managers	16 (23)	-	0 (0)
All other labourers and related workers	10 (14)	-	14 (16)
Builders and building contractors	8 (11)	-	11 (12)
Service industry workers nec	7 (10)	-	29 (33)
Sales assistants	7 (10)	-	3 (3)
Students and schoolchildren	4 (6)	-	4 (4)
Farm workers	3 (4)	-	0 (0)
Teachers and lecturers	3 (4)	-	1 (1)
Drivers	0 (0)	-	7 (8)
Unknown	13 (18)	-	27 (30)

Table 4.5 *Powys and Manchester suicides by occupation.*

Table 4.5 shows that farmers are the occupational group that comprise the largest proportion of suicides in Powys. This group is followed by labourers and related workers, and then builders. These categories make up half of the suicides in Powys. Service industry workers (not elsewhere classified) make up the largest proportion of suicides in Manchester. The next largest occupational grouping amongst the suicides are labourers and related workers, and builders. While there are some distinct differences between the two datasets some similarities should also be noted. For example, similar proportions of suicides in each of the categories: labourers and related workers, builders, and, students and schoolchildren are found in each location.

Method of suicide.

Powys comparison

In Powys the methods employed for suicide were: hanging - 31%; motor vehicle exhaust gas - 27%; shooting - 18%; self poisoning - 11% and other - 13%.

To compare the methods used for suicide by males and females we collapsed the categories into Self-poisoning; Hanging; Car exhaust gas; Shooting and other. This was done to ensure the reliability of the results since numbers in several of the original categories for females were very small. The gender differences for the methods used was significant (chi-squared = 35.98, df = 4, $p<0.00001$) As expected rural men showed a preference for the more violent

means with 38% dying by hanging and 23% by shootings as compared to 7% for hanging and no shootings for women. Deaths by self poisoning accounted for 53% of the suicides by women. No rural men died by self poisoning.

Method	Males %	Females %	Total %
Hanging	38	7	31
Car exhaust gas	29	20	27
Shooting	23	0	18
Self-poisoning	0	53	11
Other	11	20	13

Table 4.6 *Method of suicide for males and females in Powys.*

Manchester comparison

The Manchester data reveals that the following methods were used for suicide: self poisoning - 40%; hanging - 34%; motor vehicle exhaust gas - 12%; falling from a height - 6% and other methods - 8%. Only 1% of suicides were by shooting in contrast to the rural figure of 23%. To ensure the reliability of the results the categories were collapsed for the analysis to Self-poisoning; Hanging; Shooting; Car exhaust gas and Other. The differences in the methods employed for suicide by urban males and females was not significant (chi-squared = 5.76, df = 4, $p < 0.21$). The two most common methods employed were the same for both men and women, self poisoning - (35% men and 61% women) and hanging - (38% men and 17% women) with men tending to prefer more violent methods by a small margin.

Method	Males %	Females %	Total %
Hanging	38	17	34
Self-poisoning	35	61	40
Car exhaust gas	14	6	12
Fall from height	6	6	6
Other	7	10	8

Table 4.7 *Method of suicide for males and females in Manchester.*

Powys versus Manchester

Comparing rural and urban male suicides by mode of suicide revealed a significant difference between the groups (chi - squared = 35.86, df = 4, $p<0.00001$). Self-poisoning was the second most common method employed by the urban male suicides (35%) while no rural male suicides used this method. Shooting was used by 23% of rural males but only 1% of urban males. There were no significant differences between rural and urban females when compared on the method of suicide (chi-squared = 3.16, df = 3, $p<0.36$). It is important to note that rural/urban differences in the mode of suicide are wholly accounted for by male suicides.

Psychiatric history.

Reliable data regarding the presence of a psychiatric history is only available for the Manchester sample. In Powys this information is usually included in

the coroners files, but it should be noted that this is not routinely requested information. The result is that that some suicides with a psychiatric history , may not have this fact recorded in the coroners files. However, since the statements and reports in the coroners files tended to be extremely comprehensive the likelihood of this information being missed is small, but this limitation should be borne in mind. In the Manchester data set 63% of suicides had a previous psychiatric history, with depression being the most common diagnosis (35% of cases). 12% had a history of schizophrenia, 8% were diagnosed with alcohol dependence and 8% had other diagnoses. 17% had no previous history and this information was missing for 20% of suicides.

In Powys, only 41% were recorded as having a psychiatric history. Of these 31% had a history of depression. A history of alcohol dependence and schizophrenia were the next two most common diagnoses and were noted in 2.8% and 1.4% of the sample respectively. In 6% of cases this information was missing.

For the purposes of the statistical analysis the two groups were compared on Depression, schizophrenia, alcohol dependence and the number who had no psychiatric history. Other diagnoses were excluded since the numbers were very small. See Table 4.8.

The differences between the two groups were significant (chi - squared = 35.77, df = 3, p<0.00001). These results seem to suggest a greater degree of pathology in the urban sample yet since this data may not be complete for the rural sample, caution should be exercised in making any interpretation.

Psychiatric history	Powys %	Manchester %
Depression	30	44
Schizophrenia	1	15
Alcohol dependence	3	20
No history	66	21

Percentages relate to cases for whom information was available.

Table 4.8 *Psychiatric history for Powys and Manchester suicides.*

Visits to the general practitioner prior to suicide.

Several studies of urban/rural differences have hypothesized that differences in accessing services in rural areas might contribute to the excess of rural suicides. We examined this by collecting information about the last visit to the doctor from the coroner's records. Whilst this information is not routinely requested by the coroner such details are usually included in the suicide victim's general practitioner's report to the coroner. In the Powys sample there was no information for 52% of the sample. Of the remainder 18% died within 48 hours of consulting their GP. 53% had consulted their GP in the last week of their lives. This figure rose to 74% within three weeks of GP consultation. Thus, even assuming that none of those where information was

not available had visited the GP recently, at least 31% of the total did this within 3 weeks of the suicide. In the Manchester sample no information was available for 51% of suicides. Of the remainder 7% died within 48 hours of consulting their GP. 18% had consulted their GP in the last week of their lives, whilst 32% died within three weeks of a GP consultation. Statistical analysis showed the two groups to be significantly different, (chi - squared = 9.63, df = 2, $p<0.008$) with more rural than urban suicides having been in contact with their GP's prior to their suicides. The interpretation of this difference depends on the assumption that 'no information' means the same in Powys and Manchester. For example, if in Manchester this category systematically underestimated the number of visits to the GP then the difference might only be apparent and not real. Never the less the picture that emerges is one of more isolation in the urban setting than the rural setting. Thus it seems the rural rate of suicide cannot be attributed to lack of contact with services.

The analysis that follows is based on the data contained in statements in the Powys coroners files. This information was not available for the Manchester suicides.

Employment status.

Data on employment status was not available for the Manchester sample. In Powys 41% of suicides were in employment before their deaths. 24% were

unemployed, 23% were retired and for 12% this information was unknown or not recorded in the coroner's files. A number of studies report the rate of unemployment for suicides at about 50% (Williams, 1997).

Location of suicide.

63% of the Powys suicides took place at the individuals home. 32% took place in a remote location away from the individuals home. These remote areas were either forests, deserted laybys in quiet country areas or near a large dam in the area. These places are scenic and usually isolated with little chance of being disturbed. 1% took place in other locations and data was not available in 4% of cases.

Suicide notes.

34% of suicides (32% men and 43% women) in Powys left notes to be discovered after their deaths. Of the Powys farmer suicides only 13% left a note. Leenaars (1992) has reported that 12 - 15% of urban suicides leave notes. Hawton et al.(1998) report in their study of farmer suicide in England and Wales that 46.4% left notes.

Suicidal ideation.

The coroner does not routinely request information on whether the individual experienced suicidal ideation prior to the suicide. However, in

many cases the victim's closest relative will have been aware of previous suicidal ideation and this is usually reported in the statements to the coroner. In the Powys data 36% of reports referred to previous suicidal ideation having been experienced by the victim prior to their deaths.

Previous attempts.

It is well documented that people who have made a prior suicide attempt are the group most likely to go on to complete suicide. Although this information is not requested by the coroner, where the victim had a history of previous suicide attempts, this is mentioned in the statements to the coroner. In the Powys data 23% of suicides had a history of previous suicide attempts.

Farmer suicides.

In the discussion of Powys suicides it is clear that farmers are the group most at risk. We turn now to focus our attention more closely on this group.

23% (16) of the Powys suicide victims were farmers yet farmers make up less than 10% of the population. Half (8) of the farmers were over 60 years old with 94% (15) married and 6% (1)widowed. The two most common means of suicide were hanging (63% (10)) and shooting (19% (3)). All the shootings were carried out using a shotgun. Since this patttern of suicide seemed very untypical of the rural suicides in general, it was decided to compare the farmers with rural suicides. We examined age, marital status and method of

suicide. For the age comparison farmers and Powys residents were divided into two groups - under 45 years, and, 45years and older. There was a significant difference between these groups, chi-squared = 11.18, df = 1, p<.0005, with a larger proportion of farmers in the older age group. Next we compared the groups on marital status and this revealed no difference between the groups, chi-squared = 0.71, df = 2, p = .69. Thirdly , the groups were compared on the method used for suicide. This revealed a significant difference between the groups, chi-squared = 12.19, df = 4, p <.015, with a large proportion of farmers dying by hanging and very few dying by car exhaust gas poisoning and none using drug overdose as a method of suicide.

81% (13) of the suicides took place on the farm. Nearly all of the hangings took place in a barn. 19% (3) took place in a remote location where the farmer was unlikely to be discovered or disturbed. 13% (2) left a note, 19% (3) had expressed suicidal thoughts earlier, no farmers had made a previous attempt, 31% (5)had a previous psychiatric history - all involving depression. From the coroners statements it was possible to discern the main stressors at the time in 88% (14) of the cases. In the statements from the next of kin 81% (13) were reported to have been depressed prior to the suicide. Other prominent stressors or precipitants were physical illness (44% (7)) and financial problems (25% (4)).

Discussion.

Powys is a quarter the size of Wales, one of the most sparsely populated rural areas in the United Kingdom but has one of the highest suicide rates. No previous study has investigated suicides in this area. The aim of this study was to provide a profile of suicides in Powys and to compare these with an urban data set. It seems clear from the results that rural suicides do not have the same profile as urban suicides. It is also apparent that farmers are the occupational group most at risk in this rural area. Furthermore, there is evidence to suggest that they should considered as a group distinct from rural suicides in general.

The data that was examined in this investigation was derived from the coroners records. There are some problems with this data. Firstly, some of the files were incomplete and thus some data was missing. However, this was the case in only a very small number of cases. Secondly, it has been frequently reported that the official statistics are an underestimation of the true rate of suicide and that many suicides are given an open verdict (Cooper and Milroy, 1995). The ratio of open verdicts to suicide verdicts has been reported as varying greatly between coroners (Neeleman and Wessley, 1997). In Powys the proportion of open verdicts was very low (<10%) in contrast with the Manchester data where 46% of the 171 inquests were given an open verdict. This may be because in a rural areas communities are close-knit and

individuals and their circumstances are better known. Or perhaps the more frequent use of lethal means suggests that the victims intentions are much clearer for the coroner to judge. Consistent with this Neeleman and Wessley (1997) argue that the accuracy of certification varies with the characteristics of the deceased and the methods used. For example, drowning is less easily classified as suicide than hanging. The low proportion of open suicides in the Powys data increases our confidence in the reliability of the dataset, vis-a-vis representing suicides.

Powys is a large county which is divided by natural features into two halves, north and south. The proportions of suicides occurring in each sector were as expected based on the population distribution. Kelly, Charlton and Jenkins (1995) have reported that for males over 45 years of age, there is a concentration of suicides in Radnorshire, which is in the middle of Powys dividing Brecknock in the south, from Montgomeryshire in the north (these are old county divisions). When the geographical distribution of farm suicides are examined however, this pattern does not occur. There is instead a concentration of farm suicides in the north (Montgomeryshire).

The male to female ratio of suicides was 3.4:1 in the rural sample and 3.9:1 in the urban group. This is consistent with the rate described in other studies. A striking feature of the Manchester suicides was that 73% were men in the 15 - 44 age group. This is consistent with reports on urban suicide that have recorded a dramatic increase in suicide rate in men of this age group. This

bias seems less pronounced in the rural suicides with 50% of suicides being in this group. However, Kelly and Bunting (1998) have recently reported that for young men between 15 - 44 in Wales there has been more than a 50% increase in the suicide rates between the periods 1982-6 and 1992-6. These figures are higher than noted by Williams (1997) who suggests that current research shows that around 40% of suicides are in this group. Amongst the elderly, (over 70 years of age), rural men seem to be particularly at risk as they made up 12.7% of all male suicides, yet in the urban setting they only comprise 3.4% of all male suicides. In Powys more elderly men than women were victims of suicide and this gender difference is consistent with other studies (Cattell and Jolley, 1995), but was not noted in the Manchester group where the proportion of elderly was the same for both genders. There were no differences between the age distributions of the genders in either the urban or rural group, or when women from both groups were compared. However, there was a difference between the two groups of males. An inspection of the age distribution of the two groups showed that the rural group was spread more evenly through the age bands whilst the urban sample was concentrated in the lower age groups.

Most national urban studies suggest that marriage is a protective factor in suicide. This seems to be the case when considering the Manchester suicides, as here only 10% were married. Yet marriage does not seem to be protective in the rural setting as in the Powys sample 44% of suicides were married.

Even when males are compared age for age there is a significant difference between the groups. This is different from reported trends in urban studies.

As expected the methods used for suicide by the two groups were significantly different. The pattern of Manchester suicides was similar to the that reported for the national figures, that is, the top three means of suicide were self-poisoning, hanging and car exhaust gas. In national figures described by Kelly and Bunting (1998) the most common methods of suicide were car exhaust gas, hanging and self-poisoning. Comparing the methods used by men revealed that hanging was the most common means of suicide in both urban and rural men, i.e. 38% in both groups. More rural men died by shooting, 23% as opposed to only 1% of the urban sample. These results support those of Dudley et al. (1992) who investigated suicide in Australia and found death by firearm in rural areas to be common. Similar observations were made by Pasewark and Fleer (1981) in a study of rural suicides in Wyoming. In contrast, in this study more urban men died by self-poisoning (35%) as compared to the rural group of men in which self-poisoning was not used at all. There were no differences in the methods used by women in both groups, with self-poisoning being the most common means of death. It seems therefore that the high rate of rural suicide is due to the excess in the numbers of men taking their lives. In the Australian study by Dudley et al., (1992) examining urban/rural trends they found that there was a dramatic increase in the number of youth suicides in rural areas which was accounted for by a rise in male suicides. This suggests that rurality alone

is not enough to explain suicide since women in rural areas are not at much greater risk. Yet, as we saw in Chapter Three the suicide rates for women in Powys are increasing steadily and at a faster rate than those for Wales as a whole.

These results support the notion that choice of method is related to access to means. Hawton et al.,(1998) in a study of the methods used for suicide by farmers conclude that their choice of method is determined by easy access to firearms and ropes. The Manchester data support the conclusion that the means used by men and women in urban areas is becoming increasingly similar (Williams, 1997). However, if we consider the differences in the use of self-poisoning in Powys for example, we see a large difference between the genders. These data suggest that the increasing similarity between men and women in the method used is an urban phenomenon, for it is not occurring in the rural group. The reasons for this are not clear.

Previous research has suggested that psychiatric patients are one of the groups most at risk for suicide and that up to 90% of suicides have a diagnosable psychiatric illness at the time of their deaths (Hawton et al., 1998; Appleby, 1996; Blumenthal, 1991). It is therefore not suprising to find that 63% of the Manchester sample had a previous psychiatric history with depression being the most common diagnosis. In this regard the Powys data may be somewhat unreliable as only 35% were reported as having a previous psychiatric history, no psychiatric history was reported for 59% of the group

and data was missing for a further 6%. Thus it may be that this 59% did not have a psychiatric history or it was simply not reported in the coroners statements. On the other hand, the detail of the statements in conjunction with the level of corroboration by the doctors reports suggest that the level of psychopathology may well be greater in the urban sample. Furthermore, support for this notion comes from Seivewright, Tyrer and Seivewright (1991) who did a three year follow-up study of psychiatric morbidity in a sample of urban and rural patients. They found a higher proportion of morbidity in the urban sample. Similar results were obtained by Isometsa et al. (1997) in a Finnish study comparing urban and rural suicides. This area should be the subject of further research.

It has been suggested that a contributory factor to poor rural health is the inaccessibility of services in rural areas (Watt, Franks and Sheldon, 1993). However, Pollock et al. (1996) found that contrary to expectations, a large proportion of rural suicides had visited their GP shortly before their deaths suggesting, not that the services were inaccessible, but that the suicidal individuals were for some reason either not recognised or inadequately treated by their doctors. There is some evidence to support this view in other work (Freeling et al., 1985; Lemelin et al., 1994; Strauss et al., 1995; Tylee, 1996; Michel et al., 1997; Malmberg, Hawton and Simkin, 1997; Deaville, 1999). In this study no information was available for half of the subjects in each group. For the remainder, 74% in the rural group and a third of those in the urban group had made contact with the medical services in the three

weeks prior to their deaths. It seems therefore that these people are able to access medical help, but are either not recognised or inadequately treated. Contrary to expectations , it was actually the urban group who seemed more isolated than the rural group in this respect. This is a point at which intervention could be improved. Work by Rutz et al., (1992), for example, has suggested that a training programme for general practitioners on recognizing depression can be implemented with beneficial results, at least in the short term.

One of the difficulties with a study that relies on the coroners records for data is that the quality of the data depends to a large extent on the level of the thoroughness and detail or the coroners records. In this regard the Powys records were of a high standard but unfortunately some detail which would be of interest to clinicians is not routinely requested by the coroner. However, much of this information is reported to the coroner in the statements of the next of kin and those who knew the deceased well. The rest of this discussion is based on this somewhat less rigorous and perhaps poorer quality of data. It is included here since it is believed that any data that provides some insight into the functioning of suicidal individuals may be of value in enhancing our understanding or highlighting future areas for research.

A number of studies have reported the rate of unemployment for suicides at about 50% (Williams, 1997). The Powys data is consistent with this with just under half of being employed at the time of their deaths.

It is well documented that people who have made a prior suicide attempt are at risk for completing suicide and 10 -15% will go on to do this in subsequent years (Hawton and Catalan, 1987; Nordstrom et al., 1997). In the rural sample 36% had experienced suicidal ideation and others were aware of this prior to their deaths. Similarly, 23% had a known history of previous attempts and were thus at significantly higher risk than the general public. It seems that these warning signs should be taken seriously and are a point at which intervention could be aimed.

Leenaars (1992) has reported that 12 - 15% of suicides leave notes. Cattell and Jolley (1995) in a British study of elderly suicides found that 43% left notes. Few studies have reported on this in rural suicides. This analysis shows that 34% of rural suicides (32% men and 43% women) left a note. Furthermore, Hawton et al's. (1998) recent study into suicide in farmers in England and Wales found that 46 % left notes and the same number had made a clear suicidal comunication before death. In our study only 12% of farmers left a note. It is not clear why there should be such variation in the rate of note leaving. In the Hawton et al. study the high percentage of farming suicides leaving notes seems very similar to the level reported for the elderly by Cattell and Jolley. When the age of suicides in the Hawton et al. study is examined it seems that 31% were retired farmers (aged 49-74) and in addition some of the working farmers who killed themselves were in the older age group range. Perhaps it is this older group, who make up a large proportion

of rural and farm suicides, who feel the need to communicate and explain the reasons for their actions.

Within rural suicides farmers seem to be group particularly at risk. When farmers were examined half were over 60 years of age. Can this be explained as a cohort effect? These farmers were born from around the 1910's to the 1930's. This time period extends from when Britain was entering the First World War until the Great Depression. In an American analysis, Strauss and Howe (1991) refer to two cohorts that straddle this time period. The 'GI generation' (born between 1901 - 1924) and the 'Silent Generation' (born 1925 - 1942). They suggest that the GI generation is committed to doing one's duty and making sacrifices for the common good. They have deeply ingrained gender-role stereotyping and are the wealthiest and healthiest group of elders that has ever lived. In contrast, the 'Silent Generation' are an adaptive group who have worked hard throughout their lives adhering to society's rules. Throughout their lives they have had a relatively low suicide rate. It seems that these characteristics are determined by many factors including the cultural context in which these individuals were raised. Thus although the characteristics of these American groups will not necessarily explain the behaviour of British cohorts they do provide some clues as to the characteristics that may, in certain circumstances, place these cohorts at risk for suicide. For example, our group of farmers are from a generation who are hardworking within a clearly structured, predictable and relatively slowly changing section of society. However, change in the agricultural sector in the

last decade has been rapid. Disintegration of the industry, loss of jobs, changes in government policy, the BSE crisis, and other financial crises have forced farmers into rapid change. Perhaps it is this older cohort of farmers who are least well equipped to deal with these pressures.

When we compared farmers with the rural suicides in general we found there were significant differences in age and the method used between the two groups. In addition, farmers differed in the rate of note leaving and in the location of their suicides within Powys. These differences suggest that farm suicides may be a category of suicide distinct from rural suicide. Future research should examine this notion more closely.

This study has shown that there are some significant differences between urban and rural suicides and provides additional support for the findings in the small number of related studies. Prevention needs to be geared specifically to local conditions as clearly accessibility of means and adequate identification and treatment are factors which play an important role in rural suicides. Most treatment in rural areas is carried out in primary care rather than specialist settings and thus the importance of training for those working in primary care seems to be another avenue for the delivery of improved care.

In addition, this study highlights the fact that farmers make up a quarter of the suicides in Powys yet less than 10% of the occupational work force. Furthermore, they seem to have different characteristics from rural suicide in

general. They are over represented amongst suicides and seem to be a particularly stressed and at risk section of the population (Malmberg, Hawton and Simkin, 1997) and warrant further research. To this end we embarked on a further study to answer the following questions. What is it that farmers find so stressful? What factors contribute to these elevated levels of stress? This study is described in Chapter Five.

Chapter 5.

Stress in farmers.

The agricultural industry in Britain is currently undergoing a series of rapid and dramatic changes with a devastating impact on individual farmers. Gallagher and Sheehy (1994) suggest that changes in the Common Agricultural Policy in Europe and the General Agreement on Trade and Tariffs will result in a further decline in rural employment opportunities and the number of people living in rural areas. We have already referred to a report by the Rural Development Commission in 1992 that between 1978 and 1988 94 000 jobs were lost in the agricultural sector and a further loss of 100 000 jobs in agriculture in the decade 1990 and 2000 is predicted. Similarly, the Ministry of Agriculture and Fisheries in 1992, have estimated that 12 500 individuals involved in farming had left agriculture. Hornsby(1998) reports that farming income has declined by 82% over the last three years with livestock and sheep farmers being particularly badly affected. The majority of farmers in Powys are mixed livestock or sheep farmers. Parallel with this has been a rise in the suicide rate in rural areas and some researchers infer that these phenomenon may be related (Gallagher and Sheehy, 1994).

Despite the fact that farmers seem to be a particularly stressed sector of the population (Malmberg, Hawton and Simkin, 1997) there have been very few

studies of the predisposing factors in farmers in the UK. In a recent large study Mc Gregor, Willock and Deary (1995) conducted a survey of farmers perceived stressors at the Royal Highland Show in Edinburgh and the Royal Agricultural Show in Stoneleigh, Warwickshire in 1992. They surveyed 318 farmers. Their results revealed the highest ranking stressors amongst farmers to be related to government policy (filling in forms and adjusting to new regulations), followed by weather related factors, time pressure and the financial position of the farm. McGregor et al. also found an interesting age effect in that older farmers seemed to suffer significantly less stress when compared with younger farmers, supporting an earlier finding reported in a study by Weigel, Weigel and Blundall, (1987). Financial pressures appeared less stressful than they predicted, and isolation, which anecdotally has been suggested to be a stressor in farming and a contributor to suicide, was assigned to the lowest level of stressors. This result was consistent with Eberhardt and Poonyan's (1990) findings in a US study. Mixed livestock and arable famers showed highest levels of stress which McGregor et al. hypothesize may be related to the number of enterprises being managed by the farmer.

The McGregor et al. (1995) study was based on the large United States study carried out by Eberhardt and Poonyan (1990). This survey was developed by conducting interviews with six area farmers from whose responses a 28 item questionnaire representing five dimensions of farm stress was compiled. These dimensions were economics, geographic isolation, time pressure,

climatic conditions and hazardous working conditions. They mailed this survey together with measures of life satisfaction, emotional strain symptoms and an illness frequency checklist to 1300 farmers. They had a 28% response rate. The survey results were factor analysed and this produced six factors which were consistent with the authors original hypotheses. These factors were hazardous working conditions, geographic isolation, personal finances, time pressure, climatic conditions and general economic conditions. An interesting feature of their results was that although farmers rated isolation as the least stressful factor, it appeared to be a significant predictor of emotional strain and illness frequency. They concluded that isolation was a determinant of the health related variables (emotional strain and illness frequency) but not of the attitudinal variable (life satisfaction) and suggested that isolation may have an impact on how frequently farmers sought help for health related problems.

A number of studies conducted in the United States have investigated symptoms of stress and depression in farmers. Walker et al. (1986) found that 83% of farmers in their sample rated financial problems as being their major stress. The next most frequently reported stressor was unpredictable weather mentioned by 75% of farmers and then government agricultural policies and regulations. Another study by Olson and Schallenberg (1986) surveyed 1400 farmers and found that machinery breakdown, market price fluctuations, machinery costs, interest rates, when to market, and, planting and weather conditions were all reported as major stressors.

There are other stresses which farmers experience which are not necessarily connected to the farming economy. The close working proximity of more than one generation on a farm and their mutual dependency can lead to inter-generational disputes (Weigel, Weigel and Blundall, 1987; Weigel and Weigel, 1990; Wilson et al., 1991). Weigel et al., (1987) when investigating stress levels in farm families found that the older generation were less stressed. In contrast, the younger generation had higher stress scores but scored lower on family support and family satisfaction. Walker and Walker (1987b) highlight traditional family roles and disputes between marital partners over financial priorities as a major source of stress. Keating (1987) has pointed to long work hours as a source of stress in both farmers and their wives and McGregor et al., (1995) suggest that farmers sense of loss of control over their decision making and careers is a further important tension.

There are very few studies which have examined stress in farmers. In the studies we have reviewed here a range of stressors have been identified and reported. These stressors include financial factors, government policy and the weather. Other factors that farmers find stresssful include intergenerational disputes, traditional family roles, long hours and a loss of a sense of control over one's life. As so few studies have examined stress in farmers it is unclear whether the same pattern of stressors can be expected to be found in other groups of farmers in the United Kingdom. This survey of the literature raises a number of other questions. For example, since the suicide rate

amongst mid-Wales women is on the increase as we saw in Chapter 4, are there gender diffrences in the levels of stress in farmers? Furthermore, since the rate of suicide among elderly men is higher than that for younger men, are we likely to find age effects in the stress levels of farmers?

Stress in Mid-Wales farmers.

The brief survey which is described below was conducted as a preliminary investigation with the intent of shedding light on the main causes of stress experienced by farmers in mid-Wales. It was decided to replicate the McGregor et al., (1995) study in Wales as a pilot for a later larger study. We were particularly interested in whether we would find the same stressors emerging as important in our study with a population of mainly Welsh farmers. Secondly, would worries about financial pressures be secondary to other stressors as found in Scotland? Thirdly, we were interested in whether the age effect found in the Scottish study would also be found in Wales. Fourthly, would isolation achieve as low a rating as in the McGregor et al. study?

Method.

Permission was gained from McGregor, Willock and Deary to use their questionnaire in this study. Several questions were changed slightly to be appropriate in a Welsh setting. The questionnaire consisted of 30 questions

divided into six categories. These were government policy, financial concerns, social concerns, time pressure, isolation and hazards. Participants were asked to rate each stressor on a scale of 1 (no stress) to 5 (extreme stress) according to the level of worry or personal concern each caused. The questionnaire was available in Welsh and English to maximise response rates.

For this study we used a convenience sample of farmers. Farmers were approached at the 1998 Royal Welsh Agricultural Show and asked to complete the questionnaire. We defined farmers as anyone engaged in farming who qualified for a farm subsidy. The majority of participants completed the questionnaire independently. 356 questionnaires were completed over a period of five days.

Results.

31 (9%) of the questionnaires were incomplete and therefore omitted from the analysis, leaving a total of 325 valid questionnaires (265 men, 42 women and 18 completed questionnaires of undeclared gender) to be scored and analysed. The 18 questionnaires were excluded when gender issues were examined but otherwise were included in the analysis. Initially, the scores for individual stressors were summed and ranked across the group. Secondly, a global stress score was calculated for each respondent by summing their individual responses to each questionnaire item. Analyses of variance were used to examine differences between the groups.

Characteristics of this self-selected sample are given in the following tables.

Marital status	Age					
	16-24	25-44	45-64	65+	No data	Total
Married	1	67	152	21	2	243 (75%)
Single	17	24	7			48 (14.5%)
Divorced			2		1	3 (1%)
Separated			2			2 (1%)
Widowed			2	2		4 (1%)
Co-habiting	2	6	4	1		13 (4%)
No data	1	6	4	1		12 (3.5
Total	**21**	**103**	**173**	**25**	**3**	**325 (100%)**
	6%	32%	53%	8%	1%	

Table 5.1 *Marital status by age group.*

Three quarters of the farmers were married with most of these (85%) being aged between 25 and 64 years. Very few farmers were divorced , widowed or separated (3%). 14.5% were single.

Type of farming	Age					
	16-24	25-44	45-64	65+	No data	Total
Dairy		14	22	2	1	39 (12%)
Sheep	6	17	31	8		62 (19%)
Mixed arable/ livestock	4	18	23	2		47 (14%)
Mixed livestock	10	51	87	11	2	161 (50%)
Other	1	3	1	1		16 (5%)
Total	**21**	**103**	**173**	**25**	**3**	**325 (100%)**
	6%	32%	53%	8%	1%	

Table 5.2 *Type of farming by age group.*

As can be seen in Table 5.2 the majority of farmers were in the 45 - 64 age group (53%). Another third were between 24 and 44 years of age. Half the farmers were engaged in mixed livestock farming with a further fifth being involved in sheep farming.

Rank order of stressors.

For the total sample of farmers the ranking of categories of stressors was as follows: Government policy, finance, time pressure, social pressures, hazards and isolation. The complete list of individual rankings of stressors is shown in Table 5.3 below.

Rank	Statement	M	SD
1	Adjusting to govt policies and regulations	3.83	1.11
2	Filling in government forms	3.77	1.21
3	Not enough ready cash	3.54	1.29
4	Worrying about market conditions	3.47	1.15
5	To much to do and little time to do it	3.444	1.18
6	Machinery breakdown at busy times	3.44	1.20
7	Worrying about viability of the farm	3.43	1.22
8	Unsuitable weather	3.29	1.23
9	Changes in CAP	3.22	1.21
10	Complying with environmental regulations	3.19	1.27
11	Long hours of work	3.06	1.24
12	Production loss due to disease/pests/weeds	2.92	1.23
13	Financing my retirement	2.857	1.34
14	Worrying about keeping the farm in the family	2.85	1.40
15	Worrying about owing money	2.80	1.50
16	Unplanned interruptions	2.79	1.20
17	Making major purchases for the farm	2.74	1.20
18	Personal illness during busy times	2.70	1.22
19	Not being free to make my own decisions	2.60	1.42
20	Taking few holidays away from the farm	2.56	1.37
21	Problems of balancing work and family duties	2.53	1.19
22	Deciding when to sell produce	2.488	1.14
23	Keeping up with new technology and procedures	2.48	1.15
24	Having no help on the farm	2.42	1.23
25	Risk of farming related injury	2.41	1.06
26	Hazardous materials on the farm.	2.19	1.15
27	Having to travel long distances for services, shopping and healthcare	1.82	1.06
28	Not seeing enough people	1.78	1.08
29	Feeling isolated on the farm	1.77	1.01
30	Lack of close neighbours	1.41	078

Table 5.3 *Rankings of stressors in the farmers stress survey.*

Female farmers made up only 13% (42) of the sample and ranked the following categories of stressors as most important. They ranked finances, market conditions and not having enough time as the three most stressful factors.

Stressor	Males (87%)	Females (13%)
Adjusting to govt policy	1	4
Filling in govt forms	2	8
Not enough ready cash	3	1
Market conditions	4	2
Machinery breakdown	5	5
Not enough time	6	3
Concern about viability of the farm	6	6
Bad weather	7	10
Changes in CAP	8	13
Complying with environmental regulations	9	9
Long hours	10	7

Figure 5.4 *Rankings of the 10 top rated stressors for male and female farmers.*

The various age groups ranked stressors in a slightly different order although there seemed to be general agreement that adjusting to government policy, filling in government forms and finances were considered important sources of stress by all age groups. See Table 5.5.

Stressor	16-24	25-44	45-64	65+
Adjusting to govt policy	5	1	1	1
Filling in govt forms	4	3	2	2
Not enough ready cash	1	6	3	9
Market conditions	6	7	4	3
Machinery breakdown	3	2	9	6
Not enough time	-	4	6	7
Concern about viability of the farm	9	5	5	5
Bad weather	10	8	7	4
Changes in CAP	-	-	8	5
Complying with env regs.	-	10	-	10
Long hours	-	-	10	8
Production loss due to disease/pests/weeds	7	-	-	-
Worrying about owing money	2	-	-	-
Making major purchases	8	-	-	-

Table 5.5 *Rankings of the 10 top stressors for each age group.*

When stressors were examined by farm type, government policy was ranked the major stressor for all categories of farmer, followed by finances and time pressure. In each analysis isolation was consistently rated the lowest of all stressors. These results were similar to the findings in the McGregor study in that the main stressors reported by farmers were government policy and finances (market condtions). The third factor in the Scottish study was weather. In Wales time pressure rather than weather completed the triad of the main stressors. Perhaps weather was less important to Welsh farmers as the proportion of cereal farmers was very much smaller than in the Scottish sample. The majority of farmers in our sample were mixed livestock farmers.

A global stress score was calculated for each of the respondents by summing their scores for each of the 30 statements. The distribution of scores is shown in Figure 5.1.

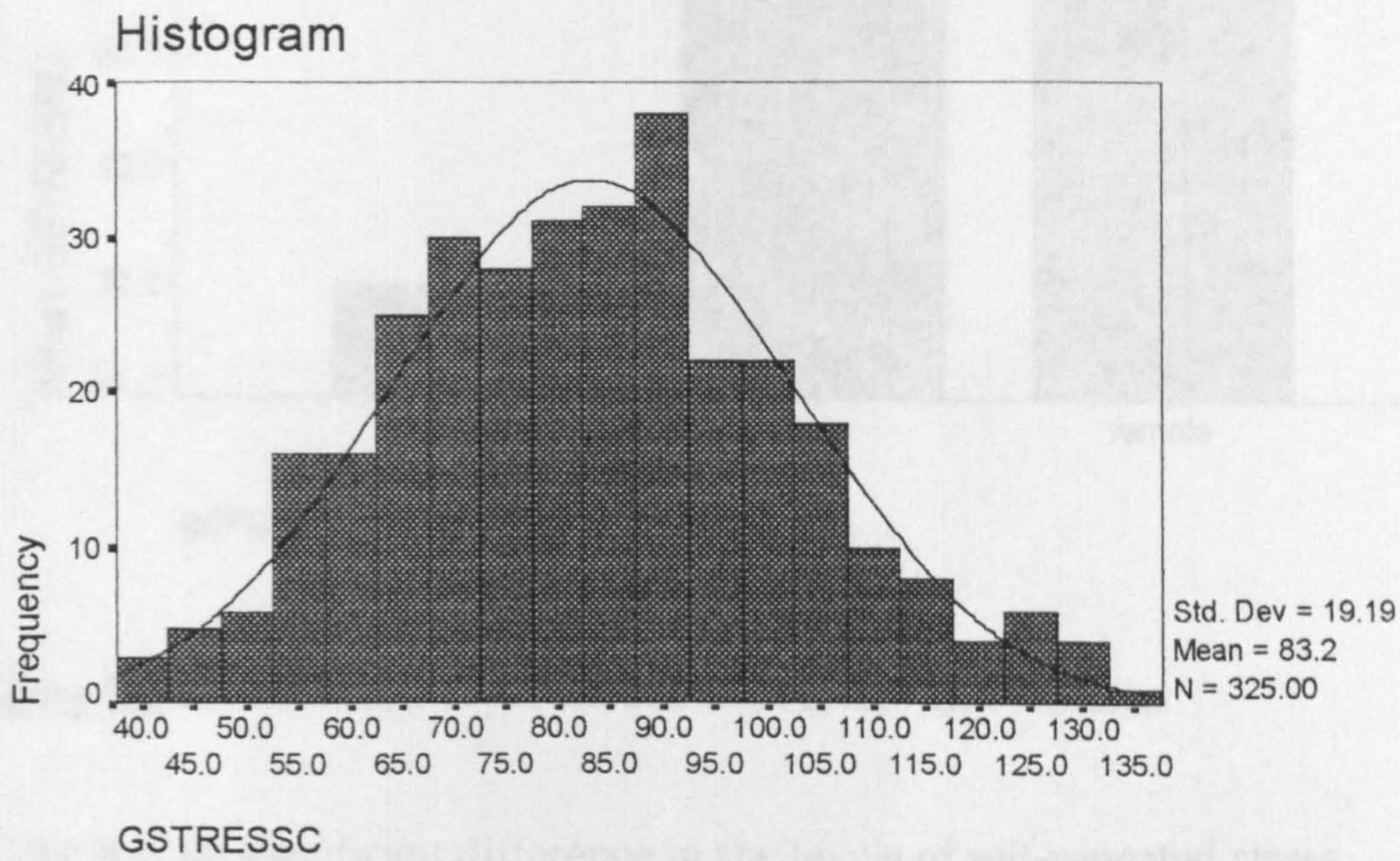


Figure 5.1. *Distribution of global stress scores.*

Global stress score means and standard deviations are shown below for males and females. In Figure 5.2 the mean scores are represented graphically.

		Mean	Standard deviation
Male	(N=265)	83.18	19.56
Female	(N=42)	83.80	18.14

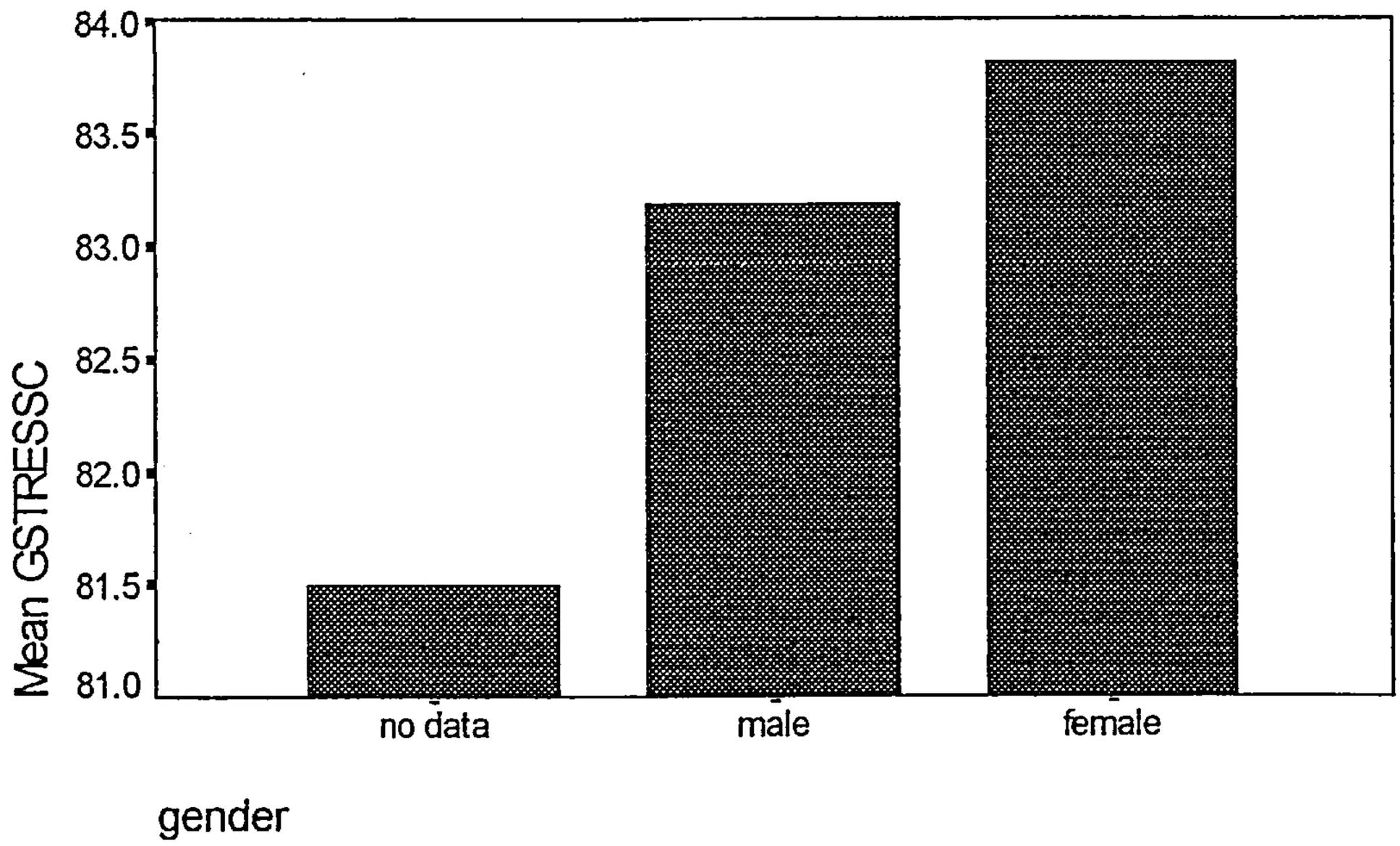
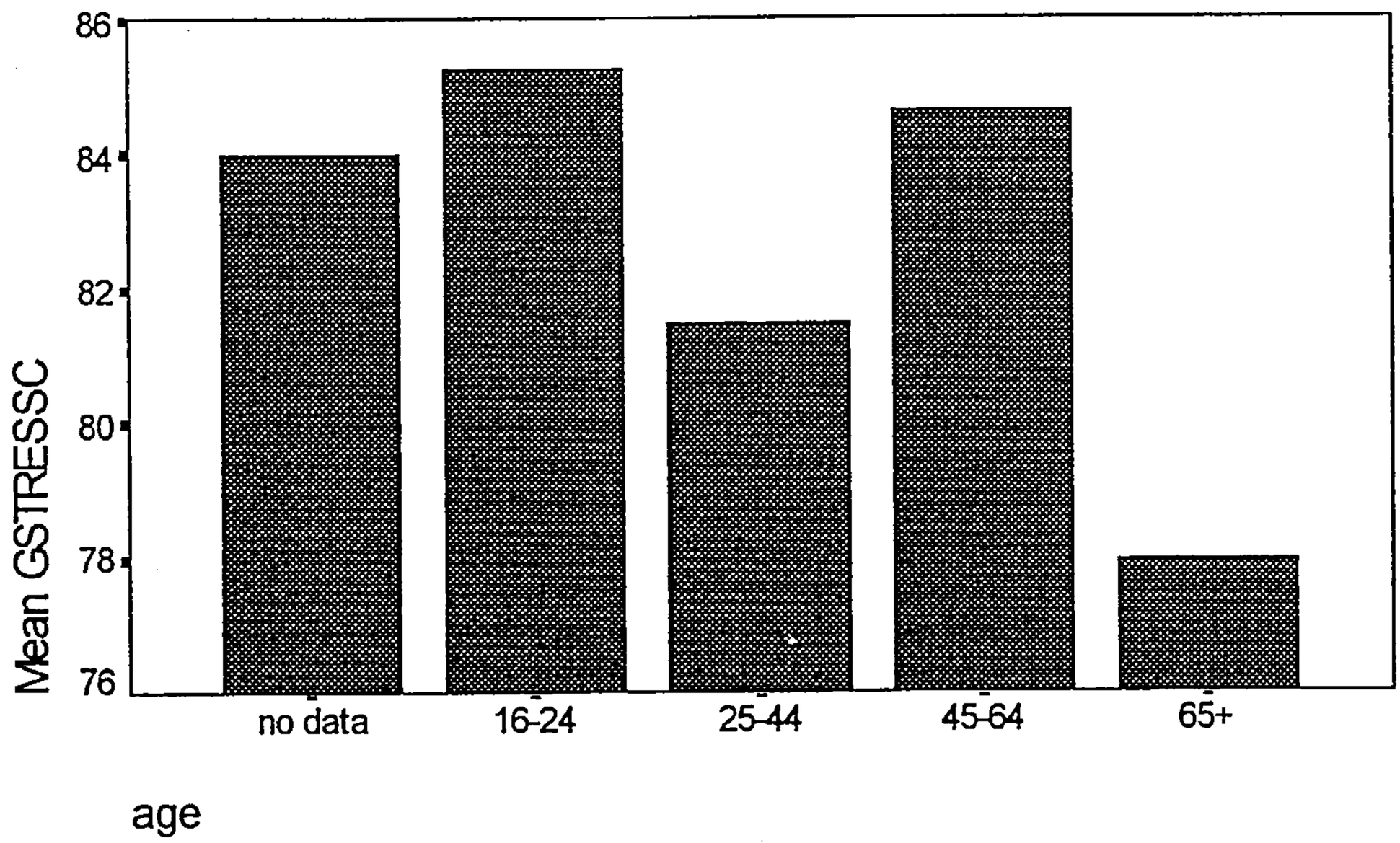


Figure 5.2 Levels of self-reported stress in males and females.

There was no significant difference in the levels of self-reported stress between males and females, $F(1,305) = 0.377$, $p<.84$.

Examining the global stress scores by age revealed no significant differences between the age groups ($F(4,320) = 0.97$, $p<.42$).



Figrure 5.3 Global stress scores by age.

When the global stress score was examined by farm type, no significant differences were found, $F(5,317) = 1.63$, $p<.15$.

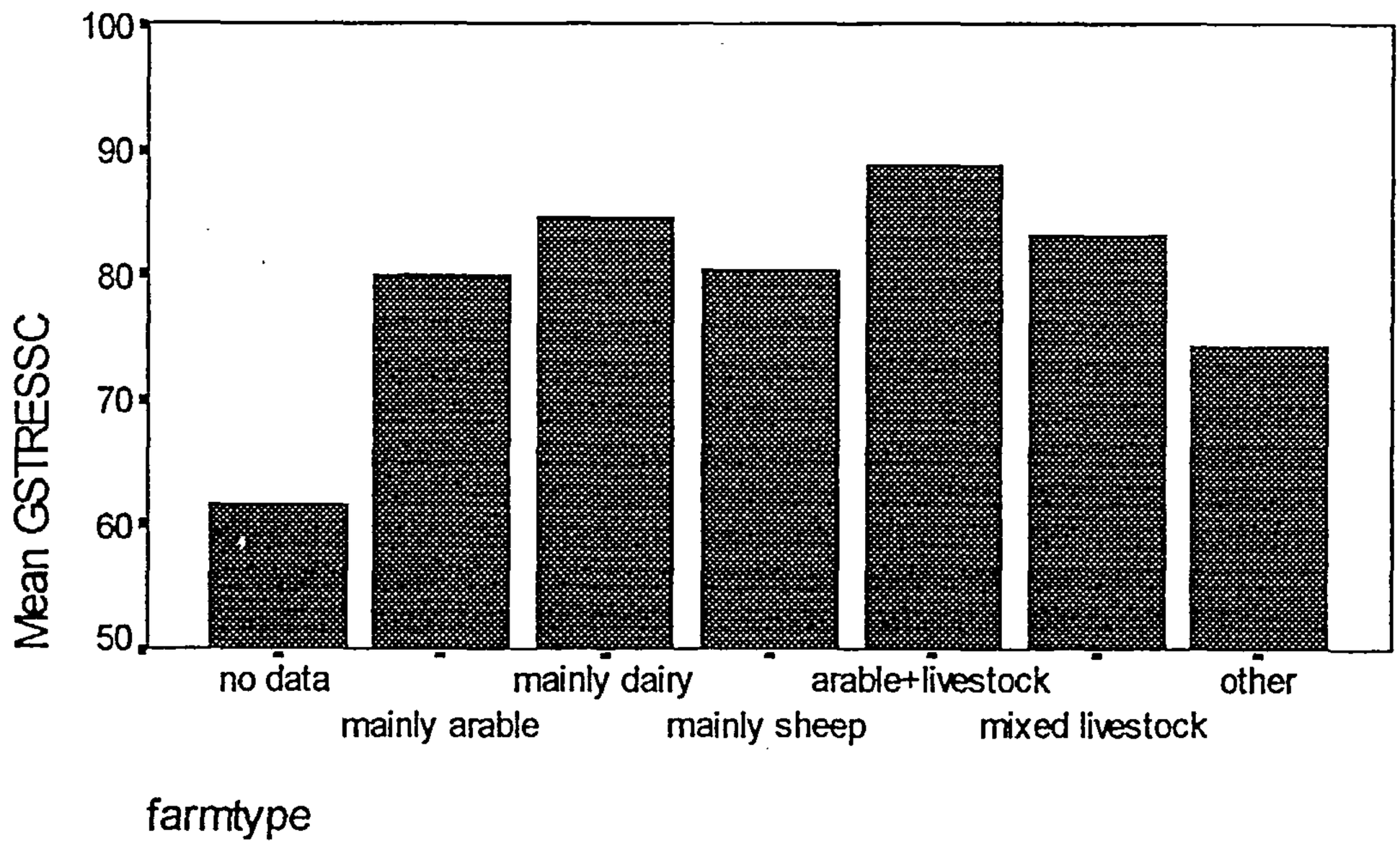


Figure 5.4 Global stress scores by farm type.

Discussion.

This study into stress factors in farmers was based on a study carried out in Scotland (McGregor et al. (1995). The majority of the sample in the current study consisted of Welsh farmers. Although both of these studies used a self-selected sample of farmers and so the results cannot be generalised to farmers

in Britain, they do shed some light on the factors which farmers experience as stressful.

In drawing any conclusions it is important to bear the main characteristics of the sample in mind. Eighty-four percent were from Wales. The two largest groups were mixed livestock farmers (50%) and sheep farmers (19%). Two thirds were married and 53% were aged 45 - 64. (85% fell into 25 - 64 age group). 13% were women farmers.

Despite the differences in types of farming in Scotland and Wales, our results were very similar to those in the Scottish study. In both studies the two major groups of stressors were the same, government policy and market conditions. Government policy and form filling are experienced as stressful since the farmers' incomes depend directly on correct completion of lengthy government forms. Furthermore, these are the factors which may leave farmers feeling that they have little control over the direction of their careers or their future and this element has been suggested to be a major stressor (McGregor et al., (1995). The third ranked stressor was time pressure. The Scottish study found weather conditions to be ranked third. The reason for this may be that the original study sample included a large proportion of cereal farmers, whereas in Wales livestock farming is more common, and thus weather conditions are less crucial to success.

Consistent with the McGregor et al. study financial pressures were rated as secondary to stress from filling in government forms and adjusting to new government regulations and policies. This is slightly different to the findings of some investigations conducted in the United States which have found financial factors to be rated as most stressful by farmers (for example, Walker and Walker, 1988).

The findings of a very recent study by Hawton et al. (1998) provides support for our results. In a survey into stress in farmers Hawton et al. (1998) sent out questionnaires to farmers in England and Wales. They had an overall response rate off 51%. This was made up of 57% from England, and a response rate from Wales of 38%. Their results suggested that financial factors, government legislation and increased paperwork were important factors. In contrast to our results the Hawton et al. (1998) study reported financial pressures to be the main concern of the farmers they surveyed. When Hawton et al. (1998) asked farmers whether their situations had been affected by changes in government policy, more of the Welsh farmers reported being adversely affected. In contrast a larger proportion of English farmers indicated that the changes in policy had benefitted them. This may go some way to explaining why, in our largely Welsh sample, government related issues were experienced as more stressful.

In addition, Hawton et al. (1998) found that long hours, the weather, pests and diseases and health problems were issues experienced as stressful by

farmers. Other stressors reported were intergenerational conflict and changing social patterns that resulted in young people moving away from the farms to the cities in search of employment.

As far as age effects are concerned our study found no differences between the groups. This result may be misleading and not representative of older farmers as there were only 25 (8%) farmers in this age group. However, this finding differs from that reported by Wiegel et al (1991) who found a significant difference in stress levels when comparing younger with older farmers, with younger men being more stressed. In Chapter 4 our profile of rural suicides revealed older farmers to be at increased risk of suicide. It seems therefore that although reported stress levels play a part in raising farmers' vulnerability to suicide additional factors must contribute to precipitating a suicidal crisis.

Significantly, isolation achieved the lowest ranking of the stressors suggesting that although this is often reported as a major factor contributing to suicide, farmers do not regard isolation as particularly stressful or a negative factor. This is consistent with the findings of McGregor et al (1995) and Eberhardt and Pooyan (1990), and consistent with the findings of Chapter 4, that lack of contact with the health services is not a specially relevant issue in the proximal risk factors for suicide. Indeed, Hawton et al. (1998) suggest that it is not the physical isolation that increases farmers' vulnerability to stress, but rather their lack of someone to confide in.

When gender effects were considered, no differences between male and female farmers emerged, although it should be noted that females only made up 13% of the sample and so no definite conclusions can be drawn. This is in contrast with the trends in rural suicide rates where we saw that the rates among males are higher than females and that the female rate is on the increase. It may be that farmers display different patterns of stress and suicidal behaviour than rural groups in general. However, it seems other factors must contribute to precipitating a suicidal crisis.

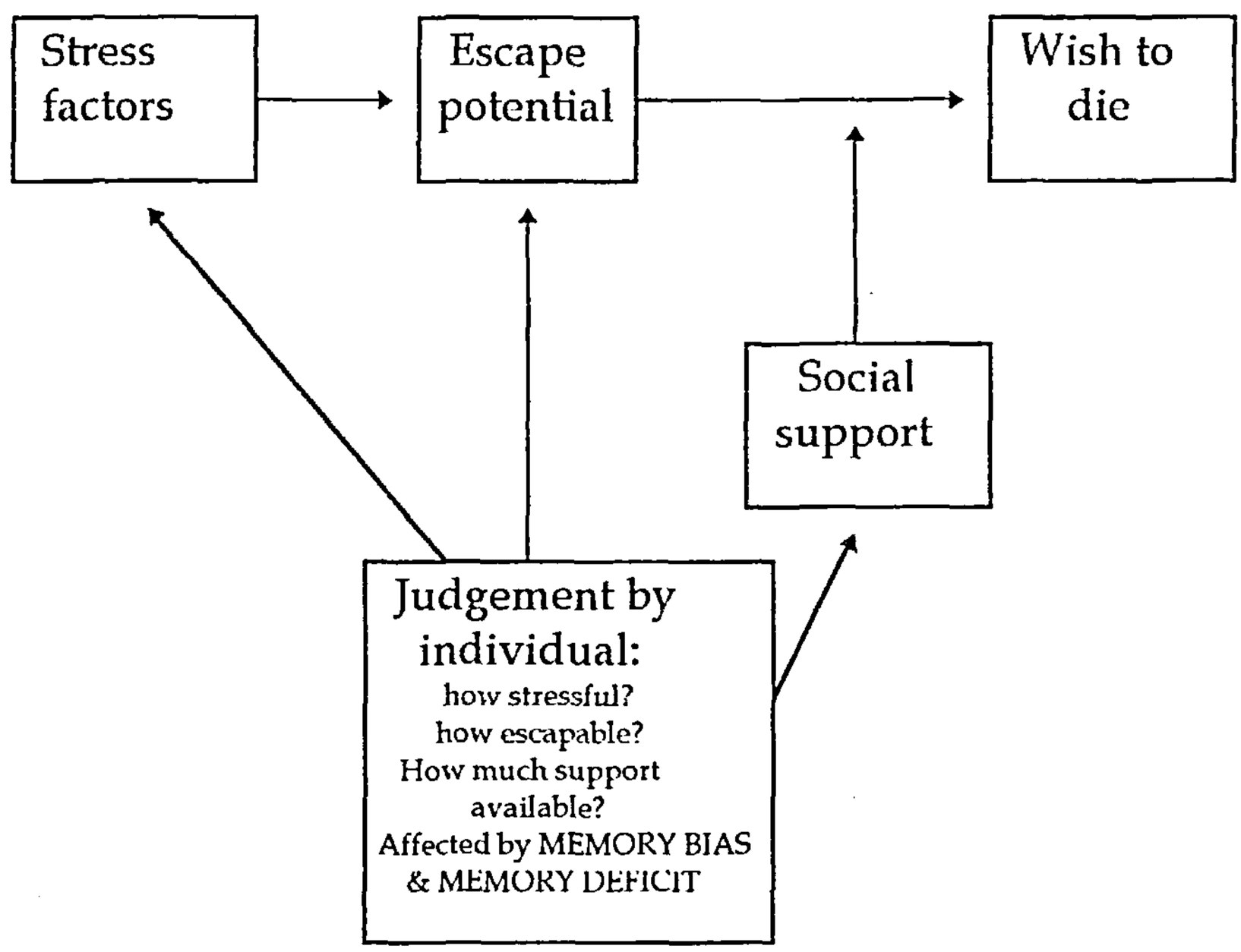
The McGregor et al., (1995) study reported that farmers engaged in mixed farming were found to be more stressed with sheep farmers reporting lowest levels of stress. We found no differences between these groups.

This preliminary study, although based on an unrepresentative, self-selected sample of largely Welsh farmers has produced results which are consistent in many respects with those of the McGregor et al. study. Thus, although these results cannot be extrapolated to the farming population in general, the stressors highlighted here are an important element of the stress experienced by farmers and warrant further careful investigation.

In the earlier literature review the Cry of Pain Model was criticized for not specifying the nature of the stressors experienced by eventual suicides. This study has shown what the nature of the stressors in farmers might be. Yet

what is it that makes apparently healthy farmers and other victims turn finally to suicide as an answer to their problems?

Referring to Williams (1997) Cry of Pain Model (p223) sheds some light on this question. The model is illustrated in the diagrams below.



In terms of this model individuals make a judgement as to how stressed they are feeling in response to a problem situation, and, as to how escapable the situation is. The less escapable the situation the more frustrated and hopeless the individuals will feel and this generates the wish to die. The wish to die is however modified by the perceived support available.

In the farmer's stress survey we saw that the most stressful issues for farmers were 'government policy and regulations' and 'financial' factors. The largest stress is that is that which combines a sense of helplessness with anger and frustration, for example, farmers' experience of government policy, and, which is personally important, for example, financial solvency, but which they are not trained to do - 'form filling' is not farming. We can contrast this with the 'weather' which is an 'unstable attribution' (it changes), whereas there is little prospect that government form-filling will change. In other words members of the farming community feel not only trapped, but also defeated. They are prime candidates for suicidal behaviour according to the Cry of Pain Model. They do not feel isolated, and this is born out by the findings of the Powys/Manchester comparison that access to health services prior to suicide is no lower than reported in other British studies.

It remains true that most farmers and others in this rural community do not harm themselves. This raises the question of what variables combine to increase the risk. To answer this we need to identify a high risk sample - those who have recently harmed themselves, and secondly, assess the likely psychological risk variables. In the next chapter, we review evidence to suggest that problem solving deficits are the processes most likely to make a bad situation seem inescapable and thus most likely to give rise to a feeling of being trapped. This will lead to an assessment of which aspects of problem solving most contribute to specific suicidal vulnerability.

Chapter 6[1]

Cognitive aspects of suicidal behaviour.

Chapter Five suggests that stress in farmers was most likely to be caused by those elements which caused most anger and frustration, were personally important, but over which they had no control. However, these are common to all farmers and tell us little about the psychological processes that may mediate between the general risk factors and an individual's suicidal behaviour. We need to move from risk factors to risk mechanisms. In this chapter we leave aside the rural issue to focus on one psychological characteristic that has been seen as a central risk mechanism for all suicidal behaviour: deficits in problem solving (Weishaar and Beck, 1992). The research showing problem-solving deficits in suicidal individuals is reviewed briefly, and the preliminary outcome trials that have yielded promising results when a problem-solving approach has been applied, are discussed. It is suggested that this early work is promising enough to make a more detailed study of problem solving and suicidal behaviour worthwhile. We therefore consider the range of methods that have been used to assess problem-solving, and consider the extent to which they assess all stages of the problem-solving process. We then review some qualitative differences that have been found in problem solving studies: the distinction between active and passive problem solving.

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[1] Much of this chapter has been published as Pollock, L.R. and Williams, J.M.G. (1998). Problem solving and suicidal behavior, Suicide and Life-Threatening Behavior, 28, 375-387.

Problem solving and suicidal behaviour.

Early studies focusing on what cognitive characteristics might distinguish suicidal individuals from normals examined impersonal problem solving, while more recent work has focused on interpersonal problem solving, as several researchers have argued that these processes may be inherently different (Schotte and Clum 1982; Arffa,1983). Also it appears that from a clinical point of view interpersonal problem solving is more relevant as Linehan et al (1986) found that suicide attempters report greater difficulty with interpersonal problems than suicidal ideators, non-suicidal psychiatric patients and normal controls from the general population. Problem solving studies have shown that suicide attempters tend to be more field dependent (Levenson 1974; Patsiokas, Clum and Luscomb, 1979), show greater cognitive rigidity (Neuringer,1967; Patsiokas, Clum and Luscomb, 1979), more dichotomous thinking (Neuringer 1967), and solve problems less effectively (Levenson and Neuringer (1971). Patsiokas, Clum and Luscomb (1979) suggest that the cognitive rigidity characteristic of suicidal individuals results in difficulty generating alternative solutions when they are faced with emotional problems and they may turn to suicide as the only solution at that moment. Williams (1986) investigating levels of hopelessness and reasons for taking overdoses found that in both high and low hopelessness groups one of the reasons for the overdose most frequently given was that the person felt the "situation was so unbearable I didn't know what else to do". It seems that

when people with poor problem solving skills are faced with a problem or external stressors, they fail to generate solutions to the situation, become overwhelmed and progressively more hopeless. As their level of hopelesness increases, they become more at risk for depression and ultimately, suicidal behaviour.

Hopelessness about the future is an important factor in suicidal behaviour, and has been frequently reported in both British and American research as mediating the relationship between depression and suicidal intent within parasuicidal populations (Rudd et al., 1994; Williams and Pollock, 1993). Petrie, Chamberlain and Clarke (1988) report that hopelessness has also been found to predict repetition of parasuicide after an interval of six months and completed suicides up to ten years later (Beck, Brown and Steer, 1989). The relationship between hopelessness and problem solving is not clear. Hopelessness was thought to be a consequence of cognitive rigidity, dichotomous thinking and problem solving deficits (Neuringer, 1967; Levenson and Neuringer, 1971; Patsiokas, Clum and Luscomb, 1979). However, more recent work has suggested that hopelessness may be unrelated to problem solving skill (McLeavey et al., 1987) and that deficits in these areas are independent risk factors that interact with and may exacerbate other cognitive vulnerabilities (Schotte and Clum, 1987; Weishaar and Beck, 1992).

Suicidal people are poor at solving interpersonal problems. The measure that has been used most frequently in assessing this has been the Means-Ends Problem Solving Test (MEPS, Platt, Spivack and Bloom, 1975). The test items ask the person about a number of different social scenarios and for each situation they are given an initial situation where a problem has to be solved, and a desired end-point. The subjects task is to complete the middle part of the story, providing the means whereby the initial situation becomes the desired end-point. Schotte and Clum (1987) compared the responses of suicidal and non-suicidal patients and found that the suicidal subjects were able to provide fewer than half as many potential solutions as the non-suicidal patients. The suicidal patients rated their solutions as being potentially effective but tended to be more negative about implementing their solutions than the control group. Schotte and Clum concluded that although hopelessness was a good predictor of the level of suicidal intent, the non-significant correlations between the degree of hopelessness and the problem solving measures were an indication of a general maladaptive set toward problems. Rudd et al., (1994) commenting on this finding, suggested that problem solving appraisal may be an important factor in the way an individual approaches a problem situation. Dixon, Heppener and Rudd (1994) examined the role of problem solving appraisal in a study that expanded Schotte and Clum's work. They concluded that hopelessness mediates the relationship between problem solving appraisal and suicidal ideation and argued that their results showed the usefulness of hopelessness in predicting suicidal ideation. Other research supports these findings and

suggests that the relationship between self-appraisal of problem solving ability may be important and deserves further study (Bonner and Rich, 1988; Rudd et al., 1994; Wilson et al., 1995).

These studies have some clinical implications. Dixon et al., (1994) suggest that it may be useful to focus clinical investigations on hopelessness and problem solving appraisal. They assert that when people think they cannot cope with the problems they face, they are more at risk for becoming hopeless about the future, and this sense of hopelessness is what leads to suicidal ideation. In an acute crisis, focussing on hopelessness may be helpful because feelings of hopelessness may be transitory and therefore amenable to brief interventions, whereas interventions dealing with problem solving appraisal and problem solving skills may, because of their traitlike nature, require longer term therapy. Several studies have shown that interventions with a problem solving focus yield promising results (See Hawton et al. (1998) for a review). These studies are discussed next.

Salkovskis, Atha and Storer (1990) suggested that treating patients who repeatedly attempt suicide with pharmacotherapy may be of questionable value and that psychological treatment directed at improving problem-solving ability may be more appropriate. They devised a study to evaluate a short-term cognitive-behavioural, problem-solving approach using 20 patients at high risk of repeated suicide attempts and compared them to a 'treatment as usual' control group. The experimental group received five

sessions of treatment based on a problem-solving approach. They were taught how to identify problems and arrange priorities for problem solving. Next they learned how to generate a wide range of solutions and then narrow these down to goals which would represent a significant improvement in their personal situation. Strategies for working towards and implementing these goals were considered as well as methods of monitoring success. They were also taught to be flexible on the basis of their results and the deciding of new or further goals. The results revealed that the problem-solving group showed significantly better overall results in rating their problems when compared with the control group. When followed up it seemed that repeat suicidal behaviour tended to occur later in the experimental group. However, by eighteen months the differences between the groups were no longer significant. The researchers suggest that longer term active follow-up may be required to sustain improvement.

Linehan et al. (1991) have also adopted an approach which incorporates a problem-solving focus in the treatment of chronically parasuicidal patients. This study evaluated the effectiveness of a cognitive-behavioural therapy (Dialectical Behaviour Therapy) on 22 chronically parasuicidal women, who met the criteria for Borderline Personality Disorder, compared to 22 controls who received treatment as usual. DBT is a treatment that combines strategies from behavioural, cognitive and supportive psychotherapies. It applies directive, problem-orientated techniques that are combined with supportive techniques, such as reflection, empathy and acceptance. This hierarchy, and

the patients behaviour in each targeted area, is used to determine the problem focus of each session. The first task of the session is to apply problem-solving strategies to the specific behaviour pattern under discussion. Adaptive behaviours are actively taught and reinforced as they occur in the therapeutic relationship. The emphasis is always on teaching the patients to manage emotional trauma rather than reducing or extricating them from crises. The results showed that the group that received DBT showed a significant reduction in the frequency of parasuicidal behaviour. DBT was also effective in keeping patients in therapy with only 16.7% dropping out of treatment over the period of a year when the normal expectancy for this group is 50%. Thirdly, patients who received DBT spent fewer days in hospital. Linehan et al. (1991) concluded that although the study shows a clear treatment effect it is unclear what aspect of the treatment this can be attributed to.

Follow up of the groups in this study continued for a year after their year in treatment. Linehan et al. (1993) found that in the first six months of follow-up patients who received DBT displayed less parasuicidal behaviour, less anger and better self-reported social adjustment. In the 6 - 12 month follow-up period there no significant group differences on parasuicide measures. However, patients who received DBT spent less time in hospital and were rated significantly higher on social adjustment by the interviewer. In general, this careful preliminary study seems to show that receiving DBT is superior to treatment as usual even in the follow-up period.

Lerner and Clum (1990) compared two groups who reported significant suicide ideations. One group received problem solving therapy based on D'Zurilla and Goldfried's (1971) formulation and the second group received supportive therapy. Problem solving therapy was found to be superior to supportive therapy in reducing depression and improving problem solving self-efficacy and slightly more effective in improving problem solving ability. At the three month follow-up the benefits of problem solving therapy continued to be evident, with reduced levels of depression, hopelessness and loneliness. However, there are problems with this study in that the small number of subjects in each group (nine), the nature of the subjects (ideators, not attempters) and the brief follow up period suggest that these results must be treated with caution and may not be directly comparable with other studies.

Rudd, Joiner and Rajab (1996) compared the effectiveness of a structured form of problem solving therapy with treatment as usual in a group of suicidal young adults. Both groups showed reduction in suicidal ideation and behaviour, symptomatology, and stress and an improvement in self-appraised problem solving ability. Problem solving therapy was more effective in retaining the highest risk participants. At 12 month follow-up initial gains were found to have been maintained. However, no distinct differences were found between the two groups and this may have been due limitations in the methodology. For example, there appeared to be considerable overlap in the type of therapy offered to the two groups. Also,

the groups were mixed (ideators, attempters and multiple attempters), there was a high proportion of male participants and a high attrition rate during the follow-up period.

Linehan (1997) has reviewed studies which focus specifically on the direct treatment of suicidal behaviours and concluded that there is very little research on whether therapeutic interventions aimed directly at reducing suicidal behaviours is effective. In her review she was able to locate only twenty controlled clinical trials in which subjects were selected due to suicidality. She concludes that the quality of the studies and their focus of study was extremely variable making it difficult to interpret the results. At the end of her analysis the only studies that were found to be effective were those with a very specific behaviour and problem solving focus.

Hawton et al. (1998) have conducted a systematic review of the effectiveness of treatments of patients who have deliberately harmed themselves. They identified twenty randomised control trial studies for inclusion in their investigation. Four of these were categorised as 'problem solving' studies. They concluded that there was little certainty over which forms of treatment are most effective for people who deliberately harm themselves. However, promising results were found for problem solving therapy and dialectical behaviour therapy, and there were indications that studies using depot neuroleptic medication, intensive intervention plus outreach, and home

treatment may be useful approaches, but the authors suggest that larger trials are necessary.

Goldney (1998) has also reviewed selected recent studies focussing on the treatment of suicidal people. He concedes that although research methodologies in studies of the treatment of suicidal behaviour are often not in the form of randomised control trials, when investigating behaviour as complex as suicide, innovative and alternative methodologies need to be utilised. He concludes, optimistically, that there are an increasing number of studies which show that suicidal behaviour can be treated effectively.

The reason for the (at least) marginal success of the studies using a problem solving approach remains unclear. It is possible that a structured approach, where problem-solving is broken down into the steps that form the total process and then taught to patients, is important. In summary, it seems that focusing on problem-solving has shown the most promise in these circumstances. However, the limited nature of the success reported so far, and the uncertainty of the reasons for this, suggest that the phenomenon requires more careful investigation.

Definitions of problem solving.

Although a considerable number of studies have investigated different aspects of problem-solving, not many researchers have attempted to define

the process. However, a useful definition has been provided by D'Zurilla and Nezu (1982).

" Social problem-solving is focusing on the process whereby an individual discovers effective means of coping with problematic situations of day to day living. It is: "a process which (a) makes available a variety of potentially effective response alternatives for dealing with a problematic situation and, (b) increases the probability of selecting the most effective response from among the various alternatives". (D'Zurilla and Goldfried, 1971, p108).

D'Zurilla and Nezu (1990) describe a Social Problem Solving Model which is based on the earlier work of D'Zurilla and colleagues (D'Zurilla, 1986; 1988; D'Zurilla and Goldfried, 1971;D'Zurilla and Nezu, 1982),which is useful as background to understanding the components of the problem solving process.

" This model characterises social problem solving as a complex, cognitive-affective-behavioural process that consists of a number of different components, including general motivational variables and a set of specific skills" (p156). The general motivational component is called problem orientation, and the four specific problem solving skills are problem formulation and definition, generation of alternative solutions, decision making, and solution implementation and verification.

A number of different measures have been used to investigate problem solving, but unfortunately the inconsistency with which these are used makes it difficult to compare results across studies. Most measures of problem solving have also failed to assess the components of problem solving comprehensively and thus the measurement of social problem solving deficits is often incomplete (Sadowski and Kelly, 1993). Some of the most frequently used measures are described below.

Measures Of Problem Solving.

Problem Solving Inventory (Heppener and Petersen, 1982).

The PSI is a self-report measure which consists of 32 items which can be responded to using a 6-point Likert scale of agreement-disagreement for each item. Low scores represent self-appraised behaviours or attitudes that reflect effective problem solving. Conversely, high scores reflect endorsement of attitudes and behaviours associated with ineffective problem solving. Total scores may range from 32 to 192. Three distinct dimensions have been identified on the PSI by a previous factor analysis and these can also be scored. They include : i)problem solving confidence

ii)approach-avoidance style

iii)personal control

The PSI has been reported by various studies to be a valid measure in discriminating differences among problem solving styles, attitudes and behaviours (Nezu 1986). Internal consistency has been reported at .72 - .90

and stable over a 2 week period (.83 - .89). One of the criticisms of self-report measures concerns whether there is any correlation between self-report, and observed, problem solving competence. The PSI scores have been found to be significantly correlated with observational ratings of problem solving competence (Heppener et al, 1982) and uncorrelated with social desirability factors (Heppener and Peterson, 1982).

The Problem Solving Scale (Rosenbaum, 1980).

This is a 9-item self report scale which was derived from the Self-Control Schedule developed by Rosenbaum (1980). It is designed to assess how much the individual applies self-control methods to the resolution of behavioural problems. Subjects rate nine behaviours on a 6-point scale of how characteristic the behaviour is of them, from -3 (very uncharacteristic of me) to +3 (very characteristic of me). The items are added to produce a total problem solving score ranging from -27 to +27. Examples of the items are: "When I am faced with a difficult problem, I try to approach its solution in a systematic way", and "If I find it difficult to concentrate on a certain job, I divide the job into smaller segments". Although the original scale had acceptable reliability (test-retest, .86; internal consistency between .78 and .81), information on reliability and validity for this short-form do not appear to be available.

Problem-Solving Questionnaire (Konig, Otto, Holling and Liepman, 1980).

This is a 50 item self report questionnaire translated from the German version (Problemlosefragebogen - Konig et al, 1980). It is designed to assess generalized attitudes towards problems and the problem solving process. Five factors can be derived from the 50 items. These are problem orientation, denial of problems, tendency to unconventional solutions, general problem solving strategies and tendency to conventional solutions. Example of items include: "Problems discourage me", "It is important to me to consider the consequences of a decision in advance" and " The best ideas occur to me if I let my thoughts take their own course". Konig et al, (1985) found that the reliability for most scales was satisfactory, and ranged from .64 to .90. The validity as assessed by Holling, Liepmann, Konig, Otto and Schmidt (1980) was also considered to be adequate.

The Social Problem Solving Inventory. (D'Zurilla and Nezu 1990).

This is a 70-item self-report measure of social problem solving ability that is designed to assess problem orientation and problem solving skills. The Problem Orientation Scale consists of three subscales: Cognition (e.g. generalized beliefs, appraisals, attributions); Emotion (e.g.distress vs calm) and Behaviour (e.g. approach vs avoidance). The Problem Solving Skills Scale consists of four subscales: Problem Definition and Formulation; Generation of Alternative Solutions; Decision making and Social Implementation and Verification. The items are self statements depicting either positive or negative cognitive, affective or behavioral responses to real-

life problem solving situations. Examples of items include: "When I cannot solve a problem quickly and without much effort, I tend to think I am stupid or incompetent", and "I usually wait to see if a problem will resolve itself first, before trying to solve it myself". The items are rated on a 5-point scale ranging from 'not at all true of me'(0) to 'extremely true of me'(4). The test - retest reliability for the whole SPSI, the Problem Orientation Scale and the Problem-Solving Skills Scale are reported to be .87, .83 and .88, respectively; and, internal consistency for these measures are reported as .94, .94 and .92. The content, concurrent, construct and predictive validity, assessed using several different samples of subjects, appear to be adequate (D'Zurilla and Nezu, 1990) .

<u>The Social Problem Solving Inventory - Revised. (Maydeu-Olivares and D'Zurilla (1996).</u>

This is a revised version of the SPSI consisting of 52 items. The SPSI-R consists of five scales which measure (1) Positive Problem Orientation; (2) Negative Problem Orientation; (3) Rational Problem Solving; (4)Impulsivity/Carelessness Style and (5) Avoidance Style. The scales Positive Problem Orientation and Rational Problem Solving are considered to be constructive or facilitative whereas the other three dimensions are regarded as dysfunctional or inhibitive. Items are rated on a five point scale ranging from 0 (Not at all true of me) to 4 (Extremely true of me). Sample items include: "I spend too much of my time worrying about my problems instead of trying to solve them", and "When faced with a difficult problem, I

often doubt that I will be able to solve it on my own no matter how hard I try". Internal consistency of the various scales using a sample of college students is reported as ranging from .76 to .92 and is stable over a three week period (.72 to .88). Validity data, as assessed by and Maydeu-Olivares and D'Zurilla, 1996), have been reported for both normal and clinical samples .

The Means-Ends Problem Solving Test. (Platt and Spivack 1975a)

This is the most commonly used measure of interpersonal problem solving. Subjects are provided with a number of different social scenarios. For each of the 10 settings, the subject is presented with an initial situation where a problem has to be solved, and a desired end-point. The subjects task is to complete the middle portion of the story providing the means whereby the initial situation becomes the desired end-point.

An example situation is: "David loved his girlfriend very much, but they had many arguments. One day she left him. David wanted things to be better. The story ends with everything fine between him and his girlfriend. You begin the story with his girlfriend leaving him after the argument".

A number of different scores can be derived from the MEPS. Answers can be scored for relevant means (problem solving steps) and irrelevant means.

Marx, Williams and Claridge (1992) reported the MEPS to have satisfactory internal consistency and construct validity. The test can also be used in a shortened version (Platt and Spivack 1975b); and the scoring can be modified. For example, the MEPS scoring was modified by Marx, Williams and

Claridge (1992) to allow responses to be scored for their effectiveness. Linehan et al. (1987) modified the MEPS scoring to assess active or passive problem solving.

Summary and evaluation.

A number of different measures of problem solving have been developed. However, since different studies do not always employ the same measure of problem solving it is difficult to judge if the same processes are being assessed in each study. For example, Sadowski and Kelley(1993) have queried whether problem solving as measured by the SPSI is the same as spontaneously occurring problem solving. Most are self report measures, and run the risk that self-ratings of ineffective problem solving ability in samples of depressed persons may not reflect actual deficits but be simply further examples of their negative self-perceptions. On the other hand, Marx, Williams and Claridge (1992) examined problem solving in depressed patients in two studies using different measures of problem solving. They employed the MEPS, (and modified the scoring to take account of the effectiveness of solutions), and the self-rated Problem Solving Questionnaire. The results showed that depressed patients did indeed show a more negative evaluation of their strategies when compared with matched controls, but also showed actual deficits in problem solving, responding with less effective 'solutions' on the MEPS. However, although research has evaluated a

number of aspects of problem solving, the measures have not generally taken full account of the different stages of the problem-solving process.

Stages In Problem Solving.

There has been a tendency for much of the research into problem solving to concentrate on different aspects of the problem solving process, often making results difficult to compare. D'Zurilla and colleagues have identified two types of problem solving measures. Process measures are those that assess the attitudes, skills and abilities that are used by an individual to enable him or her to find or reach an adaptive and effective solution. An outcome measure assesses the appropriateness, effectiveness and success of the solution. That is, it is a measure of overall problem solving performance (D'Zurilla and Maydeu-Olivares 1995). Sadowski and Kelley (1993) support the view that the measurement of social problem solving is often incomplete and that all aspects of problem solving should be taken into consideration when it is being assessed.

D'Zurilla and Nezu (1990) see problem orientation as the first stage in problem solving. It encompasses the persons general awareness and appraisal of problems in living and the individual's ability to solve them. It is also the initial point at which one motivates and orientates oneself to the problem. Marx, Williams and Claridge (1992) as part of their study into social problem solving and depression examined the attitudes of their

depressed and non-depressed control groups to problems and problem solving using the Problem Solving Questionnaire. They found that depressed patients were more negatively orientated toward problems and problem solving and reported themselves as using less unconventional solutions in problem situations. Bonner and Rich (1988) suggest that individuals who appraise their social problem solving ability as ineffective are at risk for becoming hopeless even before they attempt any other stage of problem solving. They will develop expectancies of failing and this will colour the way they react when confronted by stressful situations or problems.

Problem definition is the next step in the process of problem solving. D'Zurilla and Nezu (1990) define the goal of problem definition as an attempt to obtain "relevant, factual information about the problem, clarify the nature of the problem, and delineate a set of realistic problem-solving goals". Examining the problem area very carefully, defining its extent and limits, and describing the problem in a way that makes sense to the individual, develops their orientation, raises their level of motivation and enhances their sense of self-efficacy. These factors affect the way individuals view their ability to perform and execute problem solving and are critical in real life situations (Bonner and Rich 1988).

Once the problem has been defined the task then moves to the generation and evaluation of alternative solutions. Berman and Jobes (1992) point out that the alternatives available should include a consideration of the individual's

history, coping skills, support from significant others who are not part of the suicide attempt, and, available community resources. Marx et al (1992) have reported that depressed patients have difficulties in developing alternatives and knowing about potential obstacles in comparison with non-depressed subjects.

Having generated a wide range of solutions and evaluated them, the next step in the process is to make a decision about which solution to implement. Marx et al (1992) found that depressed patients had difficulty finding ideal solutions when assessed on the PSQ. Other results obtained in their study suggested that the two clinical groups they used may suffer from problem solving deficits at different levels. Depressed patients seem to have difficulty in the earlier phases of the problem solving process, culminating in the generation of fewer and less effective solutions. Anxious patients seemed to have difficulty in the later phases of the process, being able to generate effective solutions but rating themselves as being unable to implement the solutions effectively.

Finally, it is important for patients to monitor and evaluate the outcome. The self-regulation model as developed by Rehm (1977) highlights the difficulties that depressed people have in giving themselves sufficient reward. This model sees the control that an individual has over their own behaviour as occurring in three stages: self-monitoring, self-evaluation and self-reinforcement. Depressed individuals attend selectively to negative aspects

of themselves and their self-evaluation is based on a set of criteria that are too high to achieve, with the result that they seldom reward themselves (Williams, 1992). It is clear that, even if the person successfully negotiates all previous stages of the problem solving process, failure to monitor, evaluate and self reward will result in decreased motivation for future problem solving attempts.

Of the problem solving measures outlines earlier, the SPSI developed by D'Zurilla and Nezu (1990) comes closest to assessing each component, being explicitly based on the five components of problem solving identified by D'Zurilla and Goldfried (1971).

Passive vs Active Problem Solving.

A number of important qualitative differences in problem solving ability have been identified in several studies comparing suicidal individuals and controls. Nezu (1986) investigated the relationship between depressive symptoms and problem solving appraisal in a group of undergraduate college students. His results suggested that subjects who reported high levels of depressive symptoms also see themselves as less confident in their problem solving skills, less systematic and active in their problem solving attempts and showed lower levels of perceived self-control in problem situations when compared to people who report low levels of depression.

Linehan, Camper, Chiles Strosahl and Shearin (1987) identified some difficulties with the way that problem solving is measured using the MEPS. They pointed out that a problem solution on the standard MEPS can be scored as relevant even if it reflects a passive solution. This means that someone who generates passive solutions is scored equal to a subject supplying self-initiated or active solutions. In an effort to overcome this they modified the MEPS scoring and found that in comparing in-patient parasuicides, suicide ideators and non-suicidal psychiatric in-patients, the in-patient parasuicides were more passive (letting problems solve themselves or relying on others for solutions) and less active in their problem solving than the other two groups. This study also found that the more subjects expected that suicide would solve their problems, the higher their suicidal intent.

Orbach, Bar-Joseph and Dror (1990) conducted a study using a different measure of problem solving and found similar results, i. e. parasuicide patients offered solutions that were less active and relied more on others to solve the problem. There were also other qualitative aspects which distinguished the parasuicides solutions from controls. They showed more avoidance, were less versatile and less relevant in the solutions they supplied.

As reported earlier Marx, Williams and Claridge (1992) in comparing problem solving in depressives, non-depressive controls and anxiety disorders found that whilst depressives seem to have difficulties in the earlier

stages of problem solving, anxious patients seem to have difficulties in the later phases. In interpreting their results they suggest that anxious people know what to do in the problem situations but cannot perform the necessary behaviour or are passive because of emotional inhibitions, negative self statements or a lack of behavioural skills. These results are particularly significant as MacLeod, Williams and Linehan (1992) have suggested that suicide may be more related to apathy rather than to hostility or anger. These findings have important clinical implications going beyond the viewpoint espoused by D'Zurilla and colleagues that it is important to take the different stages of problem solving into account and showing that the degree of passivity involved is also important.

Concluding Remarks.

The development of research into the relationship between cognitive factors and suicidal behaviour in recent years, has yielded results which most workers view with optimism. However, methodological differences sometimes make it difficult to compare results and this needs to be taken into consideration in future work. Preliminary outcome studies focusing on problem-solving have shown promising results in the treatment of suicidal patients but the reasons for this are not altogether clear. Future studies should assess the problem solving deficits more precisely, so that the factors that might mediate variance in outcome from such treatment studies can be better evaluated. It is likely that different patients will have problems in

different aspects of the problem solving process, and careful assessment will help in targeting therapy where it is most likely to be effective. Further, patients may differ in the extent to which they show chronic difficulties, or show hyper-reactivity to affective states. In the latter case, apparently good problem solving skills become easily abandoned in the face of mood disturbance.

Further work should be directed at understanding how mood and memory variables interact with the stages and processes of problem solving to produce the catastrophic failure to cope that suicidal behaviour represents. Some of these questions are addressed in the studies that follow.

Chapter 7.

The Social Problem Solving Inventory-Revised.

Recent studies have suggested that there are links between problem solving ability, hopelessness, depression and suicidal risk. Of these factors hopelessness has been hypothesized to be most important in leading to a suicidal state. Yet the studies in this area have been fraught with methodological problems. For example, the D'Zurilla and Nezu model distinguishes between outcome and process measures of problem solving. D'Zurilla et al. (1998) point out that most studies have used the MEPS which is an outcome measure, i.e. a measure of global problem solving that gives no information about specific deficits. They criticize these studies which have concluded incorrectly (in their view) that poor performance on the MEPS represents deficits in the ability to generate effective or adaptive solutions. They suggest that it is inappropriate to infer specific deficits in problem solving from global measures.

The previous chapter has shown that there are many methodological problems in the existing studies of problem solving. Firstly, the most frequently used measures of problem solving do not distinguish between the different stages of problem solving. We need a measure that does do this as people with difficulties in problem solving may experience deficits at

different stages of the process. If we can identify these deficits it will be possible to target treatment at these specific areas.

Secondly, many studies make use of mixed suicide groups, for example the groups include suicidal ideators, first time attempters and multiple attempters making it difficult to interpret results. Work by numerous researchers has shown that these groups have different characteristics and thus to reduce the influence of extraneous variables empirical work should be focussed on carefully selected groups. These results would be clearer if the groups were homogeneous.

Thirdly, the typical contrast is between a clinical and a control group but it is not clear whether problem solving deficits are due to clinical status or suicidality. What is needed is a clinical control group who have no history of suicidal behaviour. This would allow us to see whether the suicide history group are generally deficient (like the other clinical group) or whether they display specific deficits in some aspects of problem solving.

The study to be reported in this chapter aimed to take account of each of these shortcomings in the existing literature. The measure to assess problem solving, the Social Problem Solving Inventory-Revised (SPSI-R) was selected on the basis of the review in the previous chapter. As reported there, it is a relatively new measure of problem solving that is an empirically derived improvement of the original inventory based on D'Zurilla and Nezu's

definition and formulation of problem solving. Adequate reliability and validity have been reported with adults. The internal consistency of the various scales is reported to range from 0.76 - 0.92 and is stable over a three week period (test - retest reliability - 0.72 - 0.88). Validity data have been reported by D'Zurilla and Maydeau- Olivares (1995) for both normal and clinical groups.

However, despite its promise the SPSI-R has not yet been very widely used with clinical populations. It has been used with university students and normal and disturbed adolescents (Sadowski and Kelley, 1993; Sadowski, Moore and Kelley, 1994) and there is one recent study (D'Zurilla et al., 1998) which has attempted to examine and compare university students, psychiatric patients and suicidal patients, but there are methodological problems with this study. These include attempting to use data gathered on three separate occasions in individual studies as a comparative study even though the three groups were tested with differing versions of the Social Problem Solving Inventory and different measures of suicidal ideation.

In summary, the aims of this study were therefore to examine and compare the performance of suicide attempters, non-suicidal psychiatric patients and normal individuals on the SPSI-R in an attempt to discover specific problem solving deficits which may differentiate the three groups.

Method.

Ethical Issues.

Ethical permission for this project was gained from the ethics committees of the University of Wales and the Powys Health Authority. Participants completed an informed consent form prior to testing and details of help available to them, should they feel distressed following their participation, was elucidated.

Participants.

The suicide attempter group consisted of 24 adults (10 males and 14 females) recruited from consecutive referrals to the adult clinical psychology service or acute admission wards of the Mid-Wales Psychiatric Hospital. To be included in the suicidal group, these individuals had to be first time attempters, who had engaged in overt, self-destructive behaviour and verbalized an intent to inflict lethal self-harm. Types of attempts included drug overdose (92%), self-cutting (4%), and drowning (4%).

The psychiatric control group consisted of 24 adults recruited from referrals to the adult clinical psychology service or the acute admission wards of the Mid-Wales Psychiatric Hospital. These patients had no previous history of suicidal behaviour. The composition of this group was designed to match that of the attempter group with regard to age, gender, educational level and in- or out- patient status.

The normal control group consisted of 24 people recruited from the community of the county town of Montgomery. To be included in this group individuals had to have no previous history of suicidal behaviour and no history of ever having used the mental health services. The composition of this group was designed to match the other two groups with regard to age, gender, and educational level.

Each group consisted of 10 males and 14 females, age range was 21 to 72 years and education ranged from 8 to 18 years. Demographic characteristics of the groups are summmarized in Table 7.1.

Psychiatric diagnoses for the clinical groups were based on criteria from the Diagnostic and Statisical Manual of Mental Disorders (DSM-III-R). Information was gathered by the psychiatrist and psychologist in admission interviews with the patient and from observations by other hospital staff. The principal diagnoses (formal diagnosis) for the suicide attempter group were major depressive episode (n = 14), adjustment disorder (n = 6), dysthymia (n = 2), bipolar disorder (n = 1) and substance abuse (n = 1). For the psychiatric control group the main diagnoses were anxiety disorders (n = 7), major depressive episode (n = 7), adjustment disorder (n= 3), dysthymia (n = 3), substance abuse (n = 2), other disorders (n = 2).

Measures

The measures used included the Scale for Suicidal Ideation (SSI), The Beck Depression Inventory (BDI), The Beck Hopelessness Scale (BHS), The Profile of Mood States - shortened version (POMS), and the Social Problem Solving Inventory-Revised (SPSI-R). The Means-Ends Problem Solving Test (MEPS) and The Autobiographical Memory Test (AMT) were also used and will be reported in Chapter 8. The current chapter focuses on the SPSI-R, since this is its first use in a UK sample.

Suicide Ideation.

Suicidal thoughts were measured using the Scale for Suicidal Ideation (SSI: Beck, Kovacs and Weissman, 1979). This scale is a 19 item, interviewer rated measure on which higher scores reflect increasing levels of suicidal ideation. Scores may range from 0 - 38. The scale items represent a number of variables which are presumed to reflect suicide ideas. These include the frequency, duration and content of suicidal ideations, sense of control over ideation, desires to live and die, preparation for an attempt and the presence or absence of deterrents to making an attempt. This is a very widely used scale in the research literature, is internally consistent, has high levels of interrater reliability and satisfactory levels of concurrent and discriminant and construct validity (Beck et al., 1979).

Depressive symptoms.

The Beck Depression Inventory was used to assess depressive symptoms. This is a 21 item self-report measure of depressive symptoms that has been used extensively in clinical research. Scores range from 0 - 63, with higher scores indicating more severe levels of depression. This scale is sensitive to short term changes in the level of depression, is internally consistent and is well correlated with other measures of depressive symptoms (Beck and Beamesderfer, 1974).

Hopelessness.

This 20 item true-false scale is a measure of negative expectations of the future. Total scores can range from 0 - 20. High scores indicate increasing levels of hopelessness. Beck et al., (1974) have have demonstrated high internal consistency and relatively high levels of concurrent and construct validity. Scores have been associated with severity and frequency of suicidal ideation (Nekanda-Trepka, Bishop and Blackburn, 1983) and with suicidal intent (Dyer and Kreitman, 1984).

Mood.

This was measured with the Profile of Mood State - Short-Form (POMS), a 25 item state - mood questionnaire. It assesses level of fatigue, tension/anxiety, vigour, anger, depression and confusion-bewilderment at the time the questionnaire is completed and is derived from the 65 item version (McNair,

Lorr and Droppleman, 1981). Williams and Broadbent (1986) have compared the short and full form with overdose patients and report the following correlations: fatigue, r = 0.97; tension, r = 0.96; vigour, r = 0.93; anger, r = 0.96; depression, r = 0.95 and confusion, r = 0.91.

Problem solving.

The measure of problem solving focussed on here was the SPSI-R, based on the five dimensional model of social problem solving developed by D'Zurilla et al., (1995). It is a 52 item self-report measure which measures five problem solving dimensions by means of the following scales: Positive problem orientation, Negative problem orientation, Rational problem solving, Impulsivity/carelessness style and Avoidance style. Subjects are asked how they typically respond to current problems and rate themselves on a five point Likert-type scale ranging from 'not at all true of me' to 'extremely true of me'. Higher scores on the Positive problem orientation and Rational problem solving scales represent more constructive problem solving processes while higher scores on the Negative problem orientation, Impulsivity/carelessness and Avoidance style scales indicate more dysfunctional processes. D'Zurilla et al. (1995) report the following coefficient alphas for the SPSI-R scales: 0.76 -Positive problem orientation, 0.91 - Negative problem orientation, 0.92 - Rational problem solving, 0.83 - Impulsivity/carelessness style and 0.88 Avoidance style. Test - retest reliability ranged from 0.72 - 0.88. The validity has been reported on by D'Zurilla et al. (1995) and Sadowski, Moore and Kelley (1994).

Procedure.

For the parasuicide group, all assessments took place within 7 days of the suicide attempt if medically possible. Following an initial assessment by the interviewer, informed consent was obtained from the participant. Suicide attempters were questioned about the circumstances surrounding their suicide attempt, their suicidal ideation and other related factors. On the basis of this information the interviewer completed the SSI. The participants were then asked to complete the psychological measures. Controls who met the inclusion criteria for the study were assessed in a similar way.

Results.

In a preliminary analysis of the data, analyses of variance were performed to determine whether there were significant differences between groups in age and educational level. No significant differences emerged for these demographic variables, (Age : $F(2,69) = 1.38$, $p < .26$; Education : $F(2,69) = 1.22$, $p<.30$). Means and standard deviations are shown in Table 7.1.

	Suicidal M (SD)	Psychiatric M (SD)	Normal M (SD)
Age	38.71 (11.13)	44.33 (11.68)	40.08 (13.70)
Education (Years)	12.25 (2.25)	13.12 (2.19)	13.04 (1.96)

Table 7.1. Means and standard deviations for variables Age and Education.

There were no gender differences between the groups as the groups were

matched for gender. Except where specifically mentioned, results were analysed using a multivariate analysis of variance. MANOVA was selected because of the intercorrelations among the dependent measures. This was followed by univariate analyses of variance. Post-hoc analyses were carried out using the Tukey test.

Suicidal Ideation, Depression and Hopelessness.

The means and standard deviations are shown in Table 2.

	Suicidal	Psychiatric	Normal
	M (SD)	M (SD)	M (SD)
Measure			
BDI	29.16 (9.24)	17.70 (9.99)	4.50 (4.53)
SSI	10.58 (5.06)	3.45 (1.74)	2.83 (1.88)
BHS	13.45 (5.29)	10.20 (6.19)	0.50 (0.83)

Table 7.2. Means and standard deviations for the BDI, BHS and the SSI. (Note: BDI = Beck Depression Inventory, BHS = Beck Hopelessness Scale and SSI = Scale of Suicidal Ideation.)

In the MANOVA, total scores on the BDI, BHS and SSI served as the dependent variables and group membership as the independent variable. The results of the analysis showed a significant effect for Group, $F(6,134) = 25.31$, $p<.0001$. Univariate analyses of variance showed that on the BDI and SSI, there was a significant group effect, $F(2,69) = 53.25$, $p<.00001$, and $F(2,69) = 65.83$, $p<.00001$ respectively, with the suicidal group proving to be more depressed and having more suicidal ideation than the psychiatric and normal control groups (See Table 7.2). Since multiple tests of significance on the same

set of means create an increased risk of Type 1 error, a more conservative estimate of significance was obtained using the Bonferroni estimate for post-hoc pairwise analyses. This showed that each of the groups differed significantly from the other on the Beck and the SSI.

On the Hopelessness Scale, univariate analysis of variance showed a significant effect for group, $F(2,69) = 30.46$, $p<.00001$, with the suicidal group displaying more hopelessness than the other two groups. Post-hoc pairwise comparisons using the Bonferroni test showed that the suicidal group and the psychiatric control group differed significantly from the normal control group, but they did not differ significantly from each other.

Mood states.

The six mood scales of the Profile of Mood States were analysed using a multivariate analysis of variance. This yielded a significant group main effect, $F(12,128) = 7.85$, $p<.0001$. Means and standard deviations for the individual scales are shown in Table 7.3.

Mood (Range: 0 - 16)	(1) Suicidal Group	(2) Psychiatric Control Group	(3) Normal Control Group	F(2,69) p<.0001
Anger/irritability	6.29 (4.93) 1 vs 2 (c)	2.79 (3.43) 2 vs 3 (d)	1.20 (1.74) 1 vs 3 (a)	12.41
Confusion	8.33 (3.73) 1 vs 2 (c)	5.00 (4.02) 2 vs 3 (c)	2.25 (2.15) 1 vs 3 (a)	19.21
Depression	10.45 (4.46) 1 vs 2 (c)	6.12 (5.48) 2 vs 3 (a)	1.33 (2.31) 1 vs 3 (a)	27.08
Fatigue	10.62 (4.26)	7.95 (5.18) 2 vs 3 (d)	4.66 (3.97) 1 vs 3 (a)	10.53
Tension/anxiety	7.75 (4.44)	5.70 (4.80) 2vs 3 (b)	1.83 (2.25) 1 vs 3 (a)	13.56
Vigour (high scores positive)	2.20 (2.58)	2.95 (2.67) 2 vs 3 (a)	7.70 (3.29) 1 vs 3 (a)	25.94

a(p<0.0001) ; b(p<0.001) ; c(p<0.005) ; d(p<0.05)

Table 7.3. Means, standard deviations and post-hoc pairwise comparisons for the Profile of Mood States (Short Form) Scales.

Since we predicted that there would be differences between the groups on these measures (based on Williams and Dritschel, 1988), pairwise analyses were carried out using unrelated t-tests (Bryman and Cramer, 1997). The suicidal group differed significantly from the psychiatric control group on the measures of Anger ($t(46) = 2.85$, $p < .005$), Confusion ($t(46) = 2.97$, $p < .005$) and Depression ($t(46) = 3.00$, $p < .005$).

The suicidal group also differed significantly from the normal control group on these measures, Anger: $t(46) = 4.75$, $p<.0001$; Confusion: $t(46) = 6.91$, $p<.0001$; Depression: $t(46) = 8.89$, $p<.0001$. In addition, the psychiatric control group differed significantly from the normal control group on each of these measures; Anger: $t(46) = 2.01$, $p<.05$; Confusion: $t(46) = 2.95$, $p<.005$ and Depression: $t(46) = 3.94$, $p<.0001$.

The suicidal group did not differ from the psychiatric control group on Fatigue: $t(46) = 1.95$, $p<.06$; Tension/anxiety: $t(46) = 1.53$, $p<.133$; and Vigour: $t(46) = -.99$, $p<.33$. However, there were significant differences on these measures between the suicidal group and the normal control group; Fatigue: $t(46) = 5.01$, $p<.0001$; Tension/anxiety: $t(46) = 5.81$, $p<.0001$ and Vigour: $t(46) = -6.44$, $p<.0001$. In addition, the psychiatric control group differed significantly from the normal control group on each of these measures; Fatigue: $t(46) = 2.47$, $p<.05$; Tension/anxiety: $t(46) = 3.58p<.001$ and Vigour: $t(46) = -5.49$, $p<.0001$.

These comparisons are illustrated in the boxplots below. Boxplots show the median, interquartile range and the smallest and largest values for a group simultaneously. The lower boundary of the box represents the 25th percentile and the upper boundary represents the 75 percentile. Fifty percent of all cases have values inside the box. The heavy line in the box represents the median.

Key: Group 1 = Suicidal group

Group 2 = Psychiatric control group

Group 3 = Normal control group

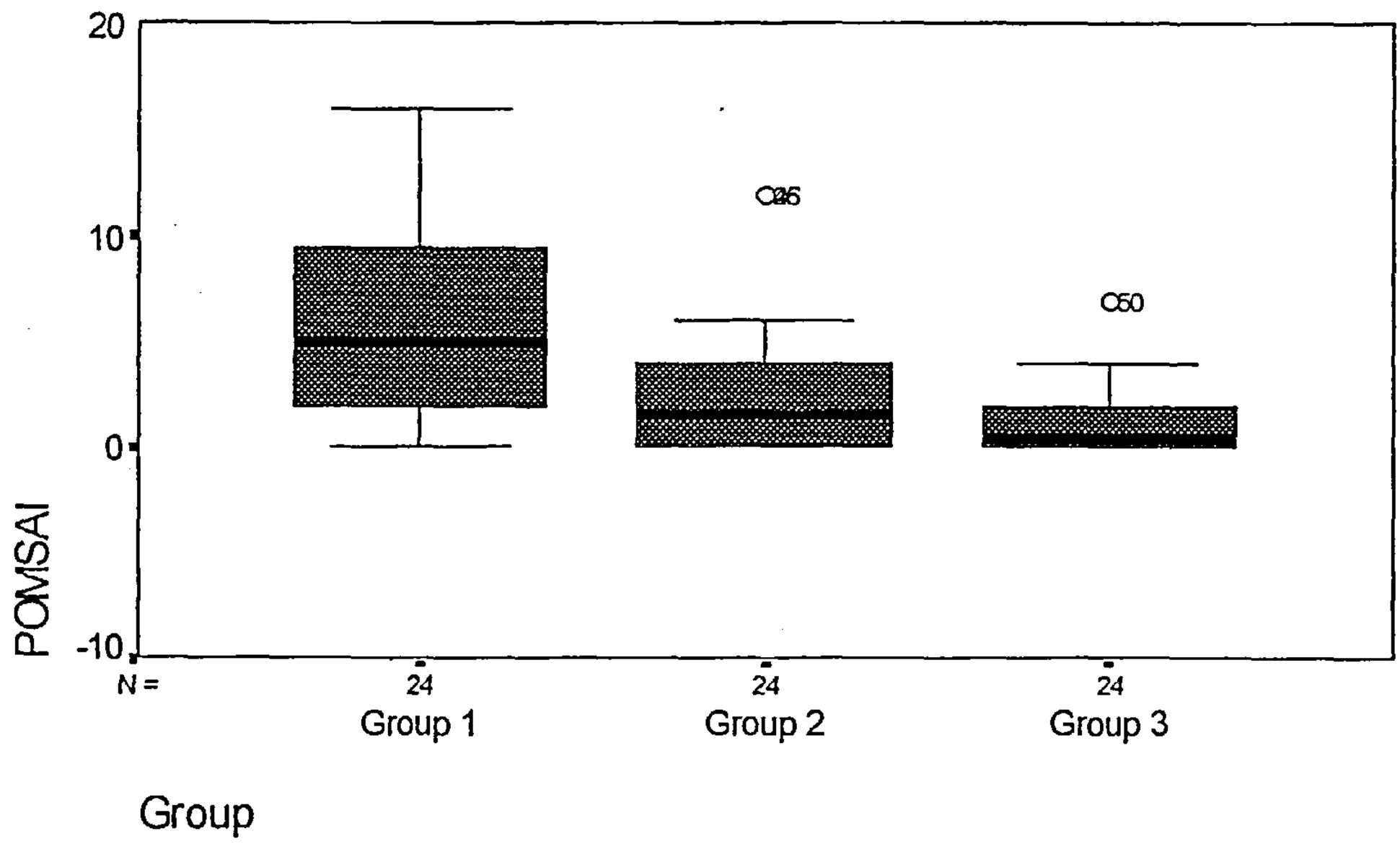


Figure 7.1 Boxplot showing scores for Anger/irritability.

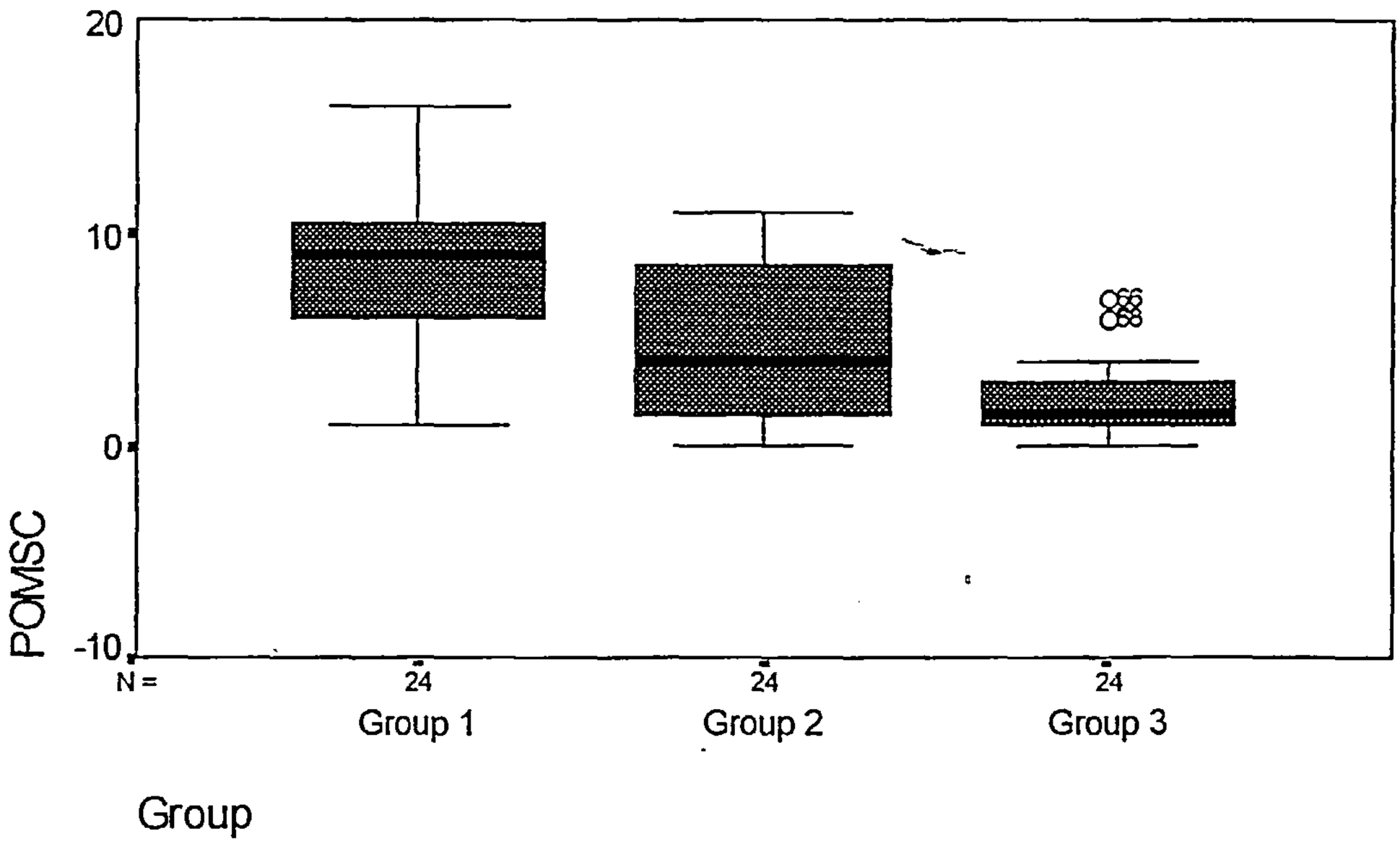


Figure 7.2 Boxplot showing scores for Confusion.

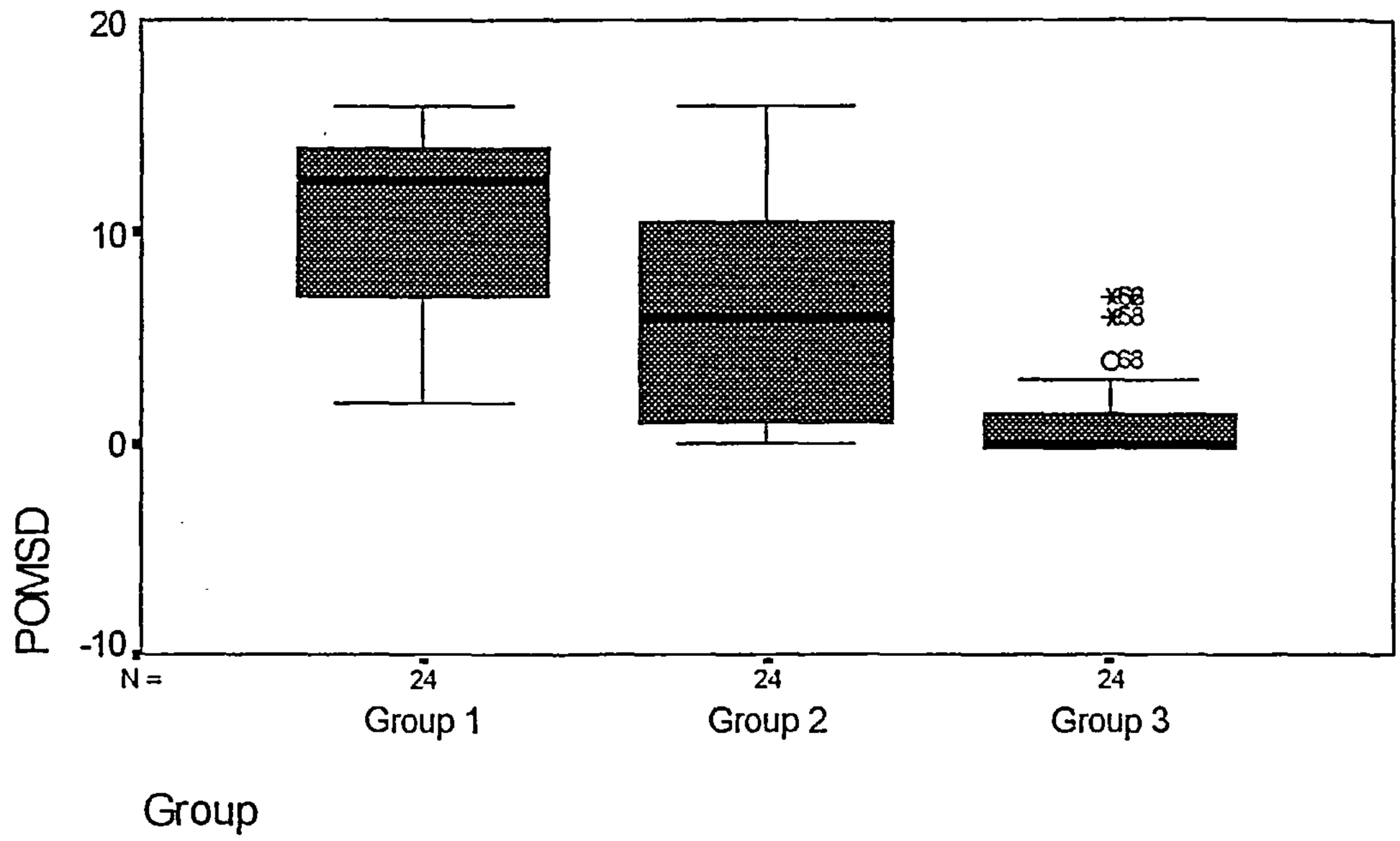


Figure 7.3 Boxplot showing scores for Depression.

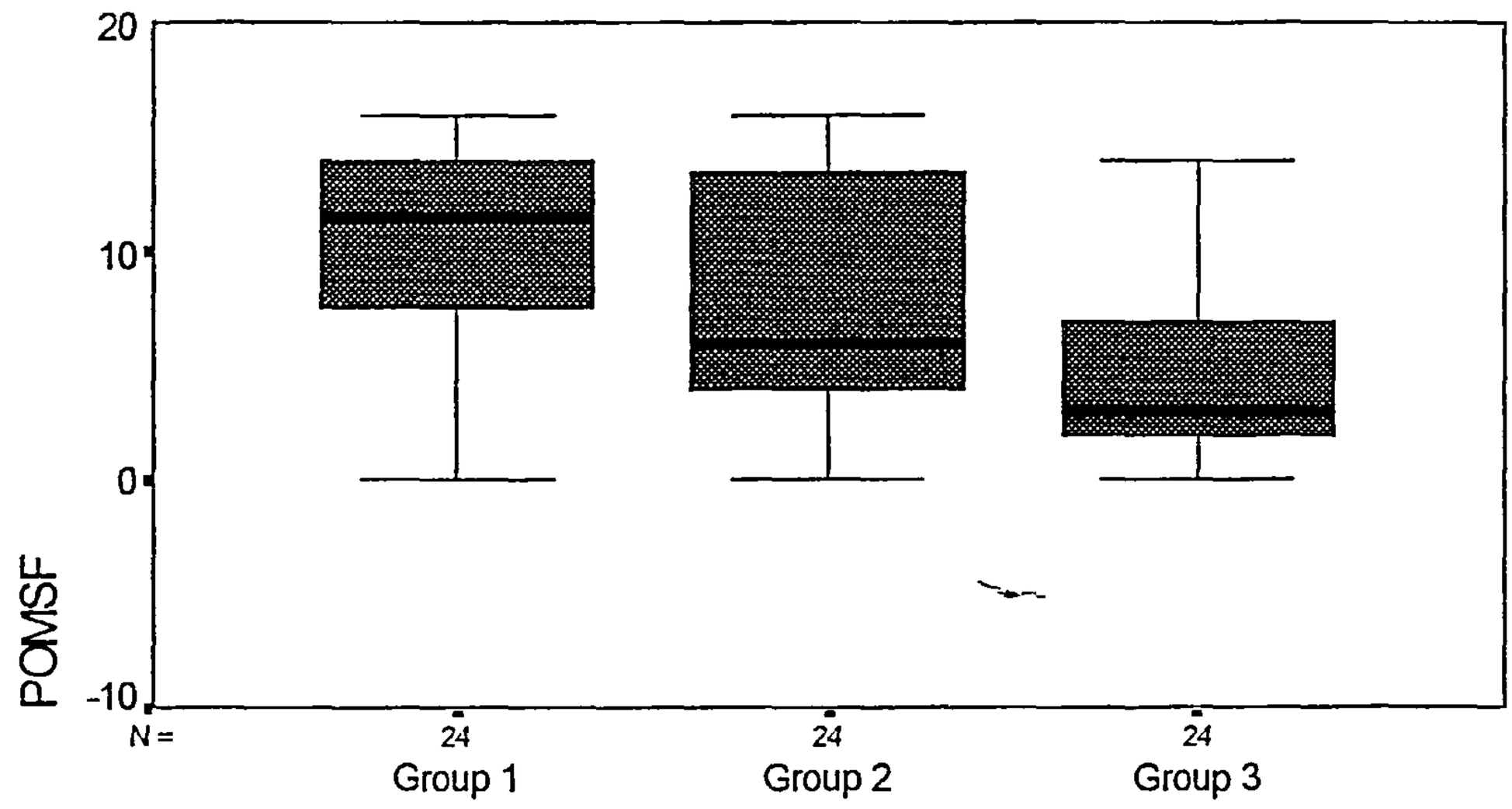


Figure 7.4 Boxplot showing scores for Fatigue.

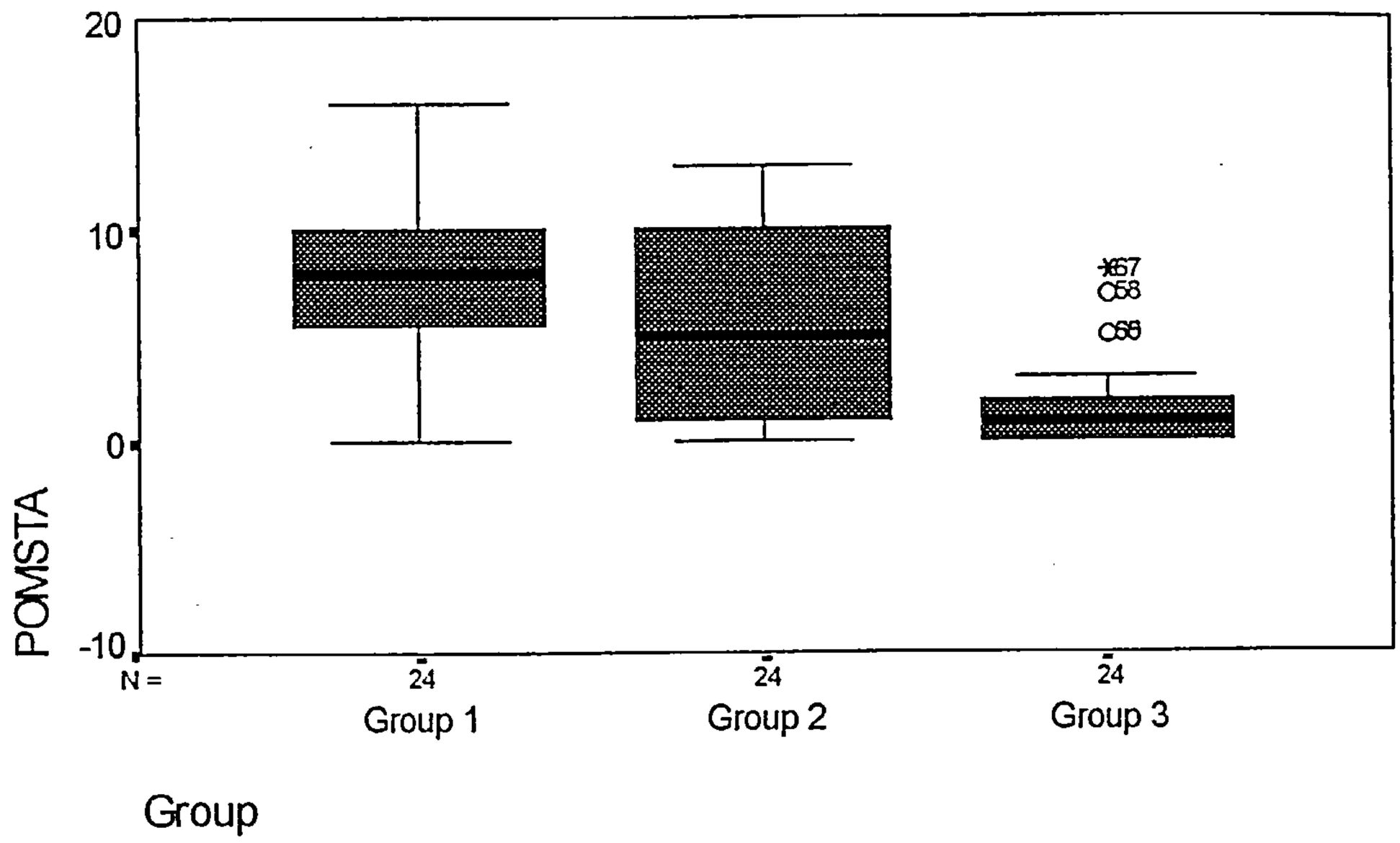


Figure 7.5 Boxplot showing scores for tension/anxiety.

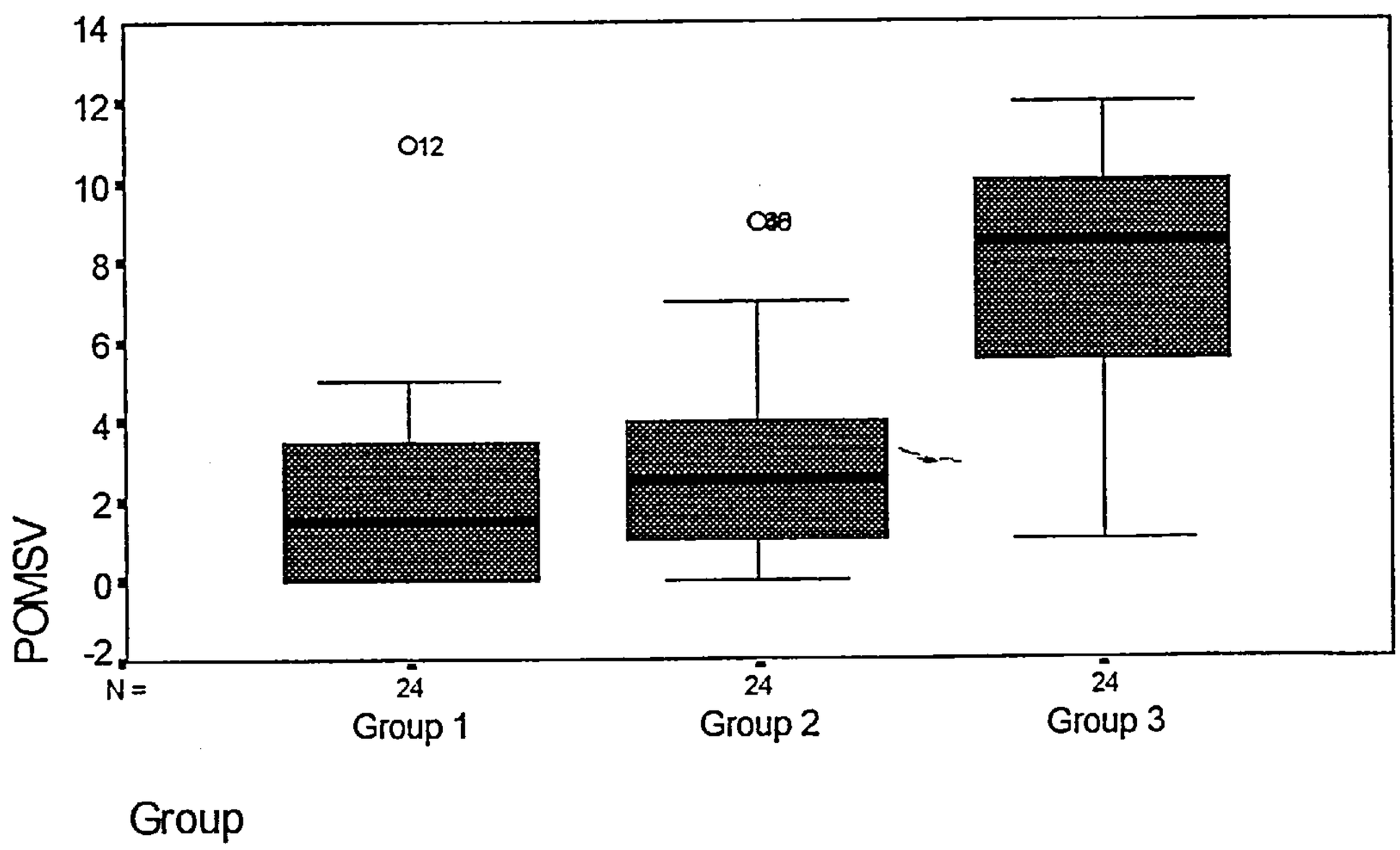


Figure 7.6 Boxplot showing scores for Vigour.

In summary, these comparisons show a significantly greater mood disturbance in the suicidal group and psychiatric control group as compared with the normal control group for all moods, and greater mood disturbance in the suicidal as compared with the psychiatric control for anger, confusion and depression.

Problem Solving (the SPSI-R).

Since so few studies have used the SPSI-R and studied specific deficits in problem solving it is important and informative firstly to examine the pattern of intercorrelations for each of the groups that took part in the study. A preliminary analysis revealed no gender differences on the problem solving measures.

Inspecting the pattern of intercorrelations reveals that for the suicidal group a positive problem orientation (PPO) is highly positively correlated with a rational problem solving style (RPS) and negatively correlated with an avoidant (AS), impulsive/careless (ICS) problem solving style. A negative problem orientation (NPO) is strongly related to an avoidant (AS) and impulsive/careless (ICS) style of problem solving. In addition, negative problem orientation and avoidance style are negatively correlated with rational problem solving suggesting that in suicidal individuals a negative problem orientation and an avoidant problem solving style are important

contributions to deficits in rational problem solving. These relationships are consistent with those reported by D'Zurilla et al. (1998).

Measures	PPO	NPO	ICS	AS	RPS
PPO	-	-	-	-	-
NPO	-.72 (a)	-	-	-	-
ICS	-.60 (c)	.64 (b)	-	-	-
AS	-.83 (a)	.76 (a)	.65 (b)	-	-
RPS	.67 (a)	-.57 (c)	-.74 (a)	-.49 (d)	-

(a) p=.0001; (b) p=.001; (c) p=.005; (d) p=.01; 2-tailed.

Key: PPO = Positive Problem Orientation; NPO = Negative Problem Orientation; ICS = Impulsive/Carelessness Style; AS = Avoidance Style;
RPS = Rational Problem Solving.

Table 7.4. *Correlations among the the scales of the SPSI-R in a group of suicidal patients.*

The pattern of intercorrelations on the SPSI-R for the non-suicidal psychiatric control group is described next. Once again a preliminary analysis revealed no gender differences on the problem solving measures.

With this group positive problem orientation is strongly correlated with a rational problem solving style and negatively correlated with a negative problem orientation and an avoidant style. A negative problem orientation is strongly linked to an avoidant and impulsive/careless style of problem solving. In addition, both negative problem orientation and an avoidant style seem unrelated to rational problem solving, suggesting that non-suicidal

patients who show a negative problem orientation and an avoidant style may not necessarily have deficits in rational problem solving skills at the same time.

Measures	PPO	NPO	ICS	AS	RPS
PPO	-	-	-	-	
NPO	-.64 (b)	-	-	-	
ICS	-.09	.44 (c)	-	-	
AS	-.53 (c)	.66 (a)	.39	-	
RPS	.56 (b)	-.15	-.28	-.13	

(a) p=.0001; (b) p=.005; (c) p=.05; 2-tailed.

Key: PPO = Positive Problem Orientation; NPO = Negative Problem Orientation; ICS = Impulsive/Carelessness Style; AS = Avoidance Style;
RPS = Rational Problem Solving.

Table 7.5 . *Corrrelations among the SPSI-R scores in a non-suicidal psychiatric control group.*

The pattern of intercorrelations on the SPSI-R for the normal control group is shown below. A preliminary analysis revealed a gender difference on the generation of alternatives subscale with men rating themselves higher than the women did on this scale. Gender was therefore controlled for in the subsequent analyses.

This group showed a pattern very similar to the non-suicidal psychiatric patients: a positive problem orientation was positively correlated with rational problem solving and negatively correlated with avoidance style and

negative problem orientation. Furthermore negative problem orientation was most strongly related to an avoidant style of problem solving. There was a strong negative correlation between an impulsive/careless style of problem solving and rational problem solving. Negative problem orientation was unrelated to rational problem solving, suggesting that individuals with a negative problem orientation do not necessarily have deficits in rational problem solving.

Measures	PPO	NPO	ICS	AS	RPS
PPO	-	-	-	-	-
NPO	-.50 (d)	-	-	-	-
ICS	-.20	.36	-	-	-
AS	-.64 (b)	.60 (c)	.39	-	-
RPS	.48 (d)	-.17	-.71 (a)	-.38	-

(a) p=.0001; (b) p=.001; (c) p=.005; (d) p=.01; 2-tailed.

Key: PPO = Positive Problem Orientation; NPO = Negative Problem Orientation; ICS = Impulsive/Carelessness Style; AS = Avoidance Style;
RPS = Rational Problem Solving.

Table 7.6. *Correlations among the scales of the SPSI-R in a normal adult sample.*

To examine the scores of the three groups on the SPSI-R a multivariate analysis of variance was conducted on the ten problem solving measures assessed by this instrument. These measures are Positive Problem Orientation, Negative Problem Orientation, Rational Problem Solving (which can be sub-divided into Problem Definition and Formulation, Generation of Alternative Solutions, Decision Making, and Solution Implementation and

Verification), Impulsivity/Carelessness Style and Avoidance Style. A Global Problem Solving Score can also be computed and this was included in the analysis. Subsequently, a series of ANOVAS for the ten problem solving dimensions were computed. Any significant differences between suicide attempters and psychiatric and normal controls were analysed with pairwise comparisons using Tukey's test, (p =.05). Means and standard deviations for the various SPSI-R are presented in Table 7.7.

Dimension	(1) Suicidal M (SD)	(2) Psychiatric M (SD)	(3) Normal M (SD)	F
Positive problem orientation	7.95 (5.36)	8.16 (4.92) 2 vs 3	12.66 (3.75) 1 vs 3	7.56 (c)
Negative problem orientation	22.54 (10.28)	21.25 (11.89) 2 vs 3	6.45 (5.49) 1 vs 3	20.72 (a)
Impulsivity/ carelessness style	18.45 (9.07) 1 vs 2	9.75 (7.64)	8.29 (7.34) 1 vs 3	11.17 (b)
Avoidance style	13.75 (7.93)	11.45 (7.80) 2 vs 3	6.37 (5.85) 1 vs 3	6.49 (d)
Rational problem solving	31.25 (17.59)	42.16 (11.88)	42.41 (17.87) 1 vs 3	3.80 (e)
Decision making	7.00 (4.66) 1 vs 2	10.25 (3.44)	9.45 (4.90)	3.59 (e)
Generation of alternatives	6.91 (4.15) 1 vs 2	9.91 (3.77)	11.20 (4.78) 1 vs 3	6.41 (d)
Problem definition and formulation	8.95 (5.08)	11.87 (3.45)	11.66 (4.06)	3.51 (e)
Solution implementation	8.37 (5.25)	9.83 (4.00)	10.20 (5.38)	0.93
Global Problem solving	91.87 (43.05)	115.25 (31.24) 2 vs 3	141.95 (31.36) 1 vs 3	11.86 (a)

(a) $p<.00001$; (b) $p<.0001$; (c) $p<.001$; (d) $p<.005$; (e) $p<.05$).

Table 7.7 Means and Standard Deviations for Social Problem Solving Dimensions by Group. (Pairwise comparisons: Tukey's test $p<.05$).

The Manova revealed a significant group effect for SPSI-R scores, $F(20,120) = 3.19$, $p<.0001$, with suicide attempters reporting poorer problem solving when compared with psychiatric controls, who in turn, were found to have impaired problem solving skills when compared with normal controls.

Subsequent univariate analyses of variance of the SPSI-R scales produced a significant effect for the five major scales, the four rational problem solving subscales and the total global problem solving score. The details of these results is as follows. There was a significant effect for the Positive Problem Orientation scale, $F(2,69) = 7.56$ $p<.001$; Negative Problem Orientation scale, $F(2,69) = 20.72$, $p<.00001$; Impulsivity/Carelessness scale, $F(2,69) = 11.17$, $p<.0001$; Avoidance scale, $F(2,69) = 6.49$, $p<.005$; and the Global Problem Solving Score, $F(2,69) = 11.86$, $p<.00001$. Pairwise comparisons using Tukey's test, $p = .05$, revealed the following pattern of results. In the case of each of these variables the suicide attempters differed significantly from the normal controls, reporting poorer problem orientation, greater impulsivity and carelessness, more avoidance and lower overall problem solving scores. Similarly, the psychiatric control group differed significantly from the normal control group on these measures also reporting poorer problem orientation, and more avoidance; and achieving lower overall problem solving scores than the normal controls. The suicide attempters differed significantly from the psychiatric control group only on the impulsivity/carelessness style scale reporting greater impulsivity and carelessness in their problem solving attempts.

On the Rational Problem Solving scale there was a significant group effect, $F(2,69) = 3.80$, $p<.05$. Pairwise comparisons using Tukey's test, $p=.05$, revealed the suicide attempters to be significantly less rational in their problem solving than the normal controls; however, the suicide attempters did not differ significantly from the psychiatric controls who in turn, did not differ significantly from the normal control group.

Significant group effects were achieved on three of the four Rational Problem Solving subscales, Problem Definition and Formulation, $F(2,69) = 3.51$, $p<.05$; Generation of Alternative Solutions, $F(2,69) = 6.41$, $p<.005$; and Decision Making, $F(2,69) = 3.59$, $p<.05$. There was no significant group effect for Solution Implementation and Verification, $F(2,69) = .93$, $p<.40$. Pairwise comparisons for Problem Definition and Formulation using Tukey's test, $p=.05$, revealed no significant differences between the three groups.

Pairwise comparisons of the Generation of Alternative Solutions variable revealed a significant difference between the suicide attempters and the psychiatric control group with the suicide attempters less able to generate alternatives. The suicide attempters also reported a significantly reduced ability to produce alternative solutions when compared with the normal control group, however the psychiatric control group did not differ significantly in this ability from the normal control group. Pairwise

comparisons of the Decision Making variable showed that the suicidal group were significantly impaired in their decision making ability when compared with the psychiatric control group. However, neither the suicidal group nor the psychiatric control group differed significantly on decision making when compared with the normal group.

In order to determine whether the significant differences between the suicidal group and the psychiatric control group on impulsivity/carelessness style, decision making and generating alternatives were due to the level of mood, hopelessness or suicidal ideation a further analysis was carried out removing the effects of these variables. The multivariate analysis of covariance still showed a significant difference between the groups, $F(3,41) = 4.86$, $p<.006$. The univariate analyses of variance revealed that the significant differences between the two groups on these measures remained - impulsivity/carelessness style: $F(1,43) = 7.61$, $p<.008$; decision making: $F(1,43) = 13.92$, $p<.001$; generation of alternatives: $F(1,43) = 6.02$, $p<.01$.

Boxplots illustrating these comparisons are shown below. In all graphs the key is: Group 1 = Suicidal group; Group 2 = Psychiatric control group and Group 3 = Normal control group.

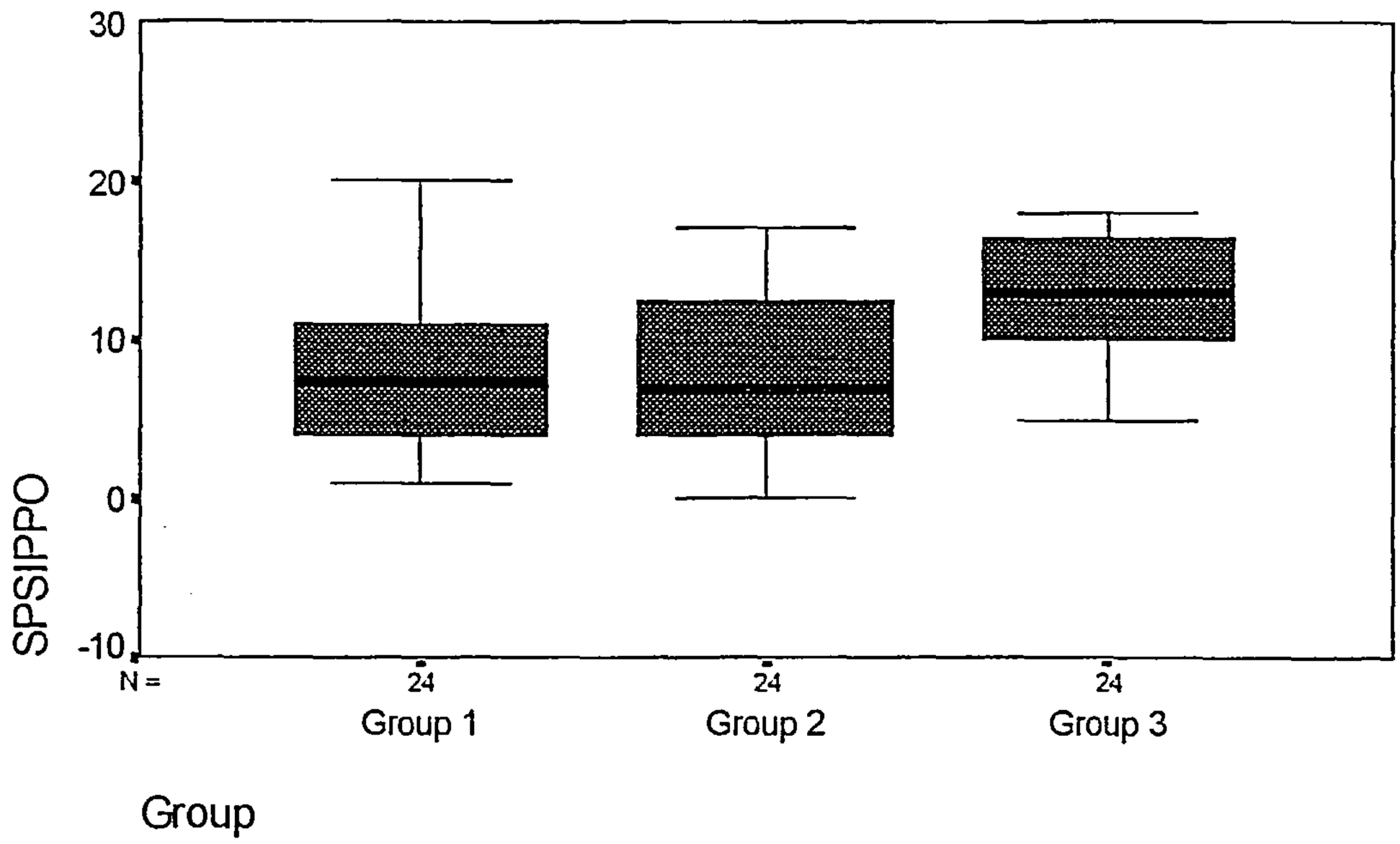


Figure 7.7 Boxplot showing group scores for Positive Problem Orientation.

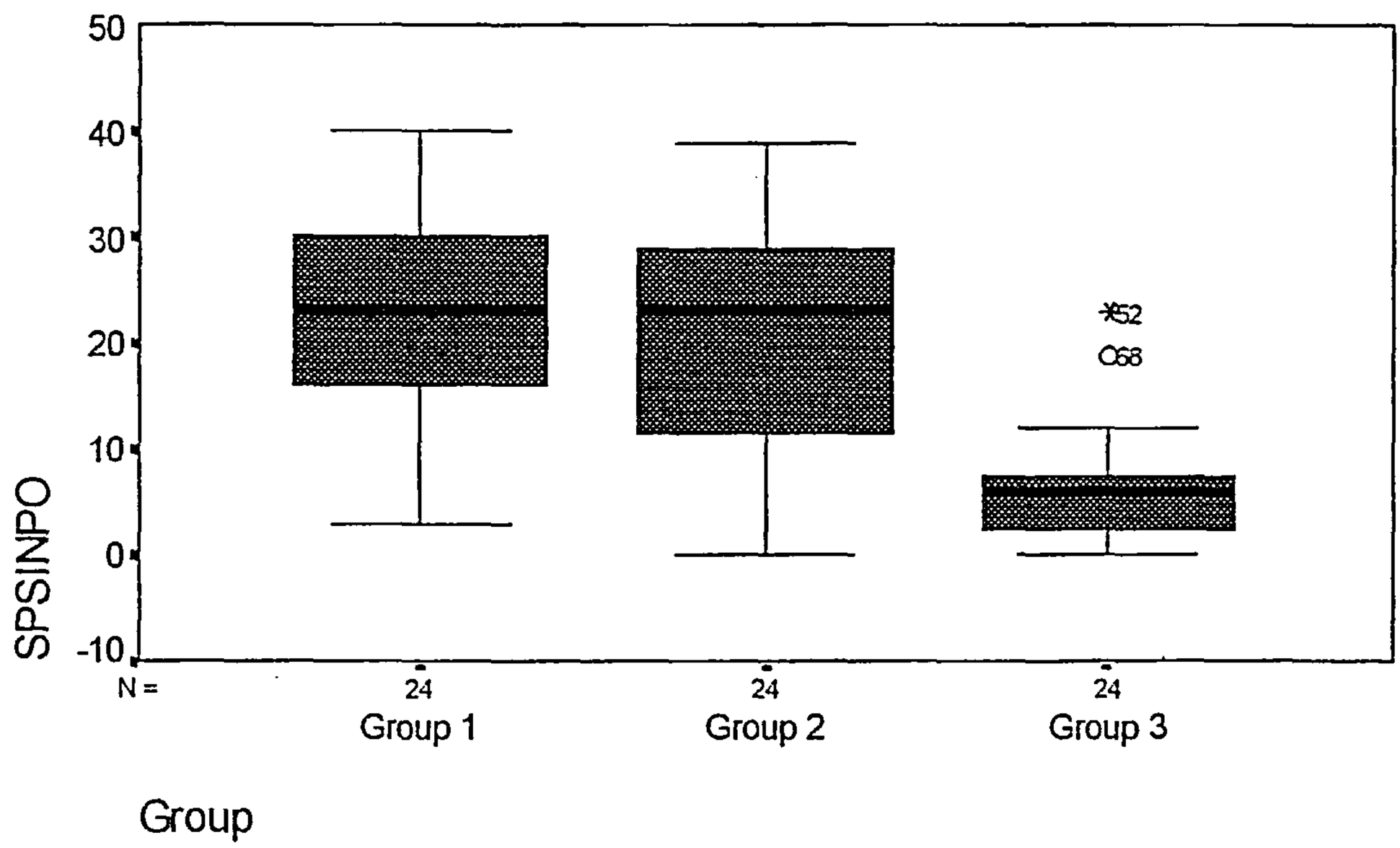


Figure 7.8 Boxplot showing group scores for Negative Problem Orientation.

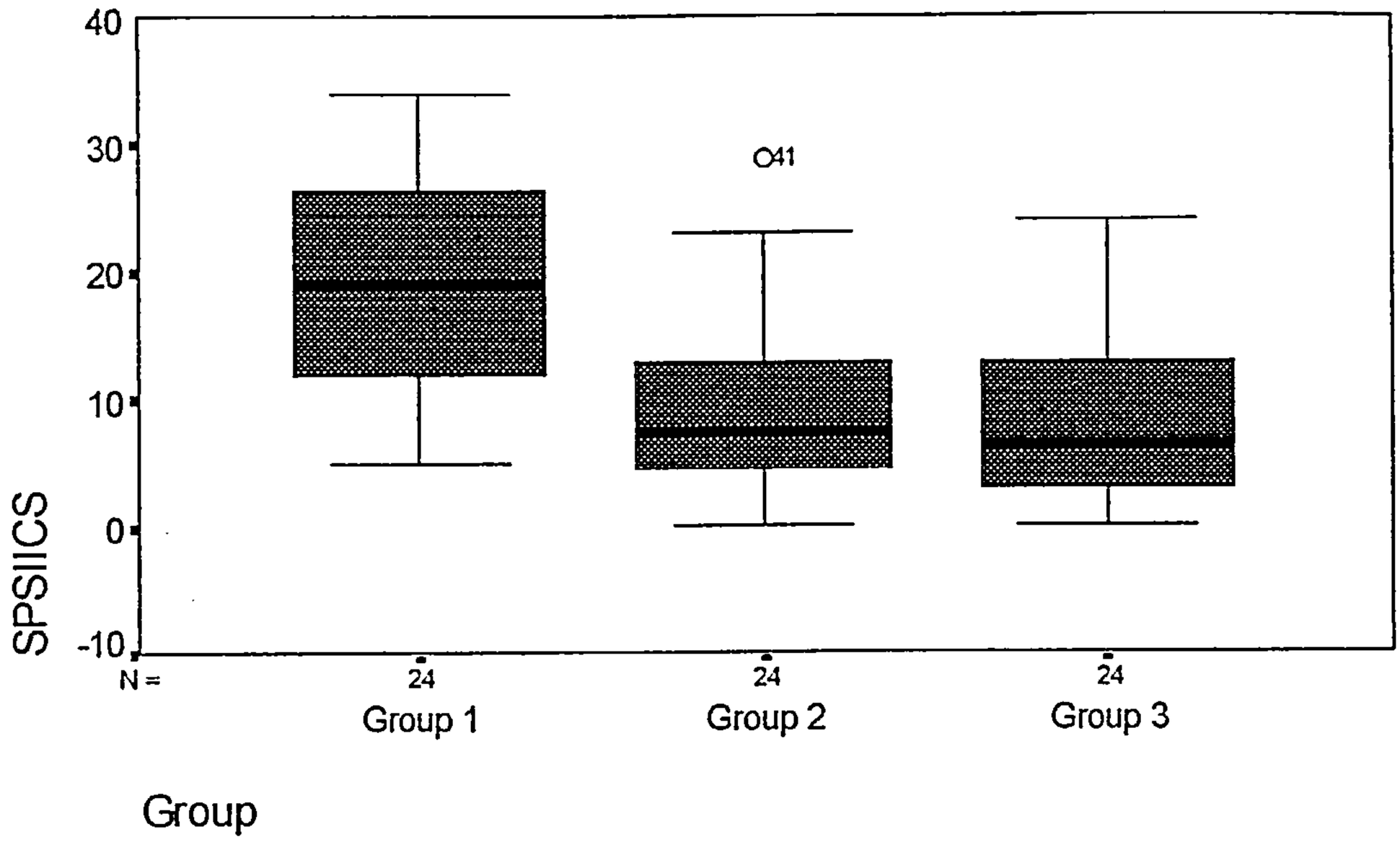


Figure 7.9 Boxplot showing groups scores for Impulsivity/Carelessness Style.

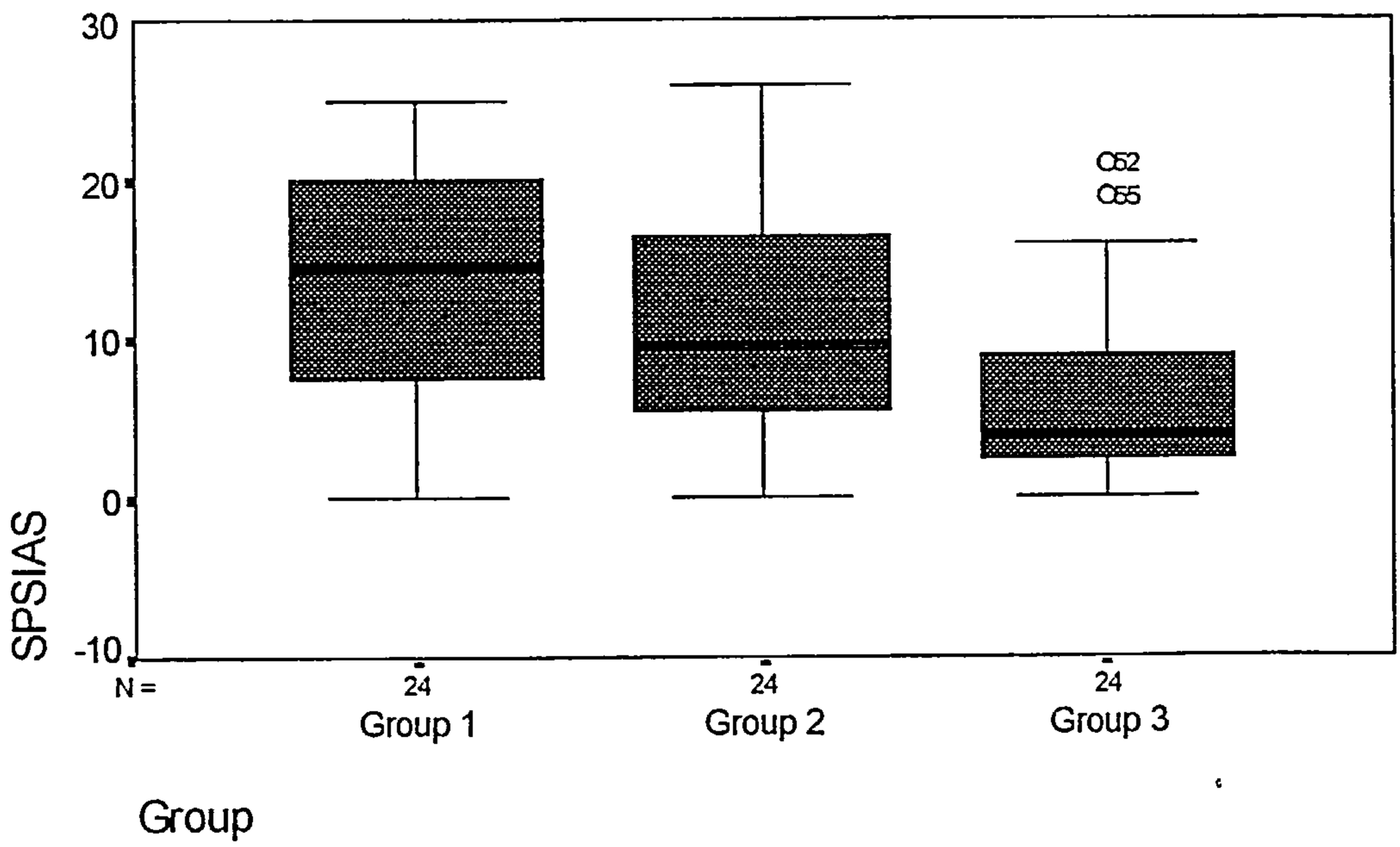


Figure 7.10 Boxplot showing group scores for Avoidance Style.

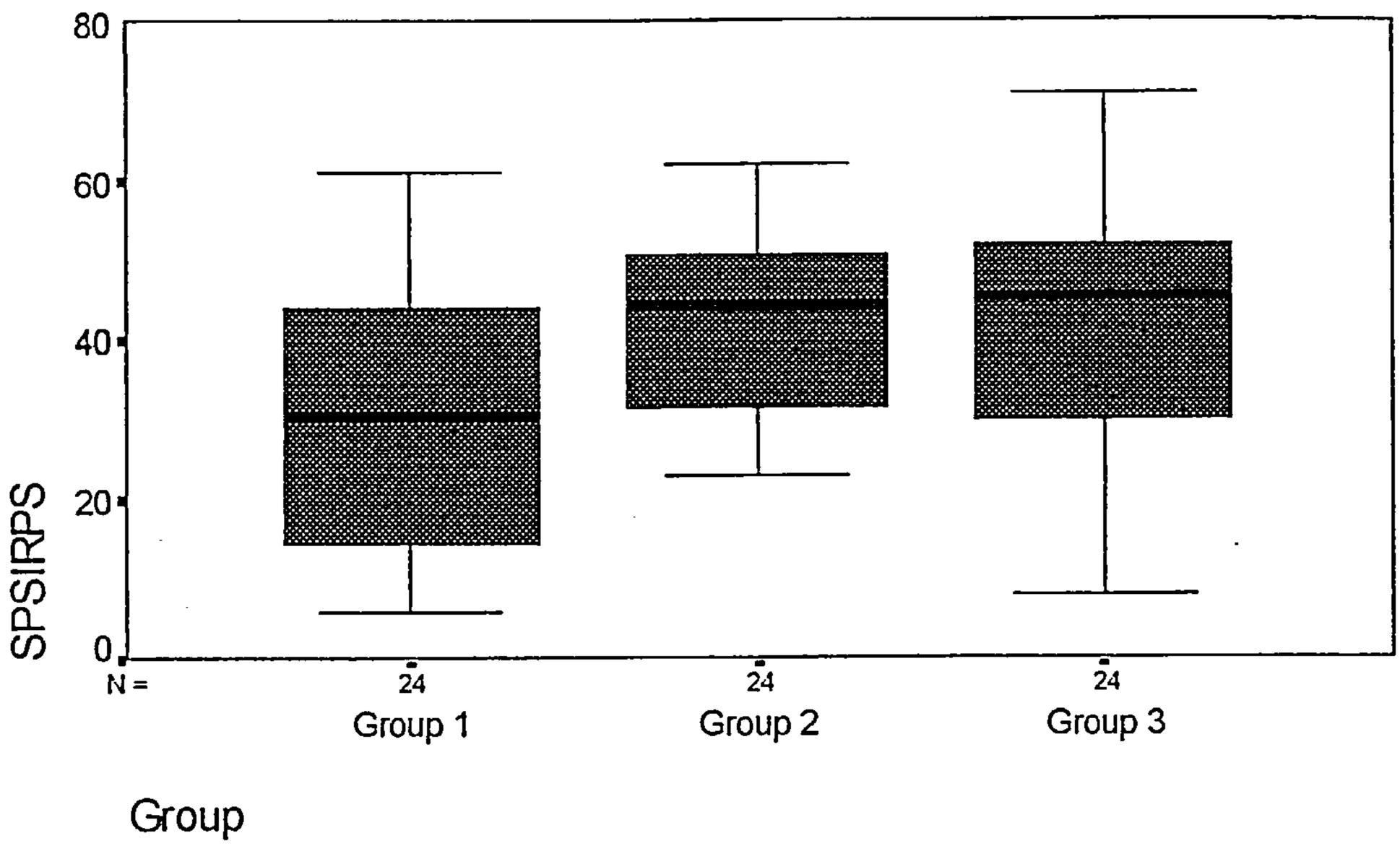


Figure 7.11 Boxplot showing group scores for Rational Problem Solving.

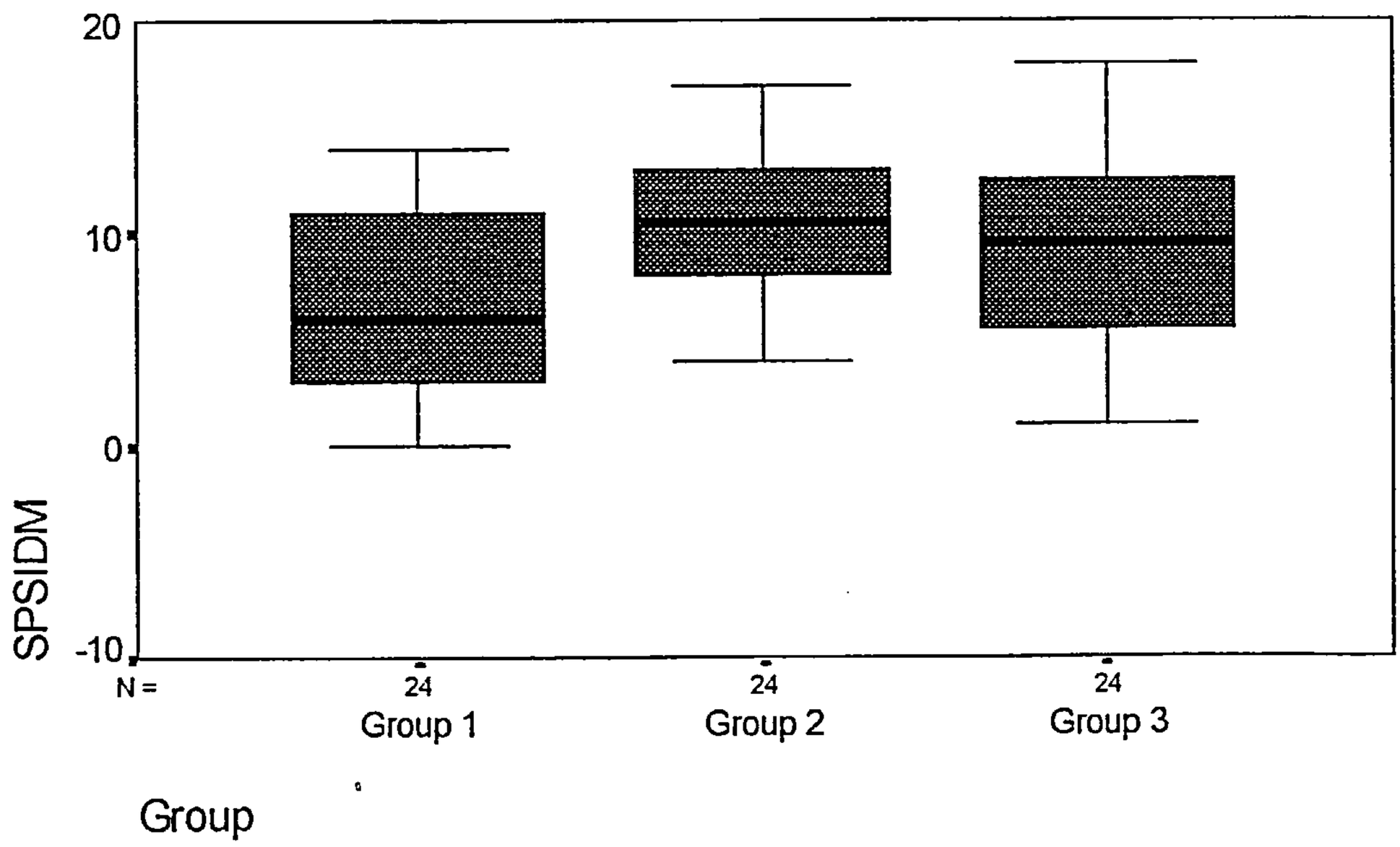


Figure 7.12 Boxplot showing group scores for Decision Making.

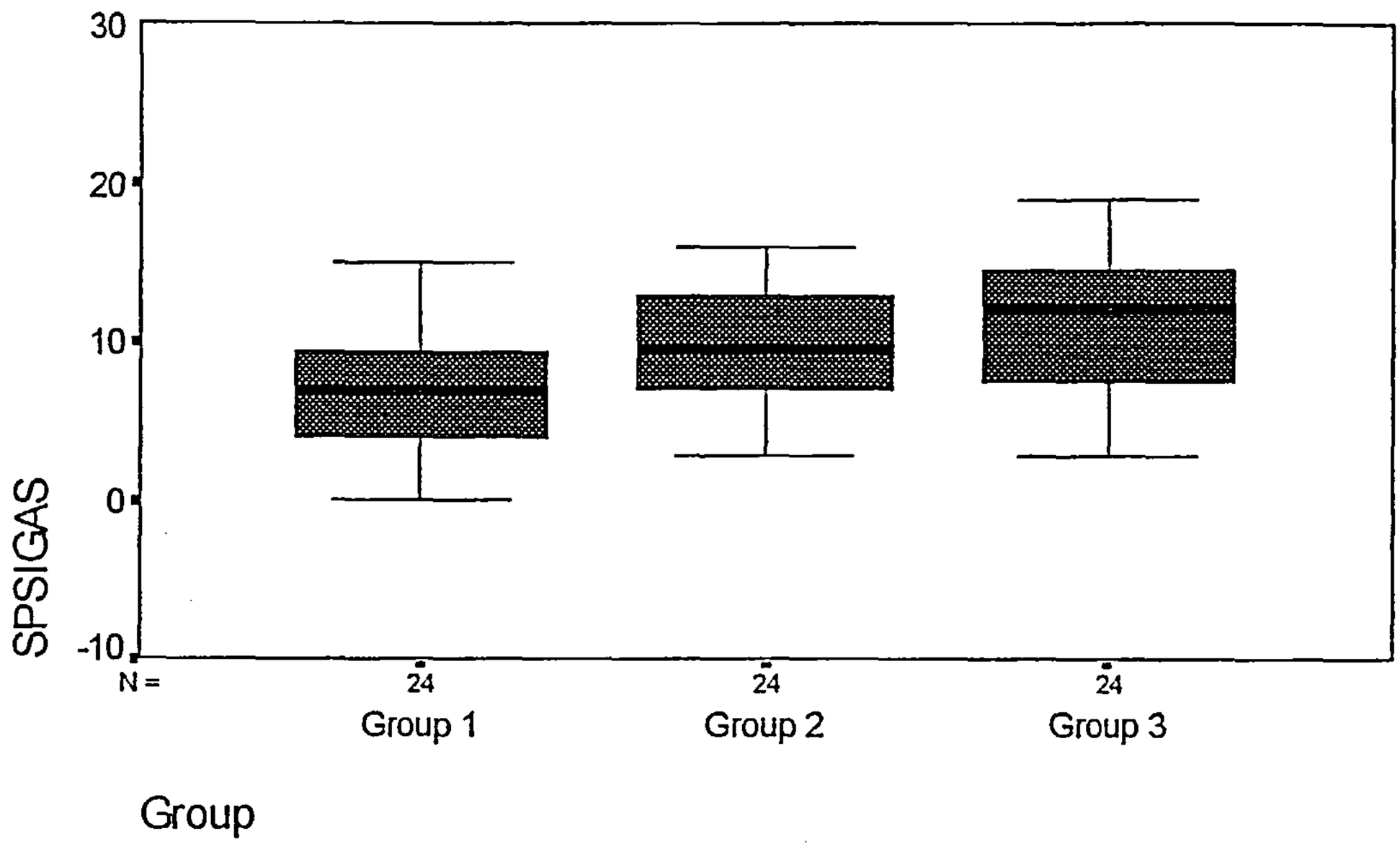


Figure 7.13 Boxpot showing group scores for Generation of Alternatives.

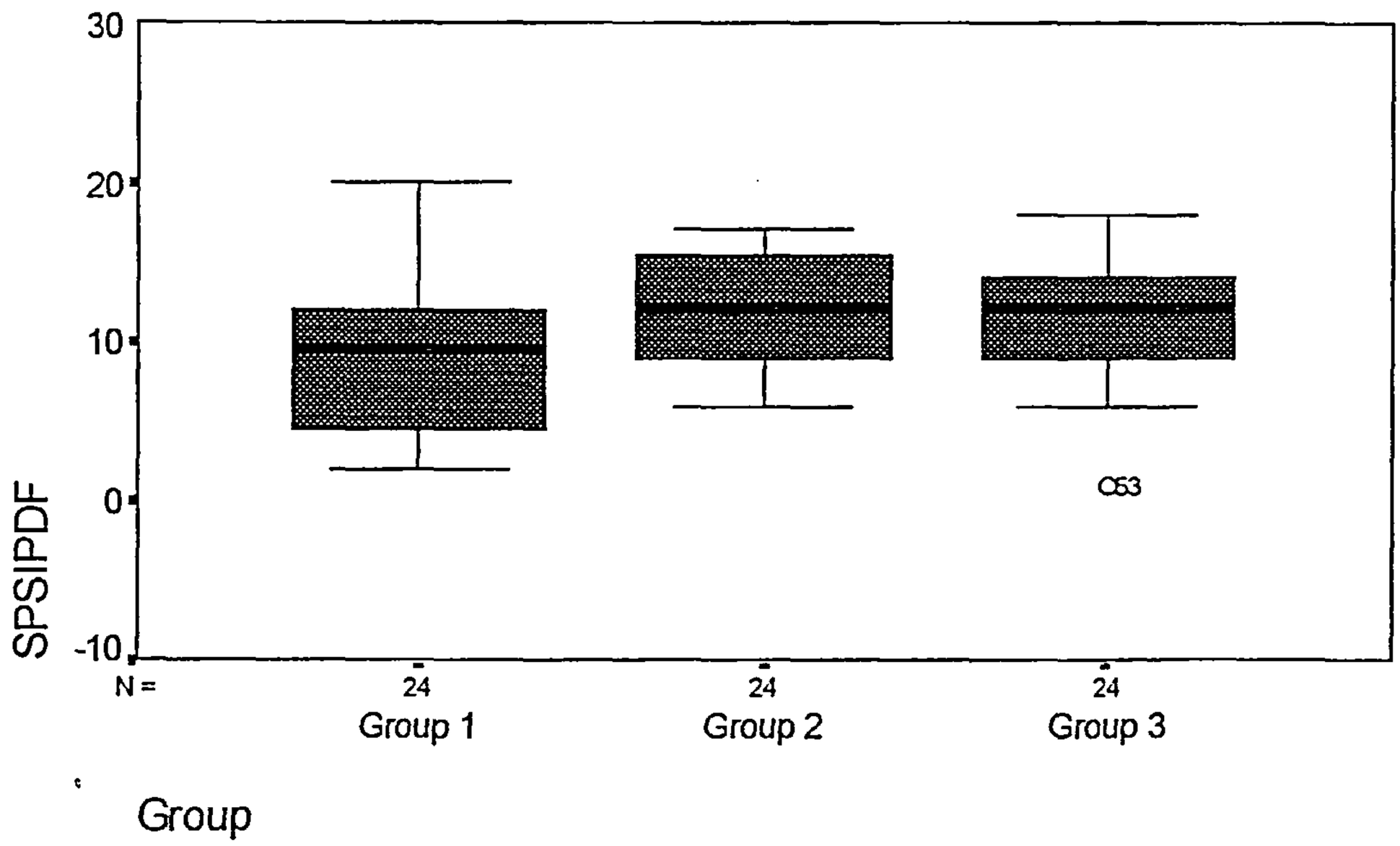


Figure 7.14 Boxplot showing group scores for Problem Definition and Formulation.

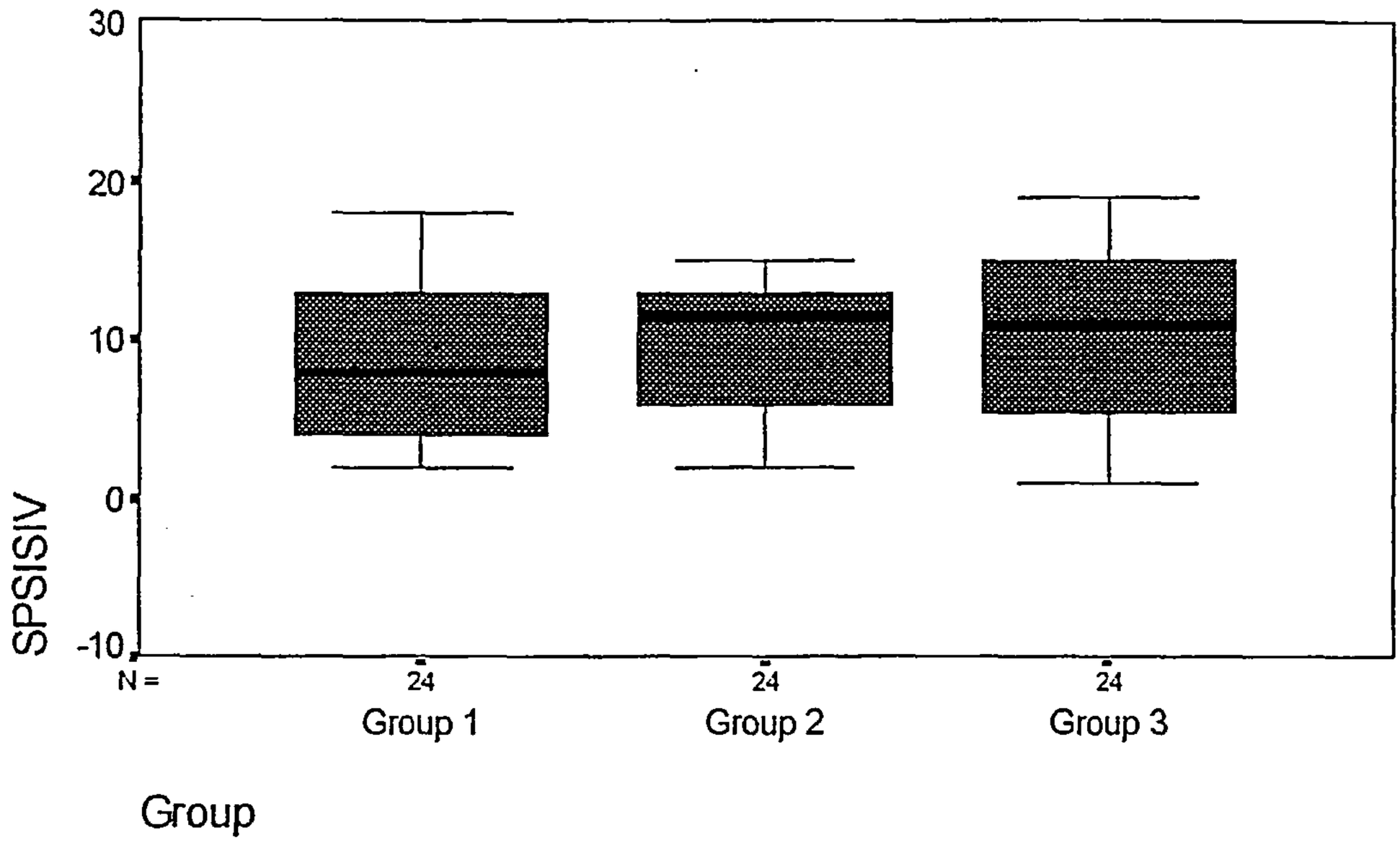


Figure 7.15 Boxplot showing group scores for Solution Implementation and Verification.

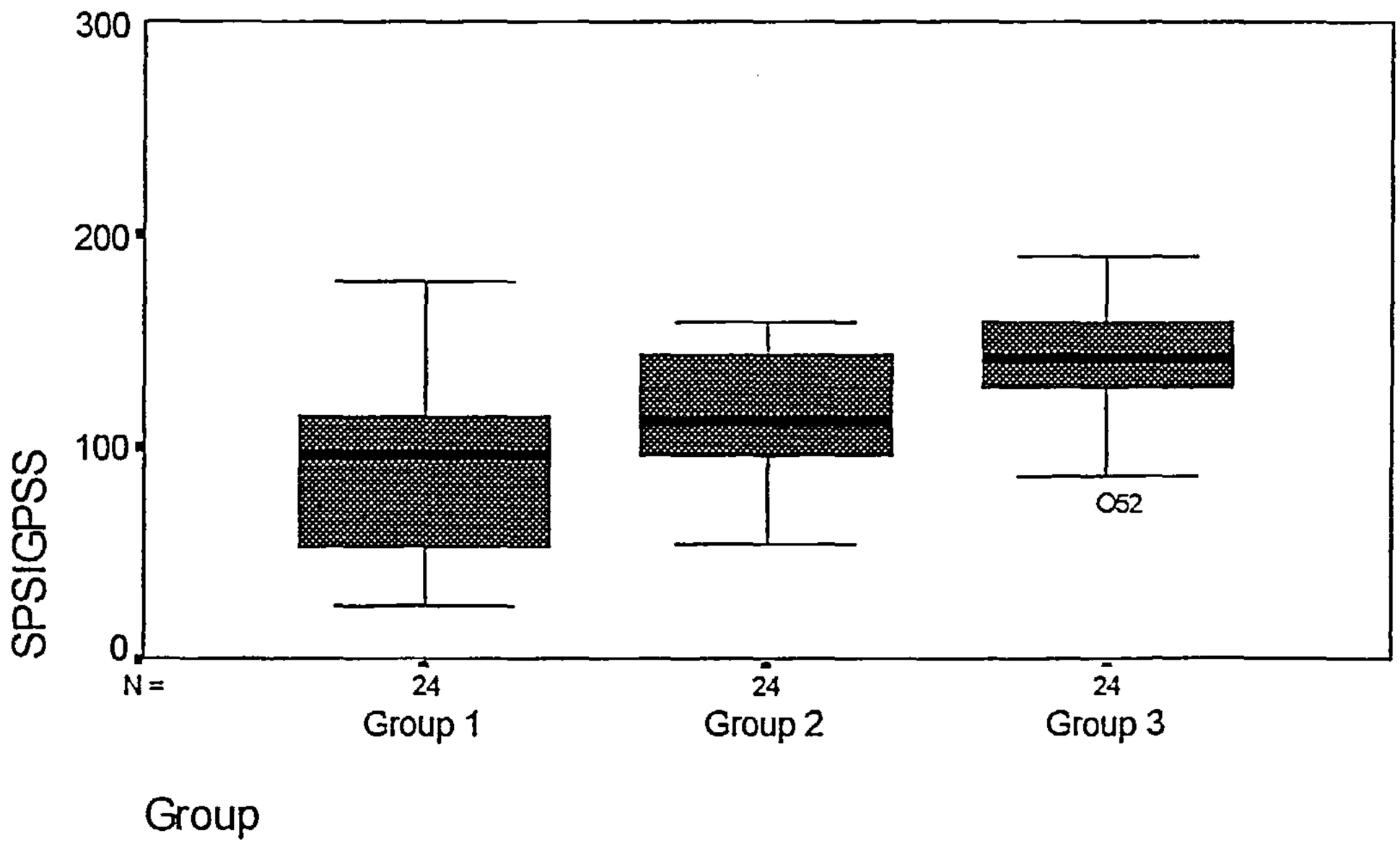


Figure 7.16 Boxplot comparing the groups Global Problem Solving Scores.

In summary, although the suicidal group differed in problem solving from normal controls in a number of variables, (Positive Problem Orientation, Negative Problem Orientation, Generation of Alternatives, Impulsivity/Carelessness Style, Avoidance Style and Global Problem Solving Score), they differed from the psychiatric controls in only three, (Impulsivity/Carelessness Style, Generation of Alternatives and Decision Making).

Table 7.8 shows the correlations between the problem solving measures and the measure of mood, hopelessness and suicidal ideation for the suicidal group. In this group the level of depression was significantly correlated with negative problem orientation and generation of alternative solutions.

Level of hopelessness was significantly correlated with almost every measure of problem solving. The best predictors of hopelessness were negative problem orientation, positive problem orientation and generation of alternatives. None of the problem solving measures correlated significantly with the suicidal ideation measure.

Measures	BDI	BHS	SSI
PPO	-.14	-.51 (a)	.12
NPO	.49 (a)	.53 (a)	-.07
ICS	.26	.45 (b)	-.18
AS	.20	.34	-.12
RPS	-.29	-.48 (a)	.27
Pdf	-.17	-.48 (a)	.28
Gas	-.43 (b)	-.50 (a)	.19
Dm	-.19	-.40 (b)	.34
Siv	-.28	-.40 (b)	.19

(a) p=.01; (b) p=.05; 2-tailed.

Key: PPO=Positive Problem Orientation; NPO=Negative Problem orientation; ICS=Impulsiveness/Carelessness Style; AS=Avoidance Style; RPS=Rational Problem Solving Style; Pdf=Problem definition and formulation; Gas=Generation of alternative solutions; Dm=Decision making; Siv=Solution implementation and evaluation.

Table 7.8 *Correlations between the SPSI-R measures (including the rational problem solving subscales), depression, hopelessness and suicidality for the suicidal group.*

The intercorrelations between the problem solving measures and the level of depression, hopelessness and suicidal ideation in the psychiatric control group showed that avoidance style, positive problem orientation and negative problem orientation were significantly associated with both the level of hopelessness and depression. In addition rational problem solving was negative correlated with level of hopelessness and negative orientation and avoidance style were correlated with the level of suicidal ideation. See Table 7.9

Measures	BDI	BHS	SSI
PPO	-.48 (b)	-.71 (a)	-.39
NPO	.47 (b)	.44 (c)	.41 (c)
ICS	.11	.02	.17
AS	.51 (b)	.48 (b)	.41 (c)
RPS	-.05	-.41 (c)	-.23
Pdf	-.06	-.31	-.09
Gas	-.05	-.32	-.17
Dm	-.03	-.30	-.09
Siv	.04	-.33	-.20

(a) p=.0001; (b) p= .01; (c) p=.05; 2-tailed.

Key: PPO=Positive Problem Orientation; NPO=Negative Problem orientation; ICS=Impulsiveness/Carelessness Style; AS=Avoidance Style; RPS=Rational Problem Solving Style; Pdf=Problem definition and formulation; Gas=Generation of alternative solutions; Dm=Decision making; Siv=Solution implementation and evaluation.

Table 7.9 *Correlations between the SPSI-R measures (including the rational problem solving subscales), depression, hopelessness and suicidality for the psychiatric control group.*

Table 7.10 shows the intercorrelations between the various measures for the normal control group. There was a significant correlation in the expected directions between negative problem orientation and positive problem orientation and the level of hopelessness.

Measures	BDI	BHS	SSI
PPO	-.06	-.47 (b)	.02
NPO	.30	.61 (a)	.13
ICS	.002	.24	-.25
AS	.02	.23	.13
RPS	-.002	-.22	.24
Pdf	.01	-.04	.23
Gas	.03	-.22	.19
Dm	.04	-.20	.31
Siv	-.08	-.31	.15

(a) p=.001; (b) p=.01; 2-tailed.

Key: PPO=Positive Problem Orientation; NPO=Negative Problem orientation; ICS=Impulsiveness/Carelessness Style; AS=Avoidance Style; RPS=Rational Problem Solving Style; Pdf=Problem definition and formulation; Gas=Generation of alternative solutions; Dm=Decision making; Siv=Solution implementation and evaluation.

Table 7.10 *Correlations between the SPSI-R (including the rational problem solving subscales), depression, hopelessness and suicidality in the normal control group.*

Discussion.

In recent years a number of researchers have hypothesized a relationship between problem solving deficits, hopelessness, depression and suicidal behaviour (Dixon, Heppener and Anderson, 1991; Haaga, Fine, Terrill, Stewart and Beck, 1995; Marx, Williams and Claridge, 1992; Chang and

D'Zurilla, 1996; Sadowski and Kelley, 1993; Linehan Camper, Chiles, Strosahl and Shearin, 1987; Schotte and Clum, 1982,1987). It has been suggested that problem solving deficits contribute to hopelessness and depression and that this may lead to increased probability of suicidal behaviour. However until very recently none of these studies had examined the specific nature of these deficits. All had used global measures of problem solving and inferred deficits in specific problem solving skills from these measures. Only two studies have attempted to examine these deficits in clinical populations, Sadowski and Kelley (1993) in adolescents and D'Zurilla et al. (1998) in adults, however, as seen in the earlier review the D'Zurilla et al. study is methodologically flawed.

The purpose of this study was to examine and assess social problem solving in a group of suicidal rural adults using the SPSI-R which allowed a closer and more detailed investigation of these specific deficits than reported in previous studies. The first focus of interest was to describe the pattern of problem solving reported by the three groups. When the intercorrelations of the problem solving measures for three groups were examined some commonalities emerged. For all groups a positive orientation towards problem solving was closely associated with with a rational problem solving style. That is, people who showed a constructive, cognitive problem solving 'set' also tended to show good skills in the components of rational problem solving i.e. problem definition and formulation, generation of alternative solutions, decision making and solution implementation and verification. A

negative orientation toward problems was consistently associated with an avoidant problem solving style. In addition, in the normal individuals both negative problem orientation and an avoidant style appear to be unrelated to rational problem solving. In the psychiatric control group an additional feature was that a negative orientation toward problems was also strongly associated with an impulsive and careless problem solving style. The pattern of intercorrelations in the suicidal group was very similar to those found in the other two groups with one exception. In this group both negative problem orientation and an avoidant style were negatively associated with rational problem solving. This suggests that in highly suicidal individuals it is this combination of negative problem orientation, an avoidant style and decreased rational problem solving skills, that may be critical.

When comparing the three groups on the problem solving measures the results revealed that the suicide attempters were generally poorer at problem solving than the other two groups. In particular the suicidal group were more careless and impulsive in their approach to problem solving and showed unique deficits in decision making and the ability to generate alternative solutions to problems. The suicidal individuals were also more depressed, angry and confused. It seems that suicide attempters approach problem solving in a less constructive manner and think about problems in a less specific way. They are more emotional, impulsive and have difficulty generating alternative solutions to a problem and making decisions about them.

In attempting to understand and explain these results we need to examine the relationship between the problem solving measures and the mood measures. In doing this we find that for each of the groups negative problem orientation is strongly associated with hopelessness. In the psychiatric group negative problem orientation and an avoidant style is associated with depression, hopelessness and suicidal intent and in the suicidal group all of the problem solving measures are strongly related to hopelessness, but only a negative orientation and generating alternative solutions are related to depression. No problem solving measures were related to suicidal ideation in this group.

It seems that people who are vulnerable to suicide view any problems they face as a significant threat to their well-being. They blame themselves for the problem, doubt their ability to solve the problem and respond to the problem in an emotionally sensitive way, feeling overwhelmed and inadequate. Rather than viewing the problem as a challenge to be faced and overcome, these vulnerable individuals tend to avoid problems. They delay solving problems for as long as possible remaining passive and waiting for the problem to resolve itself. They may attempt to shift responsibility for solving the problem to others. When they do try to solve the problem their attempts are usually hasty, poorly focussed, impulsive, careless and incomplete. These comments apply to both the suicidal and the psychiatric control group in this study since both groups are at risk for future suicidal behaviour. What aspects of problem solving differentiate the suicidal group from the

psychiatric controls? These results show that it is a careless and impulsive problem solving style, an impaired ability to generate alternative solutions and impaired decision making that are associated with suicidal behaviour.

These findings are consistent with those reported by others. Sadowski and Kelley (1993) in their study of suicidal adolescents report the presence of poorer problem solving orientation . They suggest that the cognitive distortions that have been described in suicidal people in conjunction with their maladaptive attributional style may lead suicide attempters to assess their problem situation and environmental cues inaccurately such that they view suicide as a viable or the only option. They hypothesize that faulty problem orientation may weaken their problem solving skills at a later stage in the problem solving process. For example, Rotheram-Borus et al., (1990) have described how suicidal individuals engage in more emotion focussed coping. Schotte and Clum (1987) using the MEPS found suicidal subjects provide fewer than half the solutions of non-suicidal people and rated their solutions as being effective but focussed on the negative aspects of the solution. They felt that these subjects had a negative orientation or set toward problems. Dixon, Heppener and Rudd, (1994) have suggested that the individual's own appraisal of their problem solving ability is an important element and believe that hopelessness mediates the relationship between problem solving appraisal and suicide ideation. The current results tend to support this position.

Other investigators have described the avoidant position that suicidal individuals adopt in response to problems, although this is known to be a feature of psychiatric patients in general. For example, Spirito et al., (1989) report that suicide attempters are more socially isolated, and, have less social support (King et al.(1990). They are also less assertive (Joffe et al, 1988), more passive in their problem solving (Linehan et al., 1987), and rely on others to solve their problems (Orbach, Bar-Joseph and Dror, 1990).

Sadowski and Kelley (1993) found that both suicide attempters and psychiatrically disturbed adolescents had deficits in problem solving skills. However, unlike the current study they did not find any problem solving skill deficits unique to the suicidal group. McLeavey et al. (1987) have reported that suicide attempters have difficulty evaluating solutions and this was reflected in the current study's finding of unique decision making deficits in the suicidal group. Sadowski and Kelley suggest that decision making deficits have been linked with hospitalization. As far as implementing and verifying solutions are concerned, both suicidal adolescents (Sadowski and Kelley, 1993) and adults (Schotte and Clum, 1987) have been reported to have difficulties.

In this study social problem solving was not correlated with suicide ideation. This may be because this study used first time attempters, who having made an attempt and found help were no longer seriously suicidal. We know for example that only 10% of these individuals will go on to complete suicide.

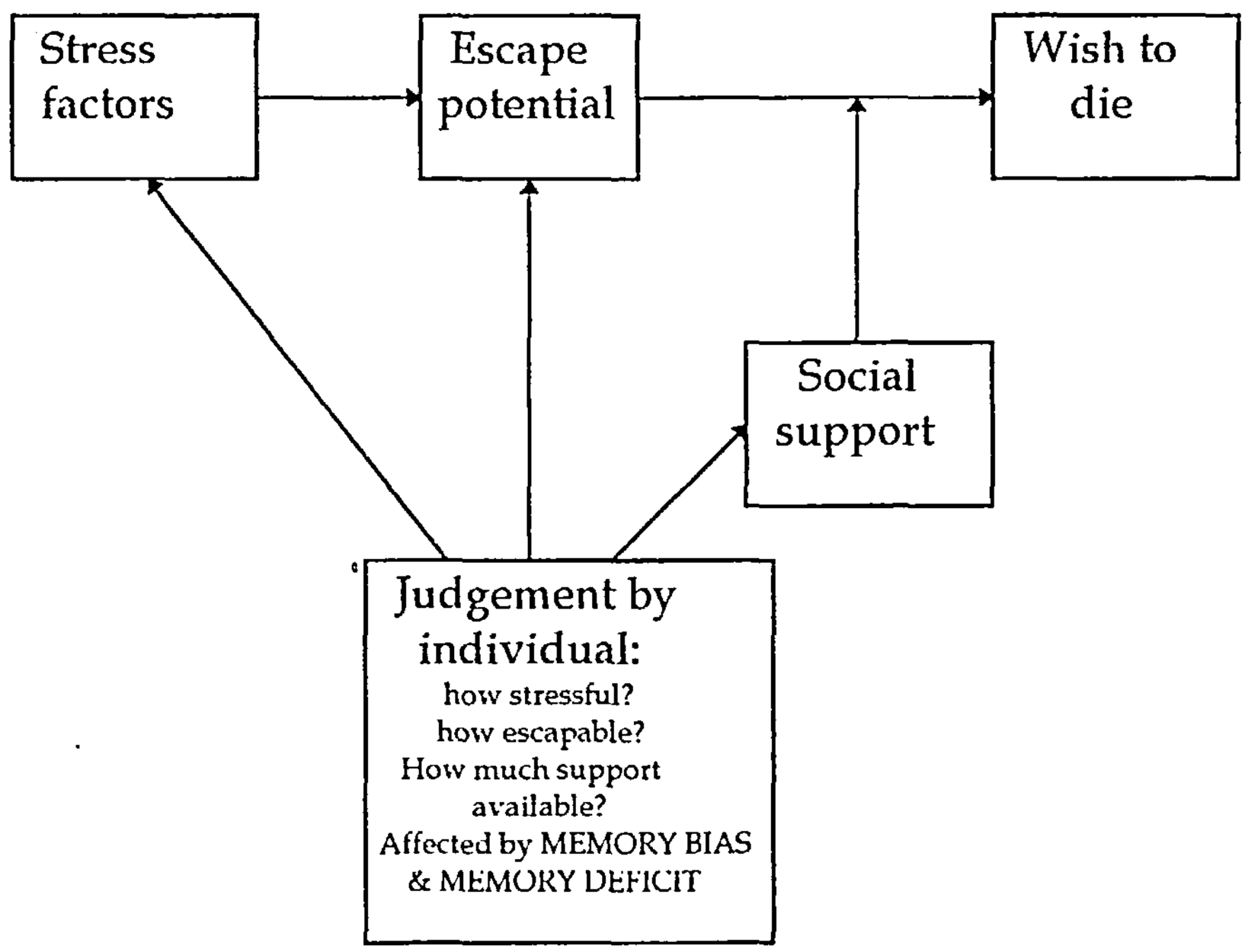
However, Sadowski and Kelley (1993) also found no correlation between problem solving and suicide ideation in their study of adolescents. D'Zurilla et al. (1998) in one of their studies did find a relationship. Closer inspection shows that this anomaly may be explained by the different measures of suicide intent that were used. Both the current study and the Sadowski and Kelley study used a measure of suicide ideation which was assessed and scored by the investigator. D'Zurilla et al. however, utilized a self-report measure which included subscales of hopelessness and negative self-evaluation. Since this was a self-report measure, it may have tapped into these other dimensions rather than considering suicide ideation separately. Indeed in a subsequent study where D'Zurilla et al. (1998) used a different measure of suicide ideation they found no correlation between suicide ideation and problem solving skills.

These results extend those of previous researchers by demonstrating a relationship between hopelessness and problem solving skills in suicidal adults. We have also shown that suicidal adults have a particular pattern of problem solving and distinct and unique problem solving deficits. These findings reinforce the view that the SPSI-R is a useful instrument for assessing problem solving in suicidal patients. This work also highlights the importance of selecting a homogeneous group of suicidal individuals, and comparing them with other carefully matched groups. The type of measure used needs careful selection.

Several questions arise from these results. Firstly, is there a relationship between self-assessed problem solving ability and problem solving ability as measured by global measures such as the MEPS? Secondly, researchers such as Williams (1997) have hypothesized that deficits in problem solving ability are due to deficits in the ability to generate specific memories. Studies by Evans et al. (1993) and Sidley et al. (1997) have reported a relationship between problem solving deficits and specificity of autobiographical memory. Is such a relationship present in these patients? These questions are considered in the next chapter.

Model of suicidal behaviour.

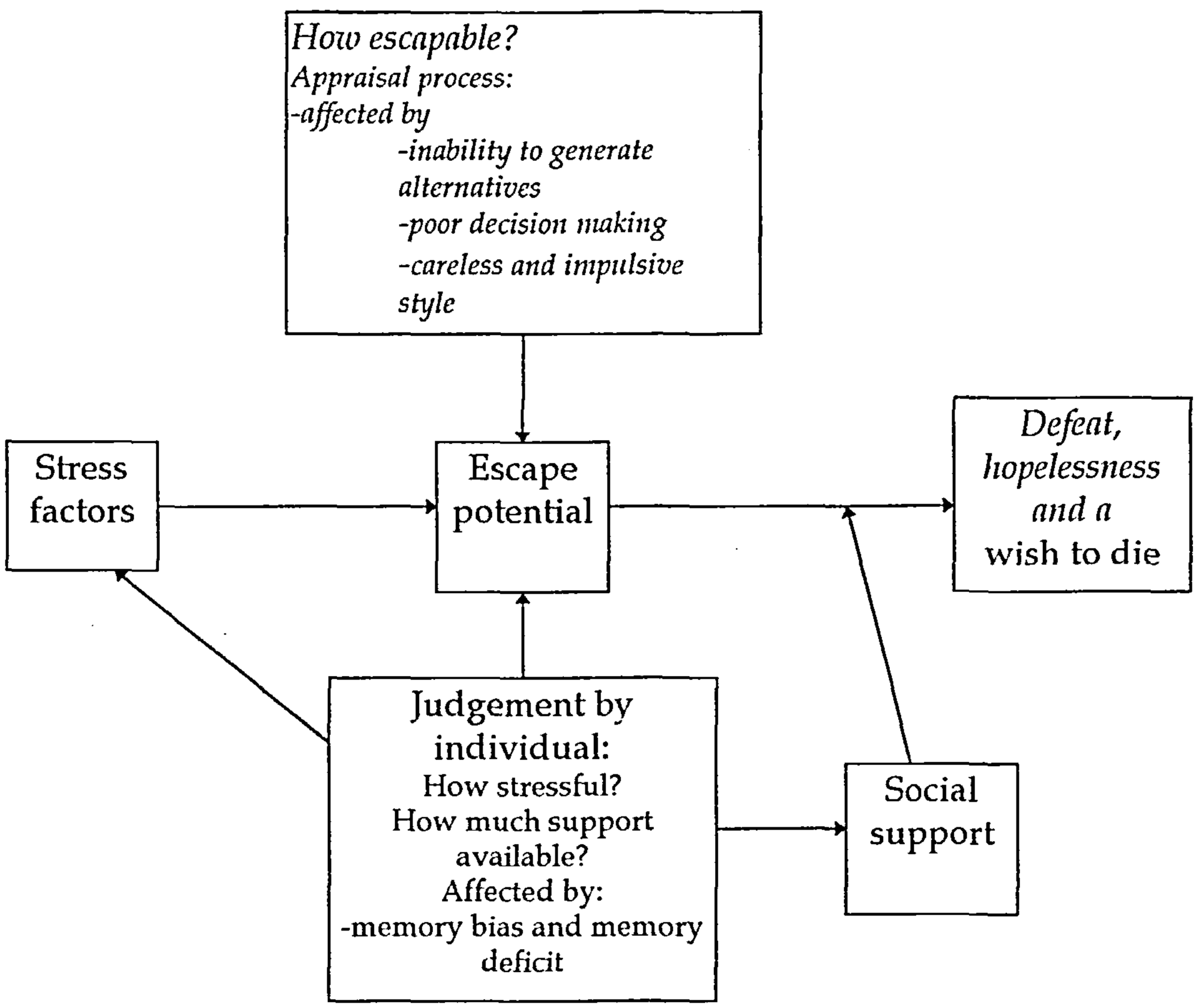
The results we have presented above provide the basis for making some additions to the 'Cry of Pain' model of suicidal behaviour (Williams, 1997). The original model is illustrated in the diagrams below.



In this model an individual is confronted with a problem which results in feelings of stress. As the individual becomes aware that they lack control over important areas of their situation or aspects of their mental life a sense of anger arises in response to the feelings of entrapment. As negative experiences continue, escalating feelings of hopelessness and despair manifest themselves. Cognitive rigidity sets in and routes of escape are considered. The predominant motivation is one of escape. Their view of the options open to them is coloured by personal bias and this makes the future seem bleak and increases hopelessness. The presence of social support can modify the intensity of hopelessness. If the situation deteriorates the wish to die increases.

As argued in Chapter 1 the model does not say how problem solving deficits may contribute to the development of suicidal behaviour. The results in this chapter have provided further detail regarding the problem solving process in suicidal people and allow us to modify the original model. We suggest that the "how escapable?" aspect of this model be elaborated (see below). The sequence of events may be as follows. Initially the individual is faced with a problematical situation. An appraisal process then takes place in which the individual assesses their ability to embark on the problem solving process and how escapable the situation is. This is an important stage in which if the person appraises themselves negatively, a sense of entrapment, hopelessness and defeat will develop. As the hopelessness intensifies the individual loses hope, becomes more careless and impulsive, fails to generate alternative

solutions, is unable to make effective decisions and consequently makes no effective problem solving attempts. Lack of progress leads to a sense of inertia which increases the hopelessness and makes the problem seem insoluble. The person feels a sense of defeat and the wish to die increases. This process is illustrated below. Additions to the original model are in italics. Results to be presented in later chapters will allow us to elaborate the model further.



Chapter 8.

Autobiographical memory and problem solving measures.

We have suggested that depressed individuals become suicidal as a result of a sense of hopelessness and an inability to generate new or alternative solutions to the problems that face them (Goddard, Dritschel and Burton, 1996). For example, as the work of Bancroft et al (1979) and Williams (1986) has shown, one of the reasons most frequently given for taking an overdose is that the person feels that 'the situation was so unbearable I didn't know what else to do'. It is also known that an increase in negative life events in combination with impaired problem solving ability may make an individual vulnerable to suicidal impulses (Schotte and Clum, 1987). Other work has shown that a sense of hopelessness about the future plays a central role in the development of suicidal behaviour. Macleod (1992) found that hopelessness affected peoples ability to think of positive possibilities even for the immediate future. Furthermore, some researchers consider the role of past life experiences to be important resources to draw on when solving a problem (Wilson et al., 1995; Levenson and Neuringer, 1971).

This link between memory and suicidal behaviour has been developed by Williams and colleagues in examining the bias in personal memories. Williams and Broadbent (1986) noticed that suicide attempters had difficulty retrieving specific memories. The task required participants to produce

memories of events that had occurred on particular days and in particular places. Instead, participants often tended to remember events in a summarized and overgeneral way. For example, when asked to think of a specific event associated with the word 'happy', a suicidal patient may respond with "when I used to go for walks by myself". To the cue word 'sorry' the patient may have responded "when I lie to my mum". In these cases the patient has responded with a memory that summarizes a number of events, an 'overgeneral ' memory rather than singling out out one specific event to respond to. Examples of specific memories to the two examples above might be, "when I went for a walk in Leighton Forest on Sunday" and "when I shouted at my dad after an argument yesterday". Williams (1996) has suggested that categoric memories are indicative of pathology. Indeed, the tendency to retrieve overgeneral memories has been found in patients with acute stress disorder (Harvey et al., 1998), depression (Brittlebank et al., 1993; Goddard et al., 1996), obsessive-compulsive disorder (Wilhelm et al., 1997) and post-traumatic stress disorder (McNally et al., 1994; McNally et al., 1995).

The theoretical explanation of overgeneral memory has it's origins in the 'descriptions' framework of Norman and Bobrow (1979). In this context encoding and retrieval of memories is seen to take place in a series of stages of greater elaboration. However in patients who are overgeneral for example, when a memory is encoded individuals may encode only certain features of the total possible information available. This general or partial description is the cue that provides the entry point into memory. Thus, when one tries to

recall an event this general description is first generated and used to search the memory 'database' for an appropriate specific event. Williams and Dritschel (1992) suggest that it is at this intermediate point that these patients have difficulty and are unable to use the general description to help in retrieving a specific example. It seems that the general description instead produces other general descriptions. This results in little specific content and causes the individual instead to ruminate on negative, self-referent themes. It has been argued that generic memories may be used as an affect regulation strategy in that the content of general memories is less focussed and consequently less painful than the primary emotion associated with specific memory. The habitual use of this style of generic memory has been termed the process of 'mnemonic interlock' (Williams, 1996). In this case the power of the memory system to retrieve specific memories when required, is lost.

To date only two studies have examined the link between problem solving and autobiographical memory in suicidal individuals, Evans et al. (1992) and Sidley et al. (1997). Evans et al., using a small group of only 12 suicide attempters and a control group of surgical patients (but no psychiatric controls) were able to show a strong correlation between the level of overgenerality in autobiographical memory and the effectiveness of solutions produced on the MEPS. Sidley et al. attempted to replicate these findings with a larger group. They used a mixed group of 35 overdose patients, 72% multiple attempters and 28% first time attempters, with no control group. They also found a significant correlation between ineffective problem solving

and the retrieval of overgeneral memories, but the correlation was lower than that achieved by the Evans study.

The aims of this study were firstly to examine the nature of the memory bias in a suicidal group and two control groups since there are no studies to date in which a suicidal group has been compared on these measures with a psychiatric control and a normal control group. Secondly, we wished to examine and compare the pattern of results obtained by the three groups on the MEPS problem solving task as we found a difference between the groups when they were measured on the SPSI-R problem solving measure, described in Chapter 7. Thirdly, we wished to examine the relationship between memory functioning and the problem solving measures in the three groups. Fourthly, we wanted to examine the relationship between the two problem solving measures. The MEPS is considered an outcome problem solving measure while the SPSI-R can be seen as a self-assessed problem solving process measure (D'Zurilla et al, 1998). Several researchers have posed the question of whether these problem solving measures are measuring the same process (D'Zurilla et al, 1998; Sadowski and Kelley, 1993) but surprisingly, have not used both in the same study to investigate this issue. Lastly, we wished to examine qualitative differences in problem solving in the three groups (active versus passive problem solving) (For a review of these differences see Chapter 6).

Procedure.

Subjects.

The three groups of subjects used in the study described in Chapter 7 were utilized in this study, testing taking place during the same session.

Method.

For parasuicide patients all assessments took place within seven days of the suicide attempt if medically possible. Informed consent was obtained and participants were administered the measures as described below.

Measures.

Autobiographical Memory Test.

18 words as listed by Williams were used to cue responses. The words were divided into three groups, positively toned words (happy, relieved, proud, eager, glorious and sunny), negatively toned words (guilty, hopeless, failure, grave, ugly, worse), and neutral words (grass, gigantic, absence, wildlife, bread, search) formed Version A. In Version B the positively toned words were devoted, hopeful amazed, pleased, calm and bright; the negatively toned words were grief, rejected, helpless, blame, awful, mistake; and the neutral words were pottery, ladder, occasion, moderate, nursery and shallow. The versions were administered alternately. The instructions for the test

asked subjects to recall a specific personal memory to each of the cue words. The instruction was repeated if necessary and three example items were given to the subject to ensure they understood what was required. Subjects were given 30 seconds to retrieve a memory in response to each of the cues. Cues were read by the experimenter with positive, negative and neutral words alternating. A stopwatch was used to time the response latency. Timing started after the last word of each cue, and was recorded to the first word of the subjects response. If subjects made a response that was not a specific memory they were prompted to do so ("Can you think of a specific time - one particular event?"). The latencies to the first word of subsequent responses were timed cumulatively, and the prompting procedure was repeated if this response was also inappropriately general. If subjects were unable to recall a specific memory in the time available, a time of 30 seconds was recorded, and the experimenter proceeded to the next item. Responses were coded as either specific memories, categoric memories or extended memories. An example of a specific memory in response to the cue word 'happy' might be "joking with my dad when we mended the farm fence on Saturday"; an example of a categoric memory might be "when I'm with friends"; and an example of an extended memory might be "when I had a weeks holiday in Mauritius" (that is, an extended memory is a memory of a particular occasion but which extends over a period of more than 24 hours).

The Means-Ends Problem Solving Procedure.

In this interpersonal problem solving task the subject is presented with ten situations with a stated need and a desired outcome. The participant is instructed to provide the middle part of the story in which the protagonist is to achieve the particular goal. Platt and Spivack (1975) have shown that it is not necessary to administer all ten of the stories to obtain a valid measure of problem solving skills. Consequently, in order to reduce testing time we selected five stories for use; these were about a couple who had many arguments, a man who lost his watch while shopping, a person who moved into a new neighbourhood not knowing anyone, a couple meeting for the first time and a man experiencing difficulties at work. These particular stories were selected on the basis of their face validity and as recommended by Marx (1987). Participants were asked to suggest strategies for overcoming the given problem situation and to describe the strategies in specific and concrete terms so that an outside person could follow their plan of action. Stories can be scored on a number of dimensions. For the purpose of this study we scored relevant means, effectiveness of the solutions and whether the solution was active or passive. A relevant means was scored for each discrete step which enabled the protagonist of the story to reach the stated goal, or overcome the obstacle which prevented the protagonist from reaching the goal. The participants response was then rated for effectiveness. Effectiveness was defined according to the definition of an effective problem solution given by D'Zurilla and Goldfried (1971). On the basis of this a problem solving

strategy is effective if it maximises positive short and long term consequences and minimises negative short and long term consequences, both personally and socially. The overall effectiveness of each response was rated on a 7 point Likert scale ranging from "1 - not at all effective" to "7 - extremely effective". Solutions were also scored active or passive. A solution was scored as active if in the solution the protagonist took the initiative and was active in solving the problem. A solution was scored as passive if the protagonist took no active part in solving the problem but relied on the actions of others or the passage of time for the problem to resolve itself.

The MEPS procedure has been found to have adequate construct, discriminant, content, predictive and concurrent validity. There are satisfactory levels of test-retest reliability over two and a half weeks (0.59) 5 weeks (0.64) and 8 months (0.43) and high levels of internal consistency (Platt et al., 1975).

Results.

Autobiographical Memory Test

No subject failed to retrieve a specific personal memory to at least some of the words. An analysis of variance of the number of omissions in each group, (no memory responses made), revealed no significant difference between the groups on this measure, $F(2,69) = 2.26$, $p<.11$.

Latency.

Table 8.1 shows the mean latencies, in seconds, for each group to retrieve a memory in response to positive, negative or neutral cue words.

A mixed analysis of variance was used to analyse the time taken to retrieve a specific memory in response to positive, negative and neutral cues. This produced a significant group main effect, $F(2,69) = 46.90$, $p < .0001$. There was no valence main effect, $F(2, 138) = 2.58$, $p < .07$ and the Group X Valence interaction was not significant, $F(4,138) = 1.83$, $p < .12$.

Post-hoc comparisons using the Tukey test ($p<.05$) revealed that for responses to positive, negative and neutral cues, the suicidal group and the psychiatric control group displayed significantly longer latencies to respond than the normal control group. The suicidal group displayed longer latencies to respond when compared with the psychiatric control but these differences did not reach significance.

Group	Positive cues M (SD)	Negative cues M (SD)	Neutral cues M (SD)	Total mean M (SD)
Suicidal group	25.51 (3.20)	25.45 (3.64)	26.88 (2.39)	25.94 (1.76)
Psychiatric group	23.66 (4.55)	22.55 (5.46)	25.48 (4.05)	23.89 (3.64)
Normal group	16.67 (4.85)	18.67 (5.73)	17.60 (4.67)	17.65 (3.51)

Table 8.1. Group latencies (in seconds), to retrieve specific memories in response to cues.

Types of memory.

Table 8.2, 8.3, 8.4 and 8.5 shows the number of specific, extended and categoric memories produced as a first response to the word cues. Initially a MANOVA was used to analyse these scores. This revealed a significant difference between the groups, $F(6,134) = 11.41$, $p<.00001$. A series of mixed analyses of variance was then computed. Examining the number of specific memories in response to the three types of cues produced a main effect for group, $F(2,69) = 39.03$, $p< .0001$. There was also significant effect for valence, $F(2,138) = 3.64$, $p<.029$, but the Group x Valence interaction was not significant, $F(4,138) = 1.20$, $p< .31$.

Examining the number of categoric memories in response to the three types of cues produced a significant main effect for group, $F(2,69) = 24.25$, $p<.0001$. There was no significant effect for valence, $F(2,138) = 1.51$, $p< .22$ and the interaction was not significant, $F(4, 138) = 0.53$, $p< .70$.

Finally, examining the number of extended memories in response to the three different types of cues revealed no significant main effect for group, $F(2,69) = 0.60$, $p<.550$. There was also no significant effect for Valence, $F(2, 138), = 0.55$, $p<.57$, and no Group x Valence interaction, $F(4,138) = 0.63$, $p<.63$.

Post-hoc comparisons using the Tukey test ($p<.05$), showed that the three groups differed significantly from each other with regard to the number of specific and categoric memories produced. The suicidal group produced

fewest specific memories and most categoric memories whilst in the normal group this pattern was reversed. The psychiatric control groups scores in each case, fell midway between those of the other two groups.

Group	Positive cues M (SD)	Negative cues M (SD)	Neutral cues M (SD)	Total mean
Suicidal group	1.75 (1.03)	1.46 (1.02)	1.29 (0.75)	4.50 (1.64)
Psychiatric control group	2.33 (1.13)	2.37 (1.47)	1.63 (1.21)	6.33 (2.82)
Normal control group	3.79 (1.25)	3.29 (1.60)	3.50 (1.14)	10.58 (2.70)

Table 8.2. Means, standard deviations and total specific autobiographical memories for the three groups.

Group	Positive cues M (SD)	Negative cues M (SD)	Neutral cues M (SD)	Total mean
Suicidal group	3.38 (1.28)	3.58 (1.47)	3.46 (1.32)	10.42 (2.67)
Psychiatric control group	2.33 (1.37)	2.67 (1.76)	3.04 (1.49)	8.04 (3.16)
Normal control group	1.50 (1.10)	1.62 (0.97)	1.71 (1.04)	4.83 (2.50)

Table 8.3. Means, standard deviations and total categoric autobiographical memories for the three groups.

Group	Positive cues M (SD)	Negative cues M (SD)	Neutral cues M (SD)	Total mean
Suicidal group	0.13 (0.34)	0.17 (0.38)	0.17 (0.38)	0.46 (0.59)
Psychiatric control group	0.25 (0.53)	0.04 (0.20)	0.13 (0.34)	0.42 (0.65)
Normal control group	0.25 (0.53)	0.21 (0.51)	0.17 (0.38)	0.62 (0.82)

Table 8.4. Means, standard deviations and total extended autobiographical memories for the three groups.

Group	Positive cues M (SD)	Negative cues M (SD)	Neutral cues M (SD)	Total mean
Suicidal group	0.83 (0.07)	0.71 (0.86)	1.04 (1.23)	2.58 (2.17)
Psychiatric control group	1.00 (0.93)	0.88 (0.90)	1.25 (1.07)	3.13 (2.03)
Normal control group	0.50 (0.83)	0.87 (1.15)	0.54 (0.83)	1.87 (1.92)

Table 8.5. Means, standard deviations and total omissions for the three groups.

Boxplots comparing the total scores of the three groups for specific, categoric and extended memories, and omissions are shown below. Key: Group 1 = the Suicidal group, Group 2 = the Psychiatric control, Group 3 = the Normal control group.

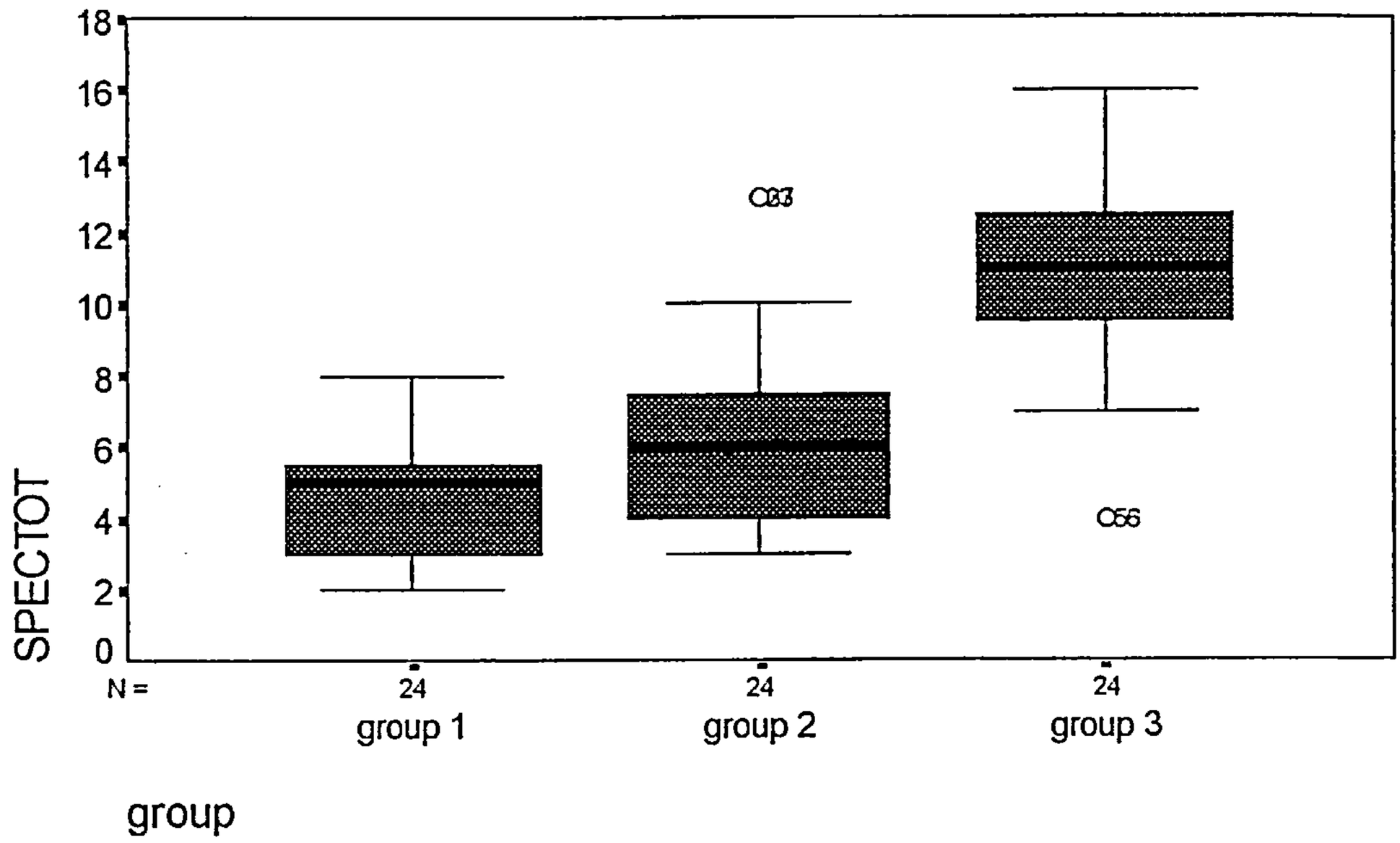


Figure 8.1 *Boxplot showing the total number of specific memories for each group.*

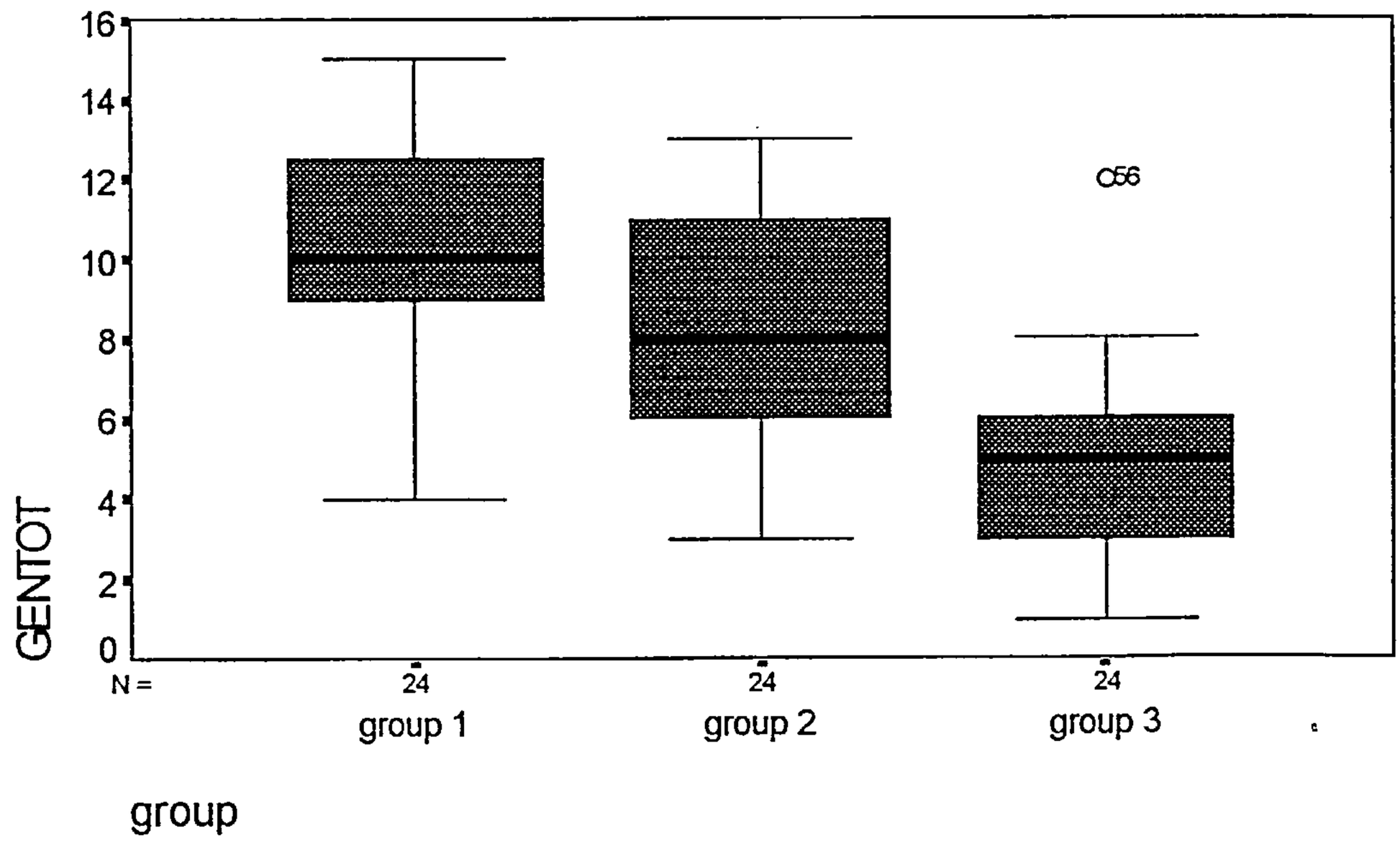


Figure 8.2 *Boxplot showing the total number of categoric memories for each group.*

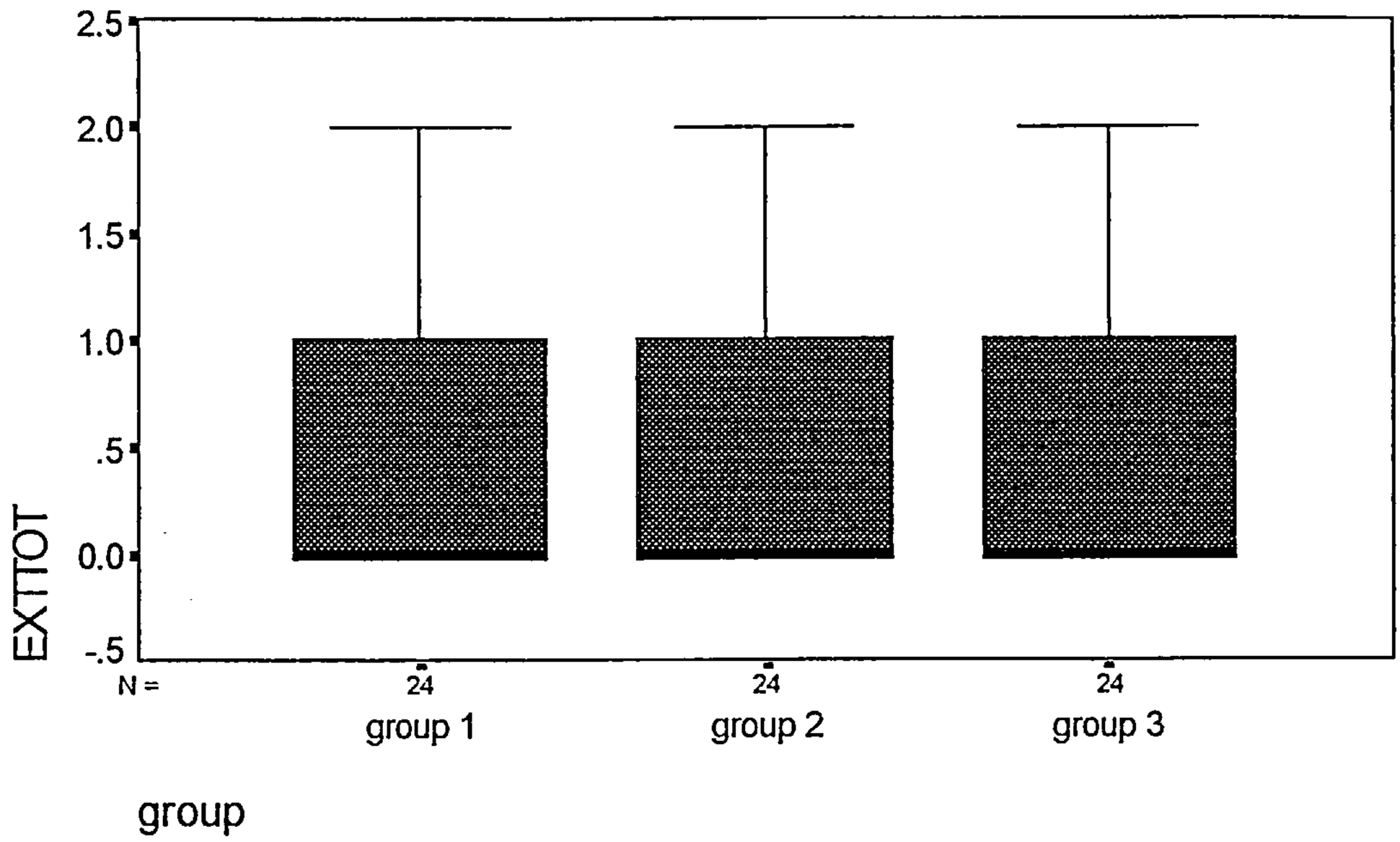


Figure 8.3 *Boxplot showing the total number of extended memories for each group.*

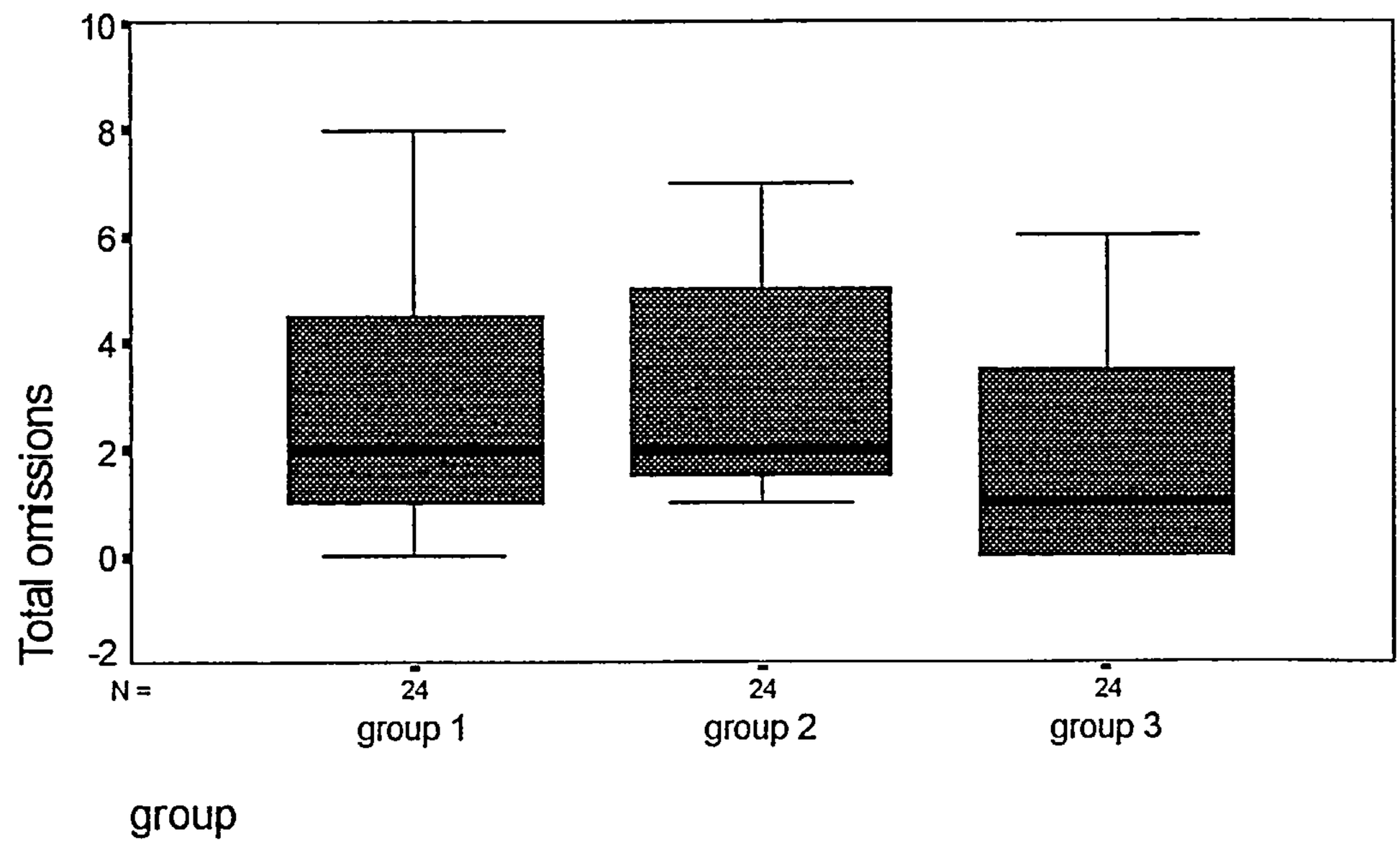


Figure 8.4 *Boxplot showing the total number of omissions for each group.*

In order to determine whether the groups scores for specific, categoric and extended memories were due to the effects of mood a multivariate analysis of covariance was performed with the effects of mood covaried out of the equation. This produced a significant group effect, $F(6, 132) = 5.36$, $p<.0001$. Univariate analyses of variance revealed a significant difference between the groups for specific memories, $F(2,68) = 15.52$, $p<.0001$; for categoric memories, $F(2,68) = 11.71$, $p<.0001$; but not for extended memories, $F(2,68) = 0.40$, $p<.67$. These results show that the differences between the groups were not due to the effect of mood.

The MEPS Problem Solving Task.

The means and standard deviations of the MEPS variables are shown in Table 8.6.

A MANOVA was used to analyse the scores on the MEPS task. This produced a significant group effect, $F(4,136) = 22.30$, $p<.0001$, with the suicidal group responding with fewer relevant means, simple effects, $F(2,69) = 14.55$, $p<.0001$, and less effective solutions, $F(2,69) = 40.80$, $p< .0001$, than the other two groups. Post-hoc analyses using the Tukey test, $p = .05$, showed that on relevant means the suicidal group differed significantly from the other two groups but the psychiatric and normal control groups did not differ from each other. On effectiveness scores, the three groups differed significantly from each other.

Group	MEPS Relevant Means M (SD)	MEPS Effectiveness M (SD)
Suicidal group	9.54 (3.07)	11.50 (2.68)
Psychiatric control	13.08 (4.26)	16.08 (4.31)
Normal control	15.87 (4.71)	22.70 (5.49)

Table 8.6. Means and standard deviations of the MEPS ***relevant means*** *and* ***effectiveness*** *scores for the three groups.*

For boxplots illustrating these results see Figure 8.5 and 8.6 below.

Group 1 = Suicidal group

Group 2 = Psychiatric control group

Group 3 = Normal control group

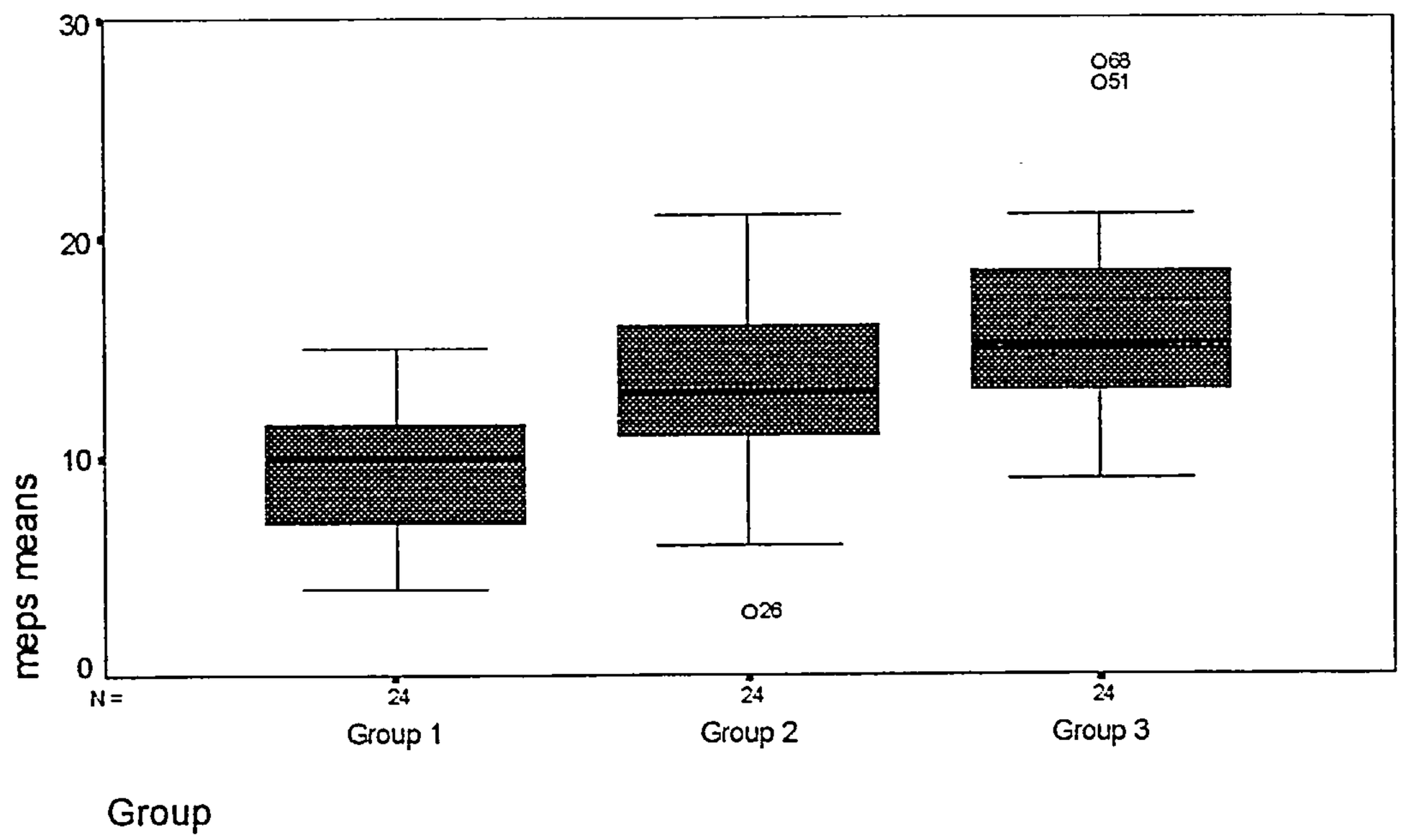


Figure 8.5

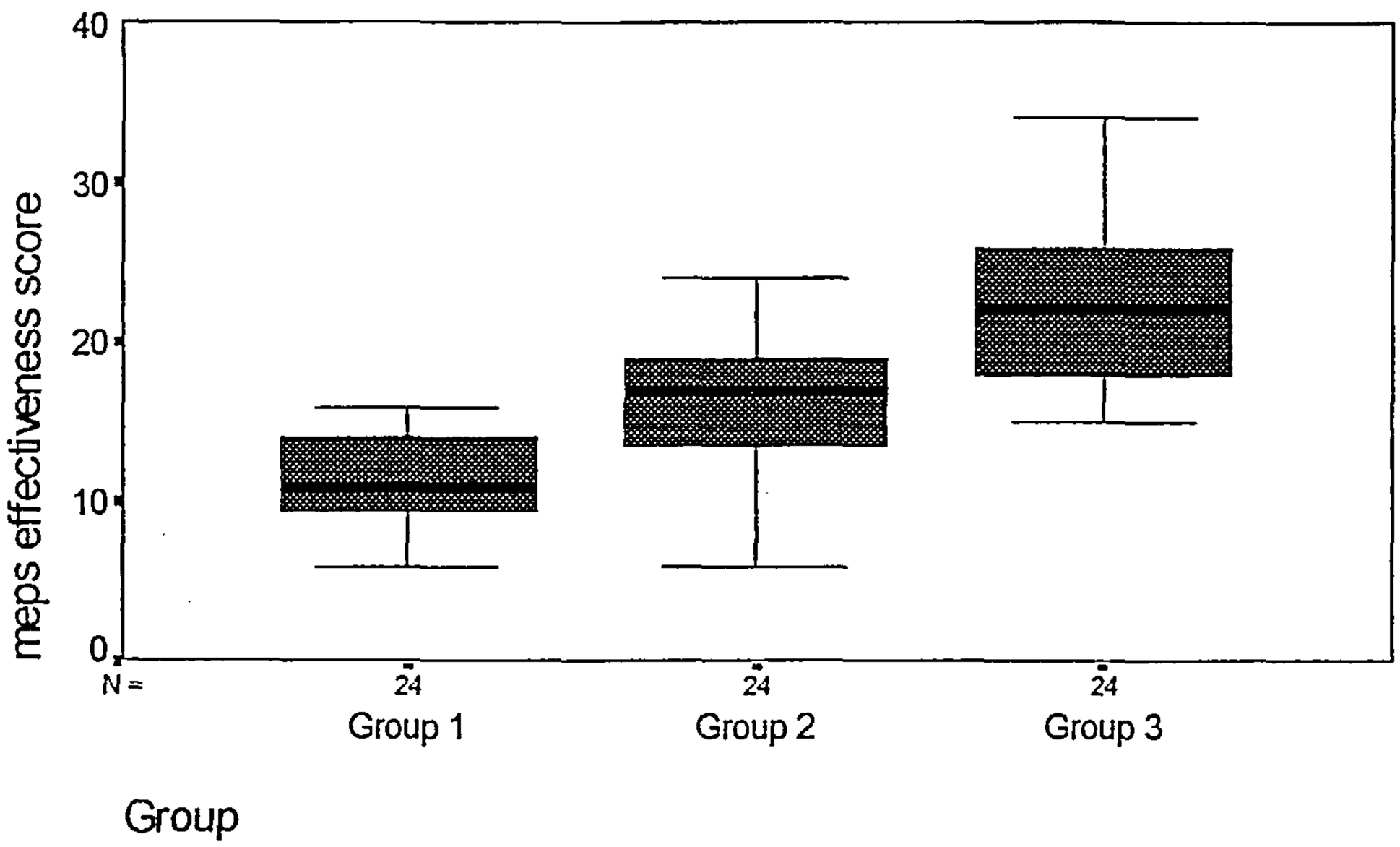


Figure 8.6

In order to determine that the differences between the groups on the relevant means and effectiveness scores were not due to mood we performed a multivariate analysis of covariance removing the effects of mood. This showed a significant difference between the groups, $F(4,134) = 12.29$, $p<.0001$. Univariate analyses of variance revealed that there was still a significant effect between the groups on the effectiveness scores, $F(2,68)$, $= 13.26$, $p<.0001$, but no longer on relevant means, $F(2,68) = 2.45$, $p<.09$.

Quality of MEPS solutions (active/passive).

An analysis of variance used to compare the quality of solutions on the MEPS for the three groups. The results showed that there was a significant difference between the groups $F(2,69) = 5.93$, $p<.004$, with the suicidal group producing the smallest number of active solutions and most passive

solutions. Post-hoc comparisons using the Tukey Test (p=.05) showed that the suicidal group differed significantly from the normal control group but not the psychiatric control group, and, the psychiatric control group did not differ from the normal control group.

Association Between the MEPS Task and Specific Responses on the Autobiographical Test.

In order to examine the relationship between specificity of memory and the effectiveness of the solutions produced by the respondents, Pearson Product-Moment Correlations were calculated between the MEPS means and effectiveness scores and the composite autobiographical memory specificity rating. This rating was achieved by scoring participants responses on the autobiographical memory test following the scoring of Baddeley and Wilson (1986). Responses were scored as follows: a specific response - 3 points, extended response - 2 points and categoric responses - 1 point. These correlations are in Table 8.7.

Variables	Suicidal Group	Psychiatric Control Group	Normal Control Group
Composite Specificity score			
MEPS means	.37 (b)	.26	.37 (a)
MEPS effectiveness	.51 (a)	.32	.32

(a) p=.005; (b) p = .05. (2 -tailed)

Table 8.7. The relationship between specificity of memory and effectiveness of solutions on the MEPS.

A significant positive correlation was found for the MEPS effectiveness measure for the suicidal group; the MEPS means score was marginally significant. Both correlations for the MEPS measures for the normal control group were in a positive direction and marginally significant in the association between the MEPS means and specificity. Both MEPS score correlations for the psychiatric control group were in a positive direction but did not achieve significance. It is possible that these correlations were due to a general sluggishness to respond to the cues. For example, the individuals responses on both tasks may have been affected by their level of depression or the effects of medication. In order to check whether these results were due to sluggishness to respond, the effect of latency was partialled out. The resultant partial correlations are presented in Table 8.8.

Variables	Suicidal group	Psychiatric control group	Normal control group
Composite specificity score			
MEPS means	.34	.27	.42.(b)
MEPS effectiveness	.50 (a)	.32	.32

(a) p = .02; (b) p = .025 (2 -tailed)

Table 8.8. The relationship between specificity of memory and effectiveness of solutions on the MEPS when the effect of latency is partialled out.

As can be seen in Table 8.8 there is little change in the correlations and one can therefore conclude that sluggishness to respond has not affected the respondent's general performance.

The Relationship Between Scores On The MEPS and Self-Rated Problem Solving Ability (SPSI-R).

In order to examine the relationship between the MEPS relevant means and effectiveness scores, and their relationship to the SPSI-R scores, Pearson Product Moment correlations were calculated and the results are displayed in Table 8.9 and Table 8.10. In the suicidal group the correlations are generally low and non-significant. (The directions however, are consistent with the hypothesis that good self-rated problem solving ability correlates with good MEPS performance). This pattern is more striking for the non-suicidal groups.

In the psychiatric controls fewer means and less effective solutions on the MEPS are significantly correlated with a negative problem orientation and an avoidant, impulsive and careless problem solving style. Global problem solving ability is positively correlated with good means scores on the MEPS. In the normal controls rational problem solving (and its sub-scales: decision-making; generation of alternatives; and problem definition and formulation) was positively associated with more effective means on the MEPS.

Variables	Suicidal group	Psychiatric control group	Normal control group
Avoidance	-.26	-.50 (d)	.19
Impulsivity/ carelessness style	-.18	-.42 (e)	-.14
Negative problem orientation	-.36 (e)	-.53 (c)	.22
Positive problem orientation	.40 (e)	.30	.21
Rational problem solving	.20	.09	.51 (c)
Decision making	-.02	.11	.50 (d)
Generation of alternatives	.18	.06	.55 (c)
Problem definition and formulation	.23	-.01	.60 (b)
Solution implementation and verification	.32	.06	.28
Global Problem solving score	.31	.50 (d)	.35 (e)

(a) p<.0001; (b) p<.001; (c) p<.005; (d) p<.01; (e) p<.05.

*Table 8.9. The relationship between **relevant mean scores** on the MEPS and self-rated problem solving ability (SPSI-R).*

Variables	Suicidal group	Psychiatric control group	Normal control group
Avoidance	-.01	-.52 (c)	-.07
Impulsivity/ carelessness style	-.02	-.46 (e)	-.30
Negative problem orientation	-.09	-.51 (c)	.18
Positive problem orientation	.21	.28	.18
Rational problem solving	.13	.16	.60 (b)
Decision making	.05	.18	.62 (b)
Generation of alternatives	.13	.07	.65 (a)
Problem definition and formulation	.16	.08	.63 (a)
Solution implementation and verification	.14	.10	.38 (e)
Global problem solving score	.12	.53 (c)	.42 (e)

(a) p<.0001; (b)p<.001; (c) p<.005; (d) p<.01; (e) p<.05

Table 8.10. The relationship between effectiveness scores on the MEPS and self-rated problem solving ability (SPSI-R).

Discussion.

The first part of this study was designed to examine the pattern of performance of the three groups on the memory task. In general the results support the findings of Williams and colleagues (Williams and Broadbent, 1986; Williams and Dritschel, 1988). That is, the group of suicide attempters tended to produce less specific and more general memories in response to cue words. It should be noted that despite the fact that the overgeneral memory phenomenon was first observed in suicidal patients this is the first study to focus on this group specifically and include both a psychiatric and a normal control group. This is important given the fact that other studies have found overgeneral memory in depressed patients, patients with post-traumatic stress disorder and obsessional patients. So it remains possible that the results in Williams and Broadbent, and Williams and Dritschel's original studies were due to their participants being depressed or emotionally disturbed in general, rather than due to their suicidality. This present study was the first to examine suicidal patients with a matched psychiatric control group. The first important finding was that, although the general psychiatric controls were more overgeneral than matched normals, the suicidal group were more overgeneral still.

In contrast to Williams et al. a latency effect was found with suicidal patients being slightly slower to respond to cues than the normal group but not different from the psychiatric group. Furthermore, no valence effect was found, that is the suicidal patients were not more likely to give non-specific

memories in response to positive cue words. A possible explanation for these slight differences in findings may be due to the fact that this study used 18 cue words (6 positively toned, 6 negatively toned and 6 neutral words) whereas the Williams and Dritschel (1988) study used 10 negative and 10 positive cue words. In addition 42% of their subjects were multiple attempters whereas in the current study the subjects were first time attempters. Some studies have shown that these subject groups have different characteristics (Linehan et al., 1987; Rudd et al., 1996, Evans, et al., 1996).

Secondly this study showed that on the MEPS task suicide attempters responded with fewer relevant means and less effective solutions. The suicide attempters were significantly poorer in their responses than the psychiatric control group and the normal group. These results support the findings of previous work using the MEPS with suicidal patients (Schotte and Clum, 1987; McLeavey et al, 1987).

We also found a difference in the quality of the solutions offered by the three groups. The suicidal group produced the least active and most passive solutions when compared with the other two groups. The trends observed in our study were similar to those reported by Linehan et al.(1987) and Orbach, Bar-Joseph and Dror (1990). However, in our study the suicidal and psychiatric controls did not differ significantly from one another as was the case in the other two reported studies. This may due to the fact that both of these studies used larger groups.

A further aspect of this study was to examine the relationship between the scores on the MEPS task and the memory task. Evans et al. (1992) found that patients who had deliberately self-harmed displayed significantly overgeneral memories. In addition they found an association between overgeneral memory and low effectiveness of problem solving strategies with a reported correlation coefficient of 0.67. Sidley et al. (1997) replicated the study with a larger sample of drug overdose patients. Of the 35 overdosers in their group 75% were multiple attempters. They reported a correlation of 0.38 between overgeneral memory and low effectiveness of problem solving strategies. The present study, using first time attempters, also found an association between these measures with a correlation coefficient of 0.51 when examining the relationship between overgeneral memory and poor problem solving ability. Thus, this study shows that the relationship between overgeneral autobiographical memory and ineffective problem solving is a robust one in suicide attempters. It seems that in both first time attempters and multiple attempters, individuals who have difficulty in generating effective solutions to interpersonal problem situations also tended to have the greatest difficulty retrieving specific memories.

No study to date has measured problem solving ability using both process and outcome problem solving measures (D'Zurilla and Maydeau-Olivares, 1995) in the same study. D'Zurilla and Maydeau-Olivares (1995) assert that these measures measure different aspects of problem solving. They suggest

that process measures " directly assess the attitudes, skills and abilities that enable a person to find an effective or adaptive solutions to specific, everyday problems". On the other hand outcome measures " assess the quality of those specific solutions". They argue that outcome measures may be viewed as global indicators of the level of problem solving ability, but they do not provide specific information about the nature of process abilities or deficits. This study shows that when examining the relationship between the MEPS means score and the scores on the SPSI-R in suicide attempters there are only correlations between the Positive and Negative Problem Orientation subscales and the MEPS scores. To some extent this supports D'Zurilla and Maydeau-Olivares contention that the MEPS and the SPSI-R measure different aspects of the problem solving process. In the SPSI-R the Positive Problem Orientation scale is deemed to measure a constructive problem solving set which may be described as: the general tendency to appraise a problem as a challenge, to believe that problems are solvable and to believe in one's ability to solve the problem. The following are some typical test items: "I usually confront my problems "head on", instead of trying to avoid them"; "When I have a problem, I usually believe there is a solution for it". The Negative Problem Orientation scale assesses a dysfunctional set in which a problem is viewed as a significant threat to well-being, the problem is believed to be unsolvable, the individual doubts his ability to solve the problem and becomes emotionally distressed when facing the problem. Typical items are: "I usually feel threatened and afraid when I have an

important problem to solve"; "When my first efforts to solve a problem fail, I tend to get discouraged and depressed".

Thus the present results provide support for the view that the MEPS is a problem solving outcome and general problem solving effectiveness measure but does not necessarily measure specific problem solving skills. This distinction suggests that the measures used in future problem solving studies should be carefully selected on the basis of what aspect of the problem solving process is under consideration.

When the relationship between the MEPS *relevant mean's* scores and the scores on the SPSI-R were examined for the suicidal group significant correlations were achieved only for the measures of negative and positive problem orientation. These scores were in the direction expected with better performance on the MEPS being associated with higher positive problem orientation and lower negative orientation. In the psychiatric control group significant correlations with the MEPS in the expected directions were achieved for avoidance, impulsivity/carelessness , negative problem orientation and the global problem solving score. In the normal group significant relationships in the expected direction were found for the following sub-tests, decision making, generation of alternatives problem definition and formulation, rational problem solving and the global problem solving score. These results seem to suggest that the more psychologically intact the group, the greater the concurrence between the MEPS score and the

self-rated problem solving ability, but in the suicidal group objectively rated problem solving does not correlate well with self-rated problem solving. It seems that the self appraisal of problem solving ability is an important factor in determining how one will cope in the problem situation. Dixon, Heppener and Rudd (1994) have suggested that hopelessness may mediate the relationship between and problem solving appraisal and suicidal ideation. The current results may provide some support for this view.

When examining the relationship between the MEPS *effectiveness* scores and scores on the SPSI-R a similar effect was noted. However, with the suicidal group the correlations were low and none achieved significance. In the psychiatric control group there was a relationship between the effectiveness of the solutions offered on the MEPS and the following sub-tests of the SPSI-R: avoidance style, impulsivity/carelessness style, negative problem orientation and the global problem solving score. In the normal group there were significant correlations between the effectiveness scores and decision making, generation of alternatives, problem definition and formulation, rational problem solving, solution implementation and verification, and, the global problem solving score. In all of these cases the correlations were in the expected directions and there was a better concordance between the self-rated problem solving ability and objectively rated problem solving the more psychologically intact the group. These results provide further support for Dixon, Heppener and Rudd's (1994) standpoint that when people <u>think</u> they cannot cope with the problems they face, they are at risk for becoming

hopeless about the future. They argue that it is this sense of hopelessness that leads to suicidal ideation. This can be related to Williams (1997) theory in which suicidal feelings are hypothesized to escalate when the individual feels hopeless and a sense of entrapment with no prospect of future relief. In this case suicidal behaviour is likely to occur.

The applied implications of these findings are that in suicidal groups it may be of value to focus on the individuals level of specificity, assessment of his/her own problem solving ability, in addition to their level of hopelessness. In this way psychotherapy could be directed to reducing the persons sense of hopelessness and at the same time teaching them to be more specific and teaching the skills of problem solving. This approach would provide a meaningful structure within which to encourage reduction of the sense of entrapment and the potential of mastering the situation in the future. Such structure may provide a sufficient sense of security and boost to self-esteem to alleviate the levels of suicidality.

In this chapter we have shown that important differences in suicidal patients performance in problem solving and autobiographical memory is not due to simply being psychiatrically disturbed. We have also shown that these differences are not due to mood differences between the groups. However, none of this addresses the issue of how stable or long-lasting these variables are. Although they may not correlate with mood between subjects, they may

register change within an individual over time as mood fluctuates. It is this issue we address in the next chapter.

Chapter 9

The stability of mood, memory and problem solving measures over time.

Introduction.

Problem Solving Deficits-State Or Trait?

It is still unclear whether deficits in interpersonal problem solving arise as a result of trait or state factors. Some recent studies with suicide attempters suggest that problem solving deficits may not be a stable trait but may occur in conjunction with transient changes in mood (Wilson et al., 1995; Ivanoff et al., 1992; Schotte, Cools and Payvar, 1990; Perrah and Wichman, 1987). It has been proposed that events may be encoded differently in different mood states and that this context may determine ease of retrieval (Weingartner, Miller and Murphy, 1977). If this is the case it seems probable that mood is an important variable to be taken into consideration when examining problem solving deficits.

It is possible that the deficits in problem solving ability may themselves increase the risk for suicidal behaviour, or it may be the depressed state itself that affects performance negatively. This issue is of importance as it has implications for the development of successful therapeutic interventions when working with suicidal individuals. For example Ellis and Ratliff (1986) suggest that a coping skills approach may be appropriate for a crisis

precipitated state, whilst a rational-emotive form of therapy focusing on changing attitudes about life, death and coping may be the line to take with a more trait like dysfunction. They argue that the state-trait issue has been debated in the literature without final resolution and suggest that further research is necessary.

The dynamics underlying the effects of emotional mood states on cognitive performance are not very clear, yet these mood states have been shown to influence cognitive processes in a variety of ways. For example, various studies show that emotional mood states are related to changes in social and personal judgements, alterations in spatial judgements, mood congruence effects and impairment of recall (Seibert and Ellis, 1991). Studies which have used mood induction procedures show, for example, that normal subjects under experimentally induced depressed mood perform poorly on interpersonal problem solving tasks (Mitchell and Madigan 1984), and take longer to retrieve pleasant memories as opposed to unpleasant memories (Teasdale and Fogarty, 1979).

Do these transient changes also affect problem solving in clinical groups? In a study by Perrah and Wichman (1987) investigating cognitive rigidity, they used subjects who had attempted suicide a minimum of 12 months previously and were not in a current state of crisis. The control group consisted of normals who had no history of suicidal behaviour. They argued that the cognitive rigidity observed in previous studies may be a result of the

stress surrounding the crisis period rather than representing an enduring character trait. They found that suicide attempters were less rigid than in previously reported studies and overall there was no significant difference between attempters and controls. They interpreted their results as supporting their argument that current mood state, rather than long-term trait determined level of rigidity.

However, Linehan, Camper, Chiles, Strosahl and Shearin (1987) came to the opposite conclusion in a study that examined the relationship between interpersonal problem solving and suicidal behaviour in suicide attempters, suicidal ideators and non-suicidal controls. They suggested that their results suggested that interpersonal problem solving deficits were not an artifact of the stress surrounding the parasuicidal episode, but there was no longitudinal component to the study, so the conclusion cannot be definitive. Some evidence suggests that the tendency to retrieve events from the past over-generally is a trait, not a state factor. Williams and Dritschel (1988) compared overdose patients and a group of ex-patients who had taken an overdose between 3 and 14 months earlier. These patients showed the same tendency to give overgeneral memories and the group of ex-patients were found to remain significantly more over-general in their memories than normal controls. It is possible that in this context overgenerality could be interpreted as a trait marker of individuals vulnerable to emotional disturbance and therefore poor problem solving. However, this study was

cross-sectional. So far there have been no longitudinal studies of overgeneral memories in attempted suicide patients.

Brittlebank, Scott, Williams and Ferrier (1993) conducted a study into whether autobiographical memory was a state or trait marker in depressed patients. They assessed 22 patients who were followed up over seven months. Their results showed that depressed patients were overgeneral in their recall of emotionally toned autobiographical memories and overgeneral recall predicted outcome at the three and seven month follow-up periods. Memory characteristics did not change as depression improved, however. Brittlebank et al (1993) concluded that overgenerality was a trait marker of vulnerability to depression but warn that this conclusion was based on a small number of subjects.

If the issue of state versus trait in connection with problem solving is to be resolved, longitudinal studies will be essential. Research in this field is urgently needed to determine which aspects of problem solving deficits persist over time and which aspects change with short-term changes in mood. The studies conducted up to this point have been based on small sample sizes, have been cross-sectional, and have been conducted on subjects coming from mixed sample groups (with the experimental group containing both suicidal ideators and attempters). It is more desirable that future research should be conducted on more carefully defined groups (Smith and Maris,1986).

There remain several possible explanations of the differences found between suicide attempters and other groups when compared on problem solving measures. First, it remains possible that they are, as a group, less effective or more passive in solving problems in general. Second, there may exist a subgroup for whom problem solving deficits are a specific trait feature, and another subgroup of individuals who do not show such deficits between episodes, but react to relatively small mood changes by showing large and catastrophic problem solving failures.

Although this area is not a major focus of this study it was felt that a brief consideration of these factors may shed some light on the persistence of problem solving and memory deficits over time and guide future research. This is important because in the Brittlebank et al. (1993) study for example, the participants were depressed patients who could be considered to have a more chronic condition than the suicidal participants in other studies and so one would not expect a great deal of change to occur over time. On the other hand, in studies using suicidal patients change is expected to be more rapid if the behaviour is mood related.

The aim of this study therefore was to investigate the persistence of memory and problem solving deficits over time in the group of suicide attempters.

Procedure.

The suicide attempters and the non-suicidal psychiatric patients assessed in the earlier studies were contacted again six weeks after their initial assessment and retested using the same measures. Note that this aspect of the study did not include the normal control group, since it was only those aspects that were specific to suicidal (versus general psychiatric) pathology that were of interest.

Results

Differences between Time 1 and Time 2.

The first analysis examined Group by Time mood effects (Beck Depression Inventory, Beck Hopelessness Scale and the Scale of Suicidal Ideation). There was a significant group effect for mood, $F(3,90) = 24.67$, $p<.0001$. There was also a significant effect for Time, $F(3,90) = 9.76$, $p<.0001$, but the Group by Time interaction was not significant, $F(3,90) = 1.18$, $p<.31$.

Suicidal Ideation, Depression and Hopelessness at Time 2.

Follow-up analyses of variance were used to examine respondents scores at Time 2 on the Beck Depression Inventory, Beck Hopelessness Scale and the Scale of Suicidal Ideation. The univariate analyses of variance showed a

significant effect on the Beck, $F(1,46) = 6.47$, $p<.01$, and the SSI, $F(1,46) = 26.58$, $p<.00001$, but not the BHS, $F(1,46) = 1.53$, $p<.22$. Thus, the suicidal group were still significantly more depressed and more suicidal than the psychiatric group at Time 2. However, their scores on the BHS were not significantly different. The means and standard deviations are shown in Table 9.1.

Measure	Suicidal group: Time 1 M (SD)	Time 2 M (SD)	Psychiatric control group: Time 1 M (SD)	Time 2 M (SD)
BDI	29.16 (9.24)	21.54 (11.19)	17.70 (9.99)	14.16 (8.73)
BHS	13.45 (5.29)	11.83 (5.13)	10.20 (6.19)	9.83 (6.03)
SSI	10.58 (5.06)	5.70 (4.04)	3.45 (1.74)	1.16 (1.49)

Table 9.1. Means and standard deviations for the BDI, BHS, and SSI at Time 1 and Time 2.

The scores in Table 9.1 are illustrated in the figures below.

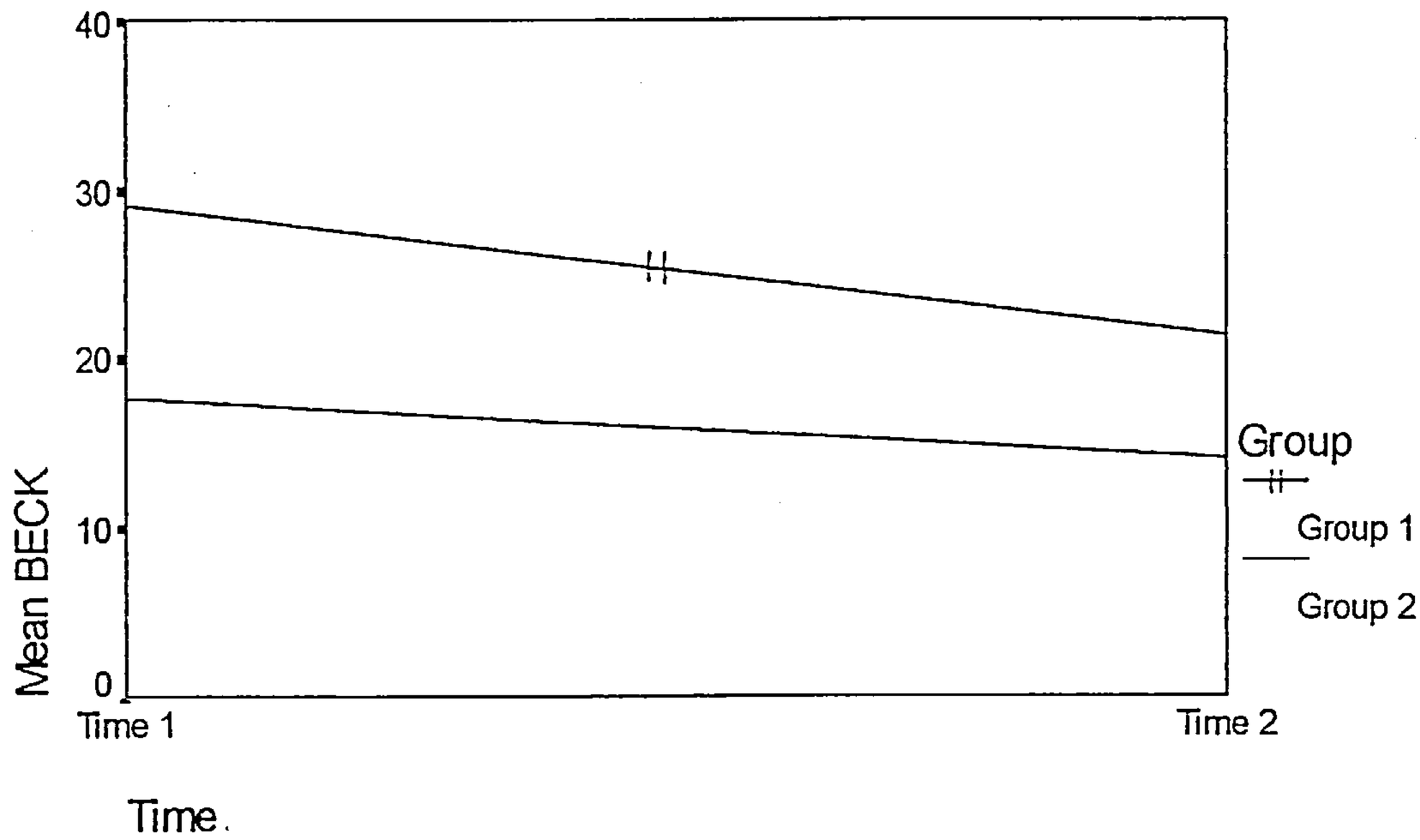


Figure 9.1 *Graph showing the Beck Depression Inventory scores of the groups at Time 1 and Time 2. (Key: Group 1 = Suicidal group; Group 2 = Psychiatric Control Group)*

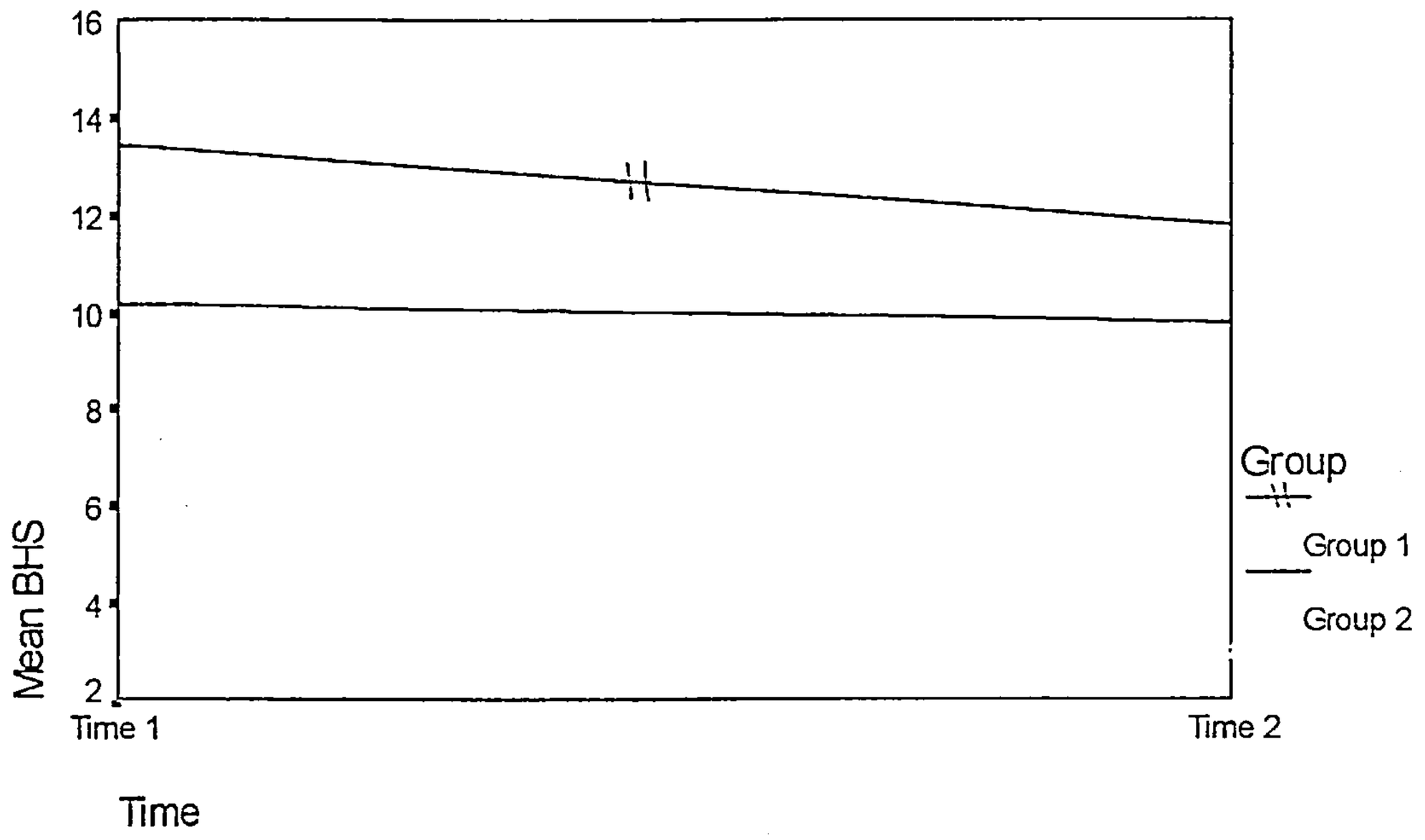


Figure 9.3 *Graph showing the Beck Hopelessness Scale scores of the groups at Time 1 and Time 2. (Key Group 1 = Suicidal group; Group 2 = Psychiatric control group)*

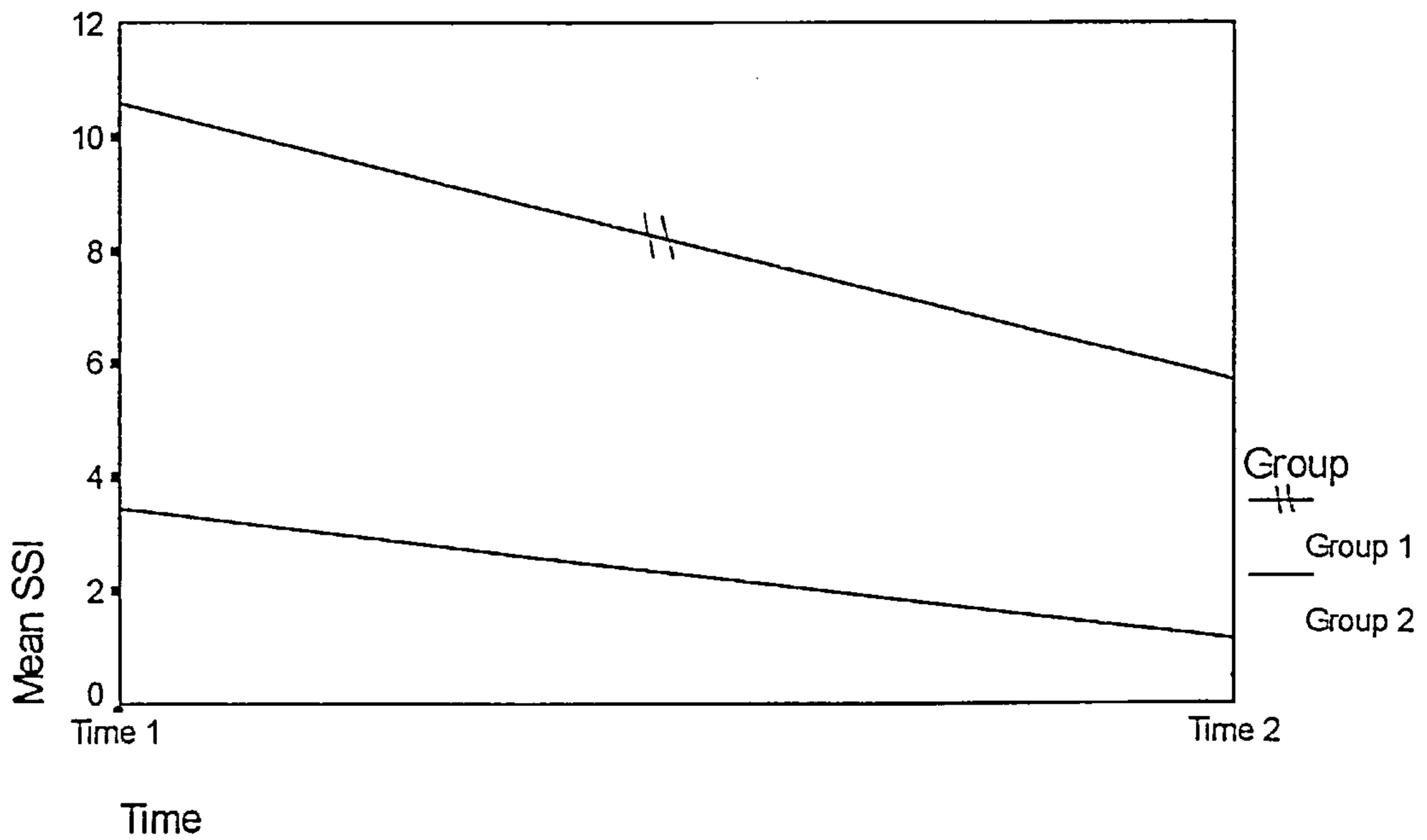


Figure 9.3 *Graph showing the Scale of Suicide Ideation scores of the groups at Time 1 and Time 2. (Key: Group 1 = Suicidal group; Group 2 = Psychiatric control group)*

In order to examine how the other sets of variables for the two groups changed over time a series of Group by Time MANCOVAS were carried out. As the mood and suicidal ideation measures still differentiated between the groups at Time 2, these effects were co-varied out.

Mood States (POMS).

The Group by Time MANCOVA produced no significant group effect, $F(6,85) = 1.32$, $p<.25$. There was no significant effect for Time, $F(6,85) = 0.93$, $p<.47$ and the Group by Time interaction was not significant, $F(6,85) = 0.80$, $p<.56$.

SPSI-R Problem Solving Measure.

The Group by Time analysis revealed a significant main effect for group, $F(10,81) = 2.23$, $p<.024$. There was no significant effect for Time, $F(10,81) = 0.57$, $p<.83$ and no significant Group by Time interaction, $F(10,81) = 0.54$, $p<.85$.

Autobiographical Memory.

In this case the Group by Time analysis revealed a significant main effect for group, $F(3,88) = 3.07$, $p<.032$. There was no significant effect for Time, $F(3,88) = 0.13$, $p<.94$ and the Group by Time interaction was not significant, $F(3,88) = 0.48$, $p<.69$.

The MEPS Problem Solving Measure.

The Group by Time analysis of covariance produced a significant main effect for group, $F(2,89) = 4.76$, $p<.011$. There was no significant effect for Time, $F(2,89) = 0.45$, $p<.63$ and the Group by Time interaction was not significant, $F(2,89) = 2.45$, $p<.09$.

Follow-up univariate ANOVAS at TIME 2.

POMS Mood States at Time 2.

The six mood scales were analysed using a series of univariate analyses of variance. Means, standard deviations and significance levels for the individual scales are shown in Table 9.2. This analysis revealed that the suicidal group did not differ significantly from the psychiatric control group on any of the POMS mood scales when compared at Time 2.

Mood (Range 0 - 16)	Suicidal group	Psychiatric control group	F(1,46)
Anger	4.67 (3.80)	3.29 (3.75)	1.59 p < .21
Confusion	6.79 (4.01)	5.58 (4.29)	1.01 p < .32
Depression	7.83 (4.50)	5.91 (5.30)	1.83 p < .18
Fatigue	8.71 (4.21)	8.29 (4.95)	.09 p < .75
Tension/ Anxiety	7.17 (4.52)	5.21 (4.20)	2.42 p < .13
Vigour	4.63 (3.89)	3.75 (3.76)	.63 p < .43

Table 9.2. Means, standard deviations and significance levels for the individual mood scales (POMS).

SPSI-R Problem Solving Measures at Time 2.

A series of univariate analyses of variance was used to examine the differences between the suicidal group and the psychiatric control group at Time 2. Means, standard deviations and significance levels are shown in Table 9.3.

The analysis of the groups scores on the SPSI-R at Time 2 revealed that the suicidal group and the psychiatric control group were significantly different on the Avoidance scale, $F(1,46) = 4.43$, $p<.04$; the Global problem solving scale, $F(1,46) = 5.90$, $p<.01$; the Impulsivity/carelessness scale, $F(1,46) = 7.67$, $p<.008$ and the Problem definition and formulation scale, $F(1,46) = 4.45$,

p<.04. The groups scores did not differ significantly on the following scales, Decision making, Generation of alternatives, Negative problem orientation, Positive problem orientation, Rational problem solving and Solution implementation and verification.

Problem solving variables.	Suicidal group M (SD)	Psychiatric control group M (SD)	F(1, 46)
Avoidance	13.13 (6.46)	9.17 (6.57)	4.43 p<.04*
Impulsivity/ carelessness style	16.67 (8.81)	10.38 (6.81)	7.67 p<.008*
Negative problem orientation	21.88 (9.99)	18.71 (10.57)	1.14 p<.29
Positive problem orientation	7.17 (5.08)	9.54 (5.53)	2.40 p<.13
Rational problem solving	31.58 (19.19)	41.33 (16.07)	3.64 p<.10
Decision making	7.63 (5.31)	10.04 (4.74)	2.77 p<.29
Generation of alternatives	7.92 (5.06)	9.87 (4.77)	1.90 p<.17
Problem definition and formulation	8.67 (5.32)	11.71 (4.65)	4.45 p<.04*
Solution implementation and verification.	7.38 (5.11)	9.71 (3.98)	3.11 p<.08
Global problem solving score	94.63 (41.49)	120.46 (31.44)	5.90 p<.01*

Table 9.3. Means, standard deviations and significance levels for the SPSI-R subtests at Time 2.

Autobiographical Memory Test at Time 2.

No subject failed to retrieve a specific memory to at least some of the words when assessed at Time 2. An analysis of variance of the number of omissions in each group, (no memory responses made), revealed that there were no significant differences between the groups, $F(1,46) = .014$, $p<.90$.

Latency

A mixed analysis of variance was used to analyse the time taken to retrieve a specific memory in response to positive, negative and neutral cues. There was no significant main effect for group, $F(1,46) = 4.01$, $p<.051$, no significant effect for valence, $F(2,45) = 1.31$, $p<.28$, and the group by valence interaction was not significant, $F(2,45) = .56$, $p<.58$.

Types of memory

A mixed analysis of variance was used to analyse the number of specific memories generated by the two groups in response to positive, negative and neutral cues. This revealed a significant main effect for group, $F(1,46) = 4.99$, $p<.03$. There was no significant effect for valence, $F(2,45) = 2.45$, $p<.09$, and the group by valence interaction was not significant, $F(2,45) = .61$, $p<.55$. Post-

hoc comparisons showed that the suicidal group still provided significantly fewer specific memories than the psychiatric control group.

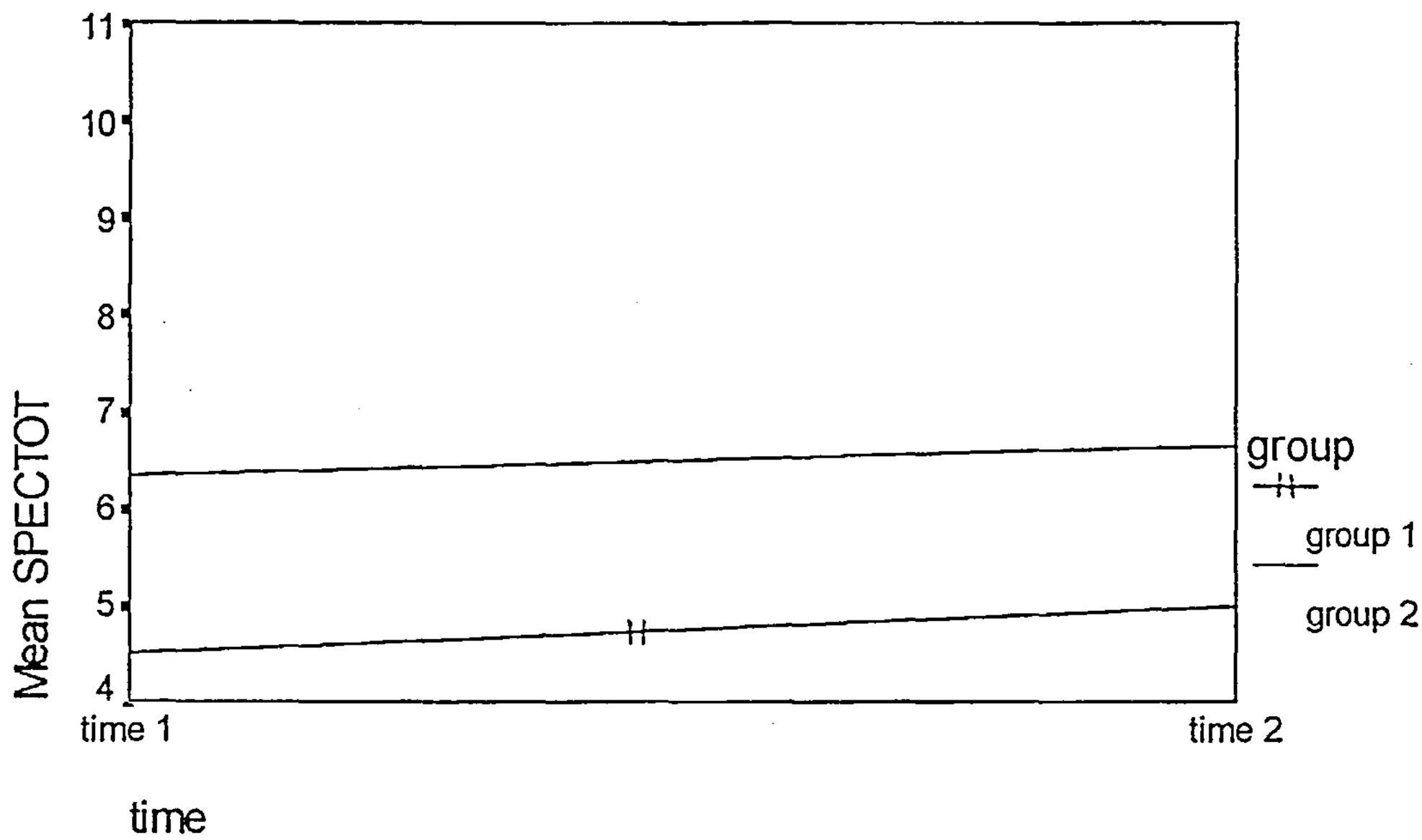


Figure 9.4 *Graph showing the mean number of specific memories for each of the groups at Time 1 and Time 2. (Key: Group 1 = Suicidal group; Group 2 = Psychiatric Control Group)*

When this difference was examined more closely taking into account the valence of the cues it was found that the groups differed significantly with regard to responses to neutral cues, $F(1,46) = 5.20$, $p<.027$, but not in their responses to positive cues, $F(1,46) = 1.39$, $p<.24$, or negative cues, $F(1,46) = 1.39$, $p<.24$. These scores are presented in Table 9.4.

Cue valence	Suicidal group M (SD)	Psychiatric control M (SD)
Positive	1.46 (1.22)	1.88 (1.23)
Negative	1.96 (0.95)	2.37 (1.44)
Neutral	1.58 (1.06)	2.42 (1.44)

Table 9.4 Number of specific memories in response to positive, negative and neutral cue words for the suicidal and psychiatric control groups.

A mixed analysis of variance was used to analyse the number of categoric memories produced by the two groups in response to cues. This showed no significant main effect for group, $F(1,46) = 3.53$, $p<.06$. There was also no significant effect for for valence, $F(2,45) = .72$, $p<.49$, and the group by valence interaction was not significant, $F(2,45) = 2.15$, $p<.13$.

The number of extended memories produced by the two groups in response to cues was analysed using a mixed analysis of variance. This revealed no significant main effect for group, $F(1,46), = .05$, $p<.83$, no significant effect for valence, $F(2,45) = .14$, $p<.87$ and there was no significant group by valence interaction, $F(2,45) = .10$, $p<.90$.

The MEPS Problem Solving Task.

An analysis of variance was used to compare the MEPS mean scores for the two groups. This showed a significant difference between the groups on this

dimension, $F(1,46) = 23.03$, $p<.00001$, with the suicidal group producing fewer means than the control group.

The effectiveness rating score was also compared for the two groups using an analysis of variance which again showed a significant difference between the two groups, $F(1,46) = 8.89$, $p<.005$, with the suicidal group describing less effective solutions than the psychiatric control group.

The means and standard deviations of the MEPS variables are shown in Table 9.5.

Group	MEPS Relevant Means M (SD)	MEPS Effectiveness M (SD)
Suicidal group	9.50 (2.73)	13.00 (3.89)
Psychiatric control group	14.37 (4.15)	16.79 (4.86)

Table 9.5. Means and standard deviations of the MEPS relevant means and effectiveness scores for the two groups at Time2.

The Relationship Between Scores On The MEPS and Self-Rated Problem Solving Ability.

In order to examine the relationship between the MEPS relevant means and effectiveness scores, and their relationship to the SPSI-R scores, Pearson Product Moment correlations were calculated and the results are displayed in Tables 9.7 and 9.8.

Variables	Suicidal group	Psychiatric control
Avoidance	-.36	-.22
Impulsivity/carelessness style	-.15	-.54 (a)
Negative problem orientation	-.14	-.37
Positive problem orientation	.22	.15
Rational problem solving	.39	.21
Decision making	.46 (b)	.24
Generation of alternatives	.23	.11
Problem definition and formulation	.32	.20
Solution implementation and verification	.44 (b)	.18
Global problem solving score	.32	.42 (c)

(a) p<.007; (b) p<.025; (c) p<.04

Table 9.7.The relationship between the MEPS ***relevant mean*** *scores and self-rated problem solving measures SPSI-R.*

Variables	Suicidal group	Psychiatric control
Avoidance	-.35	-.27
Impulsivity/carelessness style	-.01	-.55 (a)
Negative problem orientation	-.02	-.39
Positive problem orientation	.13	.18
Rational problem solving	.27	.23
Decision making	.33	.31
Generation of alternatives	.08	.10
Problem definition and formulation	.19	.16
Solution implementation and verification	.37	.24
Global problem solving score	.19	.46 (b)

(a) p<.005; (b) p<.02

Table 9.8.The relationship between the MEPS effectiveness scores and self-rated problem solving measures SPSI-R.

Table 9.7 shows that in the suicidal group relevant mean scores on the MEPS correlated significantly with scores on the SPSI-R subscales for decision making and solution-implementation and verification. This shows a relationship between the poor number of relevant means produced on the MEPS and the impairment of the ability to making decisions and, implement and verify the success of solutions. In the psychiatric group MEPS relevant mean scores correlated significantly in a negative direction with an impulsive and careless problem solving style and in a positive direction with the overall

global problem solving measure. Thus the more relevant means this group produced the less likely they were to have an impulsive and careless problem solving style and the more likely they were to achieve a better global problem solving score.

Table 9.8 reveals that there are no signifcant correlation between the MEPS effectiveness score and the SPSI-R measures for the suicidal group. However, there is a trend for MEPS responses to be more effective the less avoidant the problem solving style adopted. Also, there is a trend for more effective solutions to be correlated with better decision making and better solution implementation and verification. In the psychiatric control group there were two significant correlations. More effective scores on the MEPS were associated with a reduced tendency to adopt an impulsive and careless problem solving style and the more effective the solutions the more likely the better score on the global problem solving scale.

Test-Retest Correlations.

Test-retest correlations for the suicidal group were examined for all variables as this has never been done before in such a study. The results are shown in Table 9.9.

Variable	Correlation	Probability	Correlation (BDI and SSI partialled out)	Probability
Beck Depression Inv.	.62	p=.001	-	-
Beck Hopelessness Sc.	.57	p=.003	-	-
Sc. of Suicide Ideation	.24	p=.242	-	-
Profile of Mood States:				
-Anger/irritability	.50	p=.013	.57	p=.008
-Confusion	.65	p=.001	.46	p=.04
-Depression	.09	p=.65	.38	p=.09
-Fatigue	.33	p=.10	.30	p=.18
-Tension/anxiety	.41	p=.04	.16	p=.45
-Vigour	.08	p=.70	.15	p=.52
Social Problem Solving Inventory:				
-Avoidance style	.54	p=.006	.47	p=.03
-Impulsivity/ carelessness style	.74	p=.0001	.65	p=.002
-Negative problem orientation	.79	p=.0001	.73	p=.0001
-Positive problem orientation	.80	p=.0001	.76	p=.0001
-Rational problem solving	.95	p=.0001	.95	p=.0001
--Decision making	.84	p=.0001	.82	p=.0001
--Generation of alternatives	.85	p=.0001	.84	p=.0001
--Problem definition and formulation	.90	p=.0001	.86	p=.0001
--Solution implementation and verification	.87	p=.0001	.89	p=.0001
Global problem solving score	.90	p=.0001	.86	p=.0001
Specific memory	.44	p=.03	.49	p=.02
Categoric memory	.62	p=.001	.68	p=.001
Extended memory	.13	p=.54	.12	p=.58
Omissions	.52	p=.009	.50	p=.01
MEPS relevant means	.42	p=.03	.40	p=.07
MEPS effectiveness score	.74	p=.0001	.73	p=.0001
MEPS passive solutions	.78	p=.0001	.77	p=.0001

Table 9.9 Test-retest correlations for all variables (and correlations with the BDI and SSI partialled out) for the suicidal group.

Since the Beck Depression Inventory and the Scale of Suicide Ideation scores differentiated significantly between the groups at Time 1 and Time 2 these were partialled out in the correlations so that any relationship between Time 1 and Time 2 scores would not be due to mood. The table shows that the correlations between the Beck Depression Inventory , and the Beck Hopelessness Scale at Time 1 and Time 2 were significant but the correlation for the Scale of Suicide Ideation was not. Only two of the Profile of Mood State scores were significant. These were the Anger score and the Confusion score, suggesting that these states were the only ones where Time 1 values when people were in their crisis predicted Time 2 values after the crisis had passed. All of the correlations for the sub-scale scores of the SPSI-R were highly significant demonstrating a strong association between the scores at Time 1 and Time 2. This outcome also illustrates the excellent stability of this measuring instrument over time. Significant correlations were achieved for the Specific Memory score, the Categoric Memory score and the number of Omissions but not the Extended Memory score. This demonstrates the stability of the memory deficits over this brief period of time. On the MEPS measures significant correlations were found for the Relevant Means score (no longer significant when the mood effects were partialled out), the Effectiveness score and the score for Passive solutions. The correlation for Passive solutions was in a positive direction showing that suicidal respondents who produced passive responses on the MEPS at Time 1 continued to produce passive responses at Time 2. Thus the tendency to remain passive appeared to be independent of mood state.

Association Between the Meps Task and Specific Responses on the Autobiographical Memory Test.

In order to examine the relationship between the specificity of memory and the effectiveness of the solutions produced by the respondents, Pearson Product Moment Correlations were calculated between the MEPS means and effectiveness scores, and the composite autobiographical memory specificity rating. These are displayed in Table 9.6 below.

Variables	Suicidal group	Psychiatric control group
MEPS means	.05	-.15
MEPS effectiveness	.12	-.08

2 - tailed.

Table 9.6. The relationship between specificity of memory and the MEPS tasks.

In the case of both groups the correlations were low and did not achieve significance. Thus, over time, the relationship between memory and problem solving ability disappeared.

Discussion.

No previous study has examined mood, problem solving deficits and autobiographical memory in the same group of first-time suicide attempters at two points in time. The present study's results showed that after six weeks

there were still significant differences in the levels of depression and suicidal thoughts in the two groups at Time 2 and over the passage of time, although there was no longer any difference in their levels of hopelessness. Using the cut-off points for the Beck Depression Inventory described by Murphy et al (1984), the suicidal group were severely depressed at the time of the suicide attempt and after six weeks had improved, but were still moderately depressed. In contrast the psychiatric controls were moderately depressed at the first time of assessment but were still mildly depressed after six weeks. Thus for each group there was a significant improvement in level of depression between the two periods of assessment. A similar improvement was seen for level of hopelessness and suicidal thoughts. However, at Time 2 there was no longer a significant difference between the groups on their level of hopelessness, while the suicidal group were still experiencing significantly more suicidal thoughts than the control group.

Both groups improved from Time 1 to Time 2 on the mood state measures although this change did not reach significance. Furthermore, at Time 2 there were no longer any differences between the two groups on these measures.

When the two groups were compared on the self-reported problem solving measure it was found that their scores had not changed significantly between Time 1 and Time 2. However at Time 2 the groups did differ significantly on three subscales. The suicide attempters were more avoidant, displayed greater levels of impulsivity and carelessness and were less able to define and

formulate the problems they faced. In addition, their overall problem solving score was significantly lower than the non-suicidal control group. It seems that at a point at least six weeks after their suicide attempt, this group of individuals while no longer more emotionally disturbed than the psychiatric control group, still display deficits in problem solving. The suicide attempters also produced fewer and less effective means than the non-suicidal group when they were compared on general problem solving ability, as measured by the MEPS. These results provide some support for the view that problem solving deficits may be stable over time and may be a trait rather than a state effect.

An alternative explanation could be that problem solving ability may need longer to recover. Very few studies have examined the stability of problem solving over longer periods of time. However, Schotte, Cools and Payvar (1990) examined the stability of problem solving in suicide ideators and found an improvement in problem solving skills as the level of depression improved. In a study of depressed children and adolescents Tems et al (1993) reported that although there was a decline in the number of cognitive errors made by their participants over time this change was not significant.

These deficits are apparent whether measured by the MEPS or the SPSI-R. In this study the two groups differed at both Time 1 and Time 2 but there was no change in their scores over the time period. These results suggest that the suicide attempters still show deficits in problem solving at least six weeks

after their suicide attempt. However, the deficits that differentiate them from the psychiatric controls six weeks later are different to the ones that differentiated the two groups at the time of the suicide attempts. It appears that this group may have ongoing problem solving difficulties but the nature of the difficulties change according to the emotional state or stresses the person is currently experiencing. There may be a subgroup of individuals for whom problem solving deficits are a trait feature. An alternative explanation might be that aspects of problem solving are mood dependent or all aspects differed at both Time 1 and Time 2, but the variance changed, so some appear significant at Time 1 and others at Time 2. When the test-retest correlations for the problem solving measures at the two time points are examined highly significant results are found in all cases suggesting a strong association between performance on the two occasions. This association remains even when the effects of mood are partialled out. This result also suggests the stability of the SPSI-R measure over a six week period. D'Zurilla and Maydeau-Olivares (1993) have reported on the acceptable stability of this measure over a three week period.

This study found that the suicidal group's performance on the autobiographical memory task remained significantly more overgeneral at 6 weeks. Two studies are relevant to this finding. Williams and Dritschel (1988) compared overdose patients and a group of ex-patients who had taken an overdose between 3 and 14 months earlier. These patients showed the same tendency to give overgeneral memories, and the groups of ex-patients were

found to remain significantly more overgeneral in their memories than normal controls. Secondly, Brittlebank et al.,(1993) investigated autobiographical memory in depressed patients. They found depressed patients were overgeneral in their recall of emotionally toned memories and that overgeneral recall predicted outcome at 3 and 7 month follow-up periods. They noted that memory characteristics did not change as depression improved. These are the only two studies that have investigated the persistence over time of overgenerality of memory. The present study was the first to examine stability of overgeneral memory in parasuicidal patients over time. The results that at six week follow-up, the suicide attempter group remained significantly more overgeneral in their recall of autobiographical memories than the non-suicidal control group, is further confirmation that this phenomenan is not mood-dependent.

In the analysis at Time 1 (Chapter 7) a relationship was found between specificity of memory and scores on the MEPS measure. The more specific the individual's autobiographical memory, the more problem solving means produced and the more effective the solutions. At Time 2 this association was no longer apparent. When considering the association between the MEPS means and the SPSI-R a significant result was found for decision making, and solution implementation and verification however there was no significant relationship between the two measures when the effectiveness of the MEPS solutions was considered.

How are these results to be explained? We have shown that suicide attempters display deficits in problem solving ability. In addition they are more overgeneral in their memories than controls. We have demonstrated an association between specificity of memory and the quality of solutions produced on the MEPS and we have shown that problem solving deficits exist even when the effects of mood are removed.

We hypothesize that for certain people it is adaptive to avoid being specific as this protects against the recurrent emotional hurt of painful memories from past negative experiences. These individuals develop and retreat into an overgeneral style of autobiographical memory which although protective in some ways also places the individual at risk of developing a sense of hopelessness when faced by problematic situations. The tendency to produce overgeneral memories has been found in patients suffering from depression (Williams and Scott, 1988; Brittlebank et al., 1993; Goddard et al., 1996), post-traumatic stress disorder (McNally et al., 1994; McNally et al., 1995), obsessive compulsive disorder (Wilhelm et al., 1997), acute stress disorder (Harvey et al., 1998), adult survivors of childhood sexual abuse (Kuyken and Brewin, 1995; Henderson, 1996), and convicted male sexual offenders against children (Wane, 1998).

In intensely stressful situations people who are overgeneral may feel trapped, unable to think of solutions and feel there is no prospect of being rescued. Their sense of self-esteem falls and hopelessness increases. Availability of

means, as we have seen in the case of farmers, makes the likelihood of desperate action a greater possibility.

In our suicidal group it is possible that individuals who are motivated to avoid memories of their painful experiences may also be motivated to avoid all specific memories in case accessing these activates a traumatic memory. This may occur consciously or unconsciously. Despite understanding the test instructions they produce general memories in order to avoid or curtail a threatening task.

In Chapter 8 we were able to show that effective problem solving was associated with specific autobiographical recall. However, when examining the relationship between autobiographical memory and the MEPS problem solving scores at Time 2 we find that the significant relationship noted at Time 1 has disappeared. Figure 1 shows a scatterplot of the specificity and MEPS mean scores at Time 2. It is clear that the disappearance of this correlation is not merely due to one or two outliers.

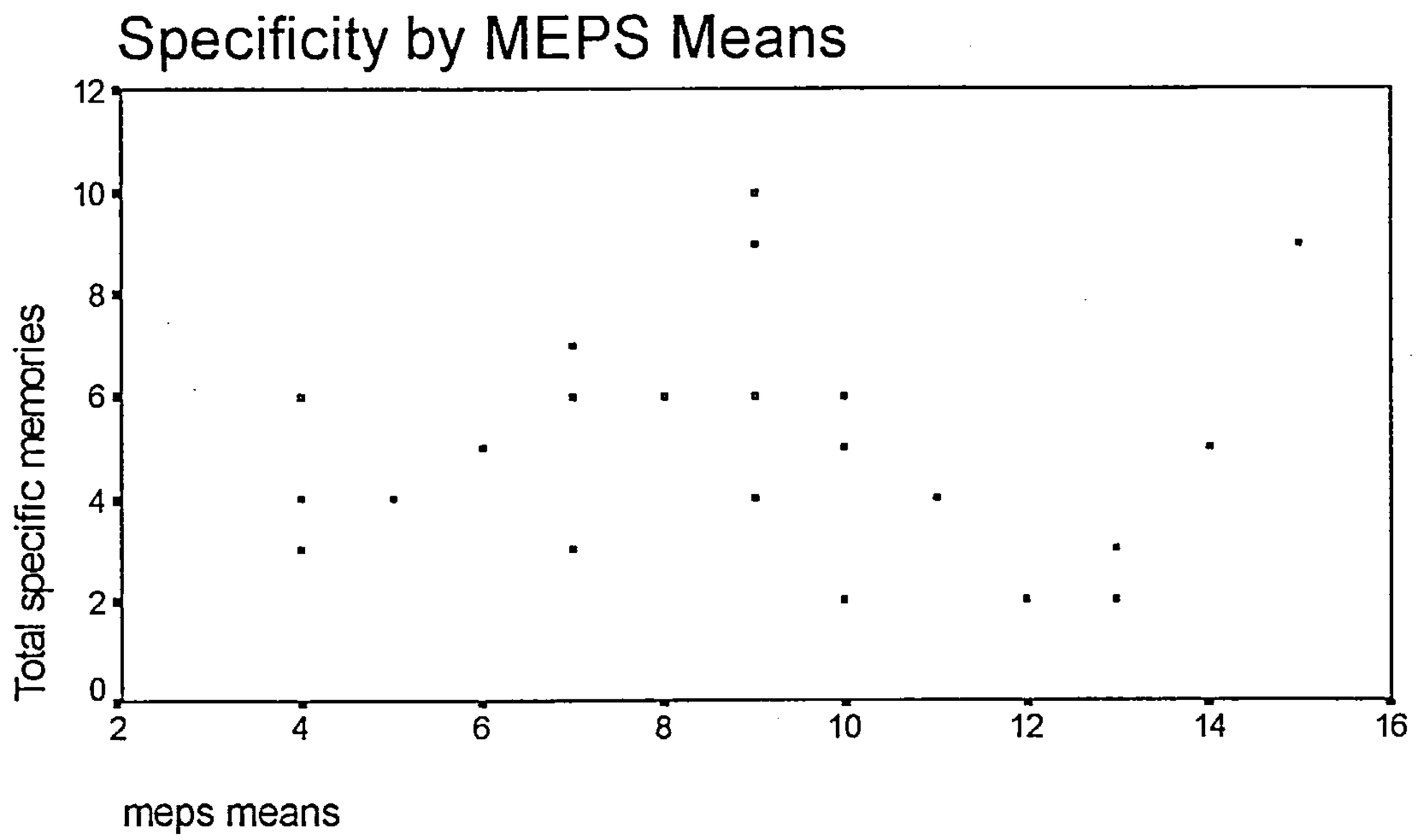


Figure 9.5 *Scatterplot showing the relationship between specific memory scores and the MEPS relevant mean scores at Time 2.*

In order to explain this outcome it is necessary to examine a table showing the changes in specificity score in relation to the MEPS relevant means scores.

In this table, those individuals who have become more specific are classified "+", with "-" indicating less specific and "0" indicating no change. Changes in the MEPS means (+, -, 0) are indicated in the same way.

Specific memory change	+	-	0	Total
MEPS means change				
+	6	0	1	7
-	9	3	1	13
0	1	3	0	4
Total	16	6	2	24

Table 9.10 *Changes in specificity and MEPS means scores.*

This table shows two main groups. It shows six people who became more specific and produced more relevant means from Time 1 to Time 2. Secondly, it shows nine people who became more specific but produced fewer relevant means. The first group has behaved as we would have expected on the basis of a simple correlation between specific memory and good problem solving. That is, as time passes, the crisis subsides and they become more specific and their problem solving improves. As far as specific memory is concerned the second group have also behaved as expected in that over time their specific memories have improved. However, in this group improved specific memory

is associated with a decline in problem solving means. Jones et al. (1999) investigated autobiographical memory and parasuicide in borderline personality disordered patients and found a non-significant trend for overgeneral memories to be associated with fewer episodes of self-harm. This raises the possibility that in a sub-group of individuals being overgeneral in memory may act as a successful defense against accessing potentially emotionally threatening memories of traumatic past experiences. In this case being overgeneral is an affect regulation strategy. If in this group the degree of specificity increases they may respond by becoming increasingly emotional which in turn may inhibit the production of solutions. Thus for this sub-group there would appear to be a decrease in external problem solving effectiveness. This implies that there may be something of a race that takes place between increasing specificity and increasing emotionality. Initially, as the person becomes more specific they may be overwhelmed by the associated emotions which would then inhibit problem solving. However, as the emotions subside the person may be able to utilise the increased specificity by eventually producing more effective solutions. Thus it may be that if the person's problem solving ability is monitored at regular intervals over time an improvement in problem solving in the expected direction will eventually occur.

This study has suggested that deficits in problem solving and the tendency to be overgeneral in autobiographical recall persist over time in suicide attempters. This effect may be interpreted as support for the view that

memory and problem solving deficits are traits. Alternatively, these deficits may be a function of state but require a longer time to recover. This possibility needs to be examined in future research studies.

Chapter 10

Summary and conclusions.

The aims of this series of studies were:

1) to examine the profile of suicides in a rural area

2) to compare the pattern of rural suicides with urban suicides

3) to investigate the role of problem solving deficits and autobiographical memory in suicidal behaviour.

In this final section the main findings from each chapter are summarized and the implications of the results are discussed. Finally, in the light of the research results, a refined version of the 'Cry of pain' model of suicidal behaviour is proposed.

We began this study with a review of the definitions of suicide. A number of researchers have pointed out that there is no universally recognised definition and this has led to some confusion in the way suicidal behaviour is described. All of the definitions we reviewed contained three elements, firstly, that suicide is an act that ends in death; secondly it is self-inflicted; and thirdly, it is an intentional act. Following our review we accepted the nomenclature and definitions proposed by O'Carroll et al (1996).

A review of the various approaches to the study of suicidal behaviour followed. Recent biological studies of suicidal behaviour have focussed on the serotonin system and it has been shown that in both people who attempt suicide and those who complete suicide, low levels of serotonin are common. In sociological work the effects of society on suicidal behaviour was examined. The emphasis in this work has been on the individual's level of integration into society suggesting that the less integrated individuals are the more vulnerable they are to suicide. This had implications for our study of rural suicide where isolation has anecdotally been seen as a risk factor. However, in our investigation it was found that rural individuals did visit their doctor prior to suicide and farmers in particular did not see isolation as a problem.

In the review of psychoanalytical approaches to suicide we showed how the study of suicide had moved from the study of external factors to concentrating on internal psychological mechanisms of behaviour. Modelling effects were also shown to be important. Hawton et al's (1998) study of media effects showed that this kind of exposure increases the probability of suicidal behaviour occurring. It becomes an option.

Cognitive perspectives of suicidal behaviour showed how the patient's negative view of self, the world and the future were precursors of hopelessness. Studies that examined the cognitive processes of suicidal

individuals were reviewed. They found deficits in problem solving and in memory specificity.

We reviewed a number of models of suicidal behaviour and showed that there were problems in these models with broad definitions and difficulty in measuring the dimensions described. In two of the models there was a lack of consideration of the elements of inescapability and uncontrollability, elements which our review of the literature suggest are important in their contribution to suicidal behaviour.

In chapter two we reviewed what is known about the patterns of suicidal behavior. We know that the male to female ratio is four to one, with males most at risk for death by suicide. Amongst males the highest rates are in the over 85 and in the 25-34 year age groups. Female vulnerability tends to rise linearly with age. Those who are single, separated, divorced and widowed are at increased risk. Rates vary according to religious affiliation with the figures for Catholic countries being the lowest. Suicide rates seem to increase in difficult economic times and are highest in professional groups and manual workers. People with a psychiatric diagnosis are at very high risk for suicide with some studies suggesting that up to 95% of suicides had a mental disorder at the time of their deaths. Comorbidity is more common amongst males than females and is a further important risk factor. A previous suicide attempt increases an individual's risk and access to lethal means of injury appears to make suicide more likely in an already vulnerable person. In

summary the factors described above seem to suggest that males are under more stress, are more isolated and more likely to use means to which they have easy access.

In chapter three we reviewed the limited literature on rural suicide and concluded that there appeared to be a higher rate of suicide in rural areas with elevated male rates and more frequent use of firearms. We examined the suicide rate for Powys and confirmed that the rates for both males and females exceeded the Welsh national rates. However, we found that these overall results hid a more complicated picture. For males under forty-five years of age we found that the rates were declining in Powys and were now below the Welsh rates. We found the opposite trend was apparent in females. The rate for young women in this group was increasing. The rates for males over forty-four years of age showed a steady decline but were still above the Welsh rates. The rates for females in this group were slightly above the Welsh rates and increasing. It was possible that these trends were short-term. However, recently the figures for the 1997 Powys suicides have become available and they show that the rates of suicide among women under forty-five years of age continue to increase. This is illustrated in Figure 10.1.

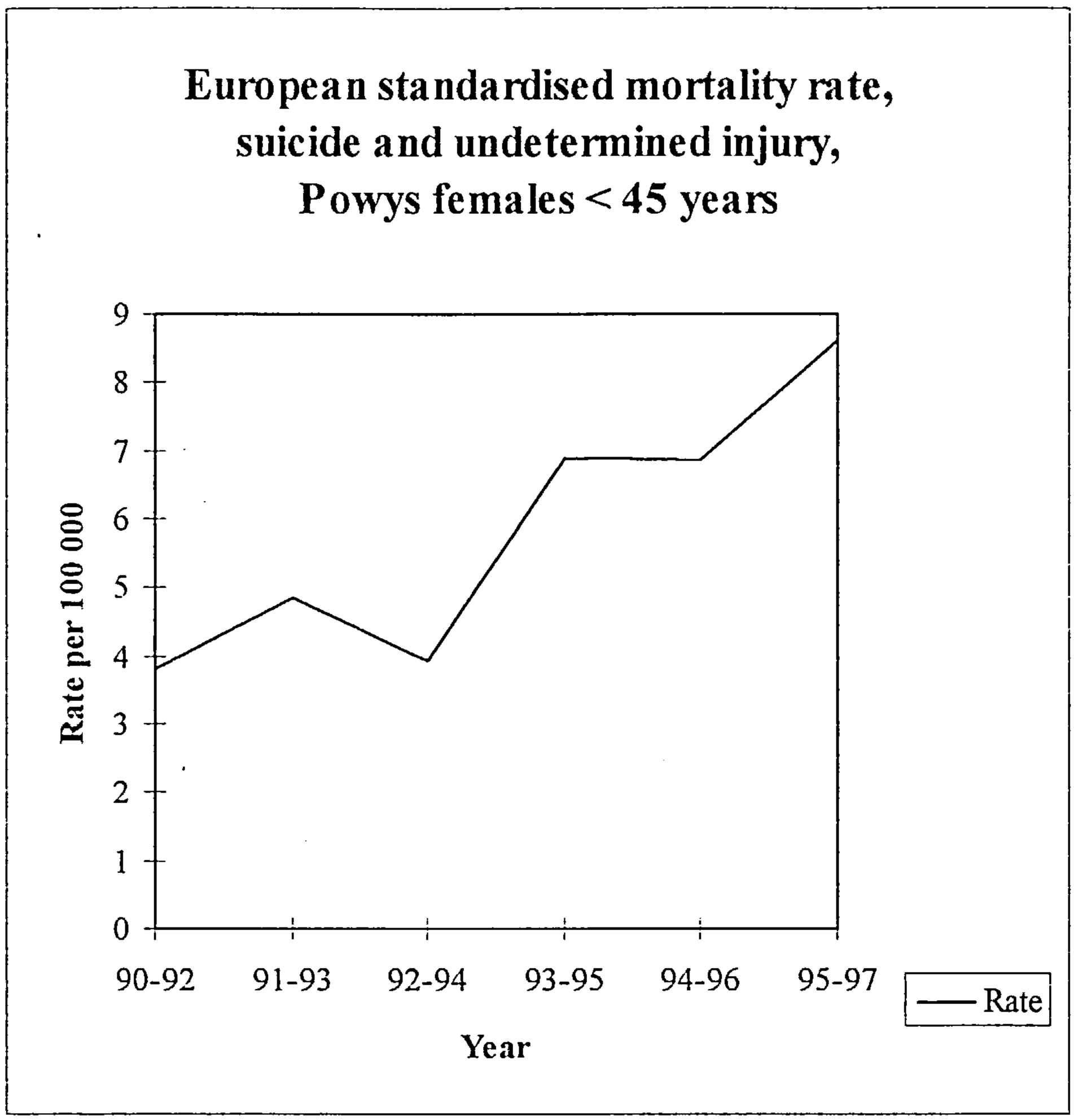


Figure 10.1 *Graph showing suicide and undetermined injury for Powys females under 45 years of age.*

Why are the rates among females on the increase? Do they use more lethal methods? Our results in chapter four suggested that this was not the case. Is it that more females in the current tough agricultural climate are having to go out and work and are therefore subject to increasing pressures? The answer to this is not clear, however some results from chapter five showed that 39% of farmers wives have jobs off the farm, but female farmers were no more stressed than male farmers.

These data strongly suggest that we may be in danger of neglecting women experiencing emotional distress in the rural context. Past initiatives in Powys have concentrated on young men and farmers largely to the exclusion of other groups. Perhaps the trends in female suicide rates are an indication that the healthcare services need to turn their attention now to young women. We need to undertstand what pathways lead women to suicide. Since female suicides are more rare we may require longer time frames to investigate these patterns.

Many of these changes are attributed to rural issues but are the same patterns evident in an urban setting? We were particularly interested in the pattern of methods used in the urban setting. In chapter four we compared groups of urban and rural suicides. We found that in the rural setting more lethal methods were used and the individuals were not isolated. In some important respects the Powys suicides differed significantly from the urban group. Powys male suicides were more evenly spread through the ages bands while the urban group were more likely to be younger males. Rural males were more likely to be married. Farmers were overrepresented amongst suicides. Rural men showed a preference for more violent means of suicide, dying by hanging or gunshot wounds. Fewer rural men had a previous psychiatric history; while three quarters of suicides for whom information was available had visited their GP within three weeks of their deaths. A table summarizing the characterisitics of urban and rural suicides is shown below.

Urban suicides	Rural suicides
Males 15-44 yrs = 58% of all suicides	Males 15-44 yrs = 35% of all suicides
No gender differences in elderly	More males than females in elderly
Suicides bunched in lower age bands	Suicides spread evenly through age bands
Most single/divorced/separated or widowed	Most married
Main methods: Overdose and hanging	Main methods: hanging and shooting (more violent means)
No gender differences in methods used	There are gender differences in methods used: Males use more violent methods
Previous psychiatric history important: high levels of pathology	Previous psychiatric history important: but generally lower levels of pathology
32% had GP contact within 3 weeks of death (more isolated)	74% had GP contact within 3 weeks of death (less isolated)
Largest group: service industry workers	Largest group: farmers

Table 10.1 *Summary of the characteristics of urban and rural suicides.*

When the rural population of suicides were examined in further detail there was some indication that farmers' suicide was different to rural suicides in general. They were older, and death by hanging and shooting were the main methods used as apposed to hanging and car exhaust gas which were the main methods used in the rural non-farmer group. Very few farmers left a note and no farmers had made a previous attempt. Although the number of farmers was small our results suggest the need for further research in which a

distinction is made between rural suicide in general and farmer suicide in particular. Table 10.2 summarizes the main differences between rural suicides and farmers' suicide.

Rural suicides	Farmer suicides
Males >45 yrs = 35% of suicides	Males >45yrs = 88% of suicides
Main methods: Car exhaust gas - 38%	Main methods: Hanging - 63%
Hanging - 28%	Shooting - 19%
Shooting - 18%	Car exhaust - 6%
31% left note	13% left note
17% previous attempt	No previous attempts

Table 10.2 *Summary of the characteristics of rural and farmer suicides*

An advantage of this study is that since the farmers were a subset of the rural group, rural suicides and farmer suicides were able to be compared side by side. Other studies have tended to focus on either farmers only, for example, Hawton et al (1998) or rural suicides in general, for example, Robert, Simpson and Wilkinson (1996). As far as we are aware this is the first study to distinguish between rural suicide in general and farmer suicide in particular.

In chapter three we saw that in rural suicides the very elderly and young males were most at risk and that male rates were declining, whereas the rates amongst women were increasing dramatically. Our results suggested that the rate amongst farmers was particularly high. Is this difference in pattern due

to the fact that older male farmers are particularly stressed? What factors cause them most stress?

In chapter five we found no differences in the levels of reported stress in male and female farmers nor did we find any significant age effects. In general farmers found filling in government forms and adjusting to changes in government policy most stressful. They also reported isolation to be relatively unimportant as a stressor. In a very recent survey into stress in farmers Hawton et al (1998) found that financial factors, government legislation and increased paperwork were important factors. In addition, they reported that long hours and health problems were issues experienced as stressful by farmers. Although reported stress levels may play a part in raising farmers' vulnerability to suicide additional factors must contribute to precipitating a suicidal crisis. This thesis then turned to examine a number of variables which have been implicated in increasing the risk for suicide.

In chapter six we reviewed evidence which showed that problem solving deficits may be the processes by which a bad situation may seem inescapable. This review highlighted the links between hopelessness, problem solving deficits, overgeneral autobiographical memory and suicidal behaviour. It was argued that examining the stages of problem solving may be a useful way of learning more about the deficits in problem solving that suicidal people have been found to experience. Tools for measuring problem solving were

reviewed and the Social Problem Solving Inventory-Revised was chosen as a way of accessing these specific deficits in problem solving skills.

In chapter seven three matched groups were selected (suicidal, psychiatric control and non-psychiatric control) and assessed using mood and problem solving measures. The suicidal group were found to be poorer in problem solving than the other two groups. Specifically, the suicidal group displayed a careless and impulsive problem solving style and unique deficits in decision making and the ability to generate alternative solutions. They were also more depressed, angry and confused but the problem solving deficits remained when these mood differences were covaried out. These results extended previous work by showing that suicide attempters have a distinct pattern of problem solving and unique problem solving deficits. Yet what psychological processes underlie the deficits in problem solving that we described?

In chapter eight we made the point that past life experiences are important resources to draw on when solving a problem. Our review showed how this link between autobiographical memory and problem solving has been developed in a range of studies which have found overgeneral autobiographical memory to be a feature of a number of pathological conditions. In chapter 7 we investigated these two areas and the link between memory and problem solving. This was the first study to examine these inter-relationships in parasuicide patients with an appropriate psychiatric control

group. Our results showed that the suicidal group were significantly more overgeneral in their memories than the other two groups. In addition, they produced fewer relevant means and less effective solutions. Furthermore, we were able to show that effective problem solving depended on specific autobiographical recall. No study to date has examined the relationship between self-report and 'objective' (or process and outcome) measures of problem solving. This was the first study to do this and it was apparent that the outcome measure (Means-Ends Problem Solving test) provides a measure of the general orientation and problem solving performance rather than a measure of specific problem solving skills. It is important to note that these differences between the groups were not due just to being psychiatrically disturbed or due to group differences in mood.

The study in chapter nine showed that after a period of time the suicidal group still differed from the psychiatric control with respect to the levels of depression and suicidal thoughts but not hopelessness. Problem solving deficits remained and the suicidal group were still more overgeneral in their memories. These results were interpreted as support for the hypothesis that overgeneral autobiographical memory and problem solving were trait features. However, an alternative explanation remained that these functions require variable lengths of time to recover and had the measurements been taken after a longer period of time it is possible that no differences may have been observed. These issues need to be examined in further studies in which the time course of these variables is investigated in more detail.

Revisiting the "Cry of pain" model of suicidal behaviour.

The results of the present study allow a model of suicidal behaviour to be proposed. This model builds on and elaborates the 'Cry of pain' model which, as we saw in chapter one, sees suicidal behaviour developing in the following way. An individual finds themselves in a problem situation which results in feelings of stress. These feelings may focus attention on other areas in their lives over which they have little or no control. Feelings of anger develop in response to the sense of entrapment - 'the cry of pain'. As the negative feelings escalate the anger becomes mixed with hopelessness and despair. The individual becomes more cognitively rigid and normal escape routes are overlooked. Alienation increases and the likelihood of suicide occurring depends on how overwhelming these feelings are, previous family models of suicidal behaviour, media influence, support available, easily available means, level of impulsivity and whether there are drugs or alcohol involved which would impair judgement. This model is specifically about risk mechanisms rather than longer term vulnerability factors and it does not say anything about chronic vulnerability factors. We have seen that problem solving deficits and overgeneral memory may be chronic vulnerability factors which need to be taken into account.

In examining suicidal behaviour it is useful to divide the discussion into a consideration of vulnerability factors, precipitating factors and maintaining factors. As far as vulnerability factors are concerned age, gender, marital

status, ethnic group, religious affiliation, employment status, social class, occupation, psychiatric status, co-morbidity, previous attempts and access to lethal means have all been shown to be important factors contributing to an individuals vulnerability to suicide. These factors are discussed in detail in chapter two. Our study has shown that in rural suicides vulnerability factors may be different - males, both the young and the elderly, who are married, farmers and those with access to lethal means are particularly at risk. However, we have also seen that the same cognitive traits found in other non-rural populations - problem solving deficits and overgeneral memory - may be important in the rural group.

What factors precipitate a suicidal crisis? The issues that farmers find most stressful are adjusting to government policy and regulations, filling in government forms, and financial matters; the first two being issues over which they feel they have little control. In a discussion leading up to the formulation of his model Williams refers to the work of Gilbert (1992) and shows the important distinction Gilbert makes between voluntarily giving up and involuntarily being defeated as important aspects of the development of depression. The crucial point is that in the latter case the person is trapped and has no alternative. The feeling of entrapment is seen as an important part of the process towards a suicidal crisis and was incorporated into the model. However, although Williams mentions the aspects of Gilbert's theory that talk about defeat, this concept is not made explicit or incorporated into the original model. We suggest that it is not just any stress leading to a feeling of

entrapment, but a stress that leads to a sense of defeat that is important. Thus in our refinement of 'the cry of pain 'model we suggest that it is the combination of defeat and entrapment which is crucial. That is, the term 'stress' is not specific enough.

In terms of the 'cry of pain' model one's judgement of how much social support is available can be considered a maintaining factor. This judgement can be affected by bias in memory which also affects the individual's estimate of the aversiveness of the stress and it's controllablility. However, in the original 'cry of pain' model not enough is said about the effect of problem solving deficits. The effect of these deficits are implicit but not made explicit in the model. Thus a further refinement of the 'cry of pain' model is to include problem solving deficits as elements which may affect the judgements individuals make of their situation, increasing the chance that they will feel trapped. Our results showed that suicidal individuals had specific problem solving deficits and were overgeneral in their memories. They remained deficient even when mood changed over time and so these deficits should be seen as a maintaining factor. The respect in which it might be considered a maintaining factor is in the complex relationship with memory. We found that there was not a simple relationship between specificity of memory and problem solving over time. It has always been assumed that the relationship is one direction, that is, that to be specific is beneficial. But this view has been maintained in the absence of longitudinal data. This study has shown that the relationship is not that simple. The results raised the possibility that for

certain individuals, increased specificity makes them vulnerable to emotionally painful suppressed material which when activated, is deleterious to effective problem solving, at least for a temporary period. In this study taking these measures at another point in time has revealed the complexity of this relationship. In order to clarify this relationship further research needs to be carried out in which measures are taken over several points in time.

The 'cry of pain' model assumes that the presence of social support can ameliorate the intensity of feelings of hopelessness. Williams (1997) suggests that men differ in the extent to which they perceive and make use of such support. Indeed, Murphy (1998) supports this view and in his recent paper argued that women use social contacts more effectively than men and this acts as a protective factor against becoming suicidal. Consistent with this, it has always been assumed that the relative isolation of farmers and rural dwellers placed them at risk for suicide. However, in our studies we have noted that evidence from the coroner's reports shows that many of the victims had seen a doctor shortly prior to the suicide attempt, that is that access to support was present. Furthermore, in the study of stress factors in farmers, the farmers said they did not feel isolated. Thus, a further refinement of the 'cry of pain' model is that it is not always the case that social support is missing. In fact, our results show that even in cases where social support was present the individuals went on to kill themselves. Thus, social support may, but does not necessarily moderate the path to eventual suicide in rural cases. By contrast, in an urban situation, isolation seems to be a vulnerability factor.

Of course, it remains true that the quality of the support may be the critical factor. For example, Hawton et al (1998) argue that the crucial factor in farmers is the lack of a close, confiding relationship. The present study did not address this aspect but it should be taken into account in future research.

In summary, our revised model of suicidal behaviour needs to incorporate the following: some detail of the precipitating stress factors; recognition of the short term cognitive bias which affects the individuals judgement of the extent of the stress, social support and escape potential; and recognition of the longer term cognitive deficits (memory and problem solving) which lead to a sense of defeat and hopelessness.

As the individual comes under additional pressure the wish to escape increases and easy availability of means will lead to a suicide attempt. If the attempt is not fatal and the cognitive deficits are not addressed the cycle is likely to be repeated with eventual fatal consequences.

The components of this revised model can be represented as below.

Additions to the model are in italics.

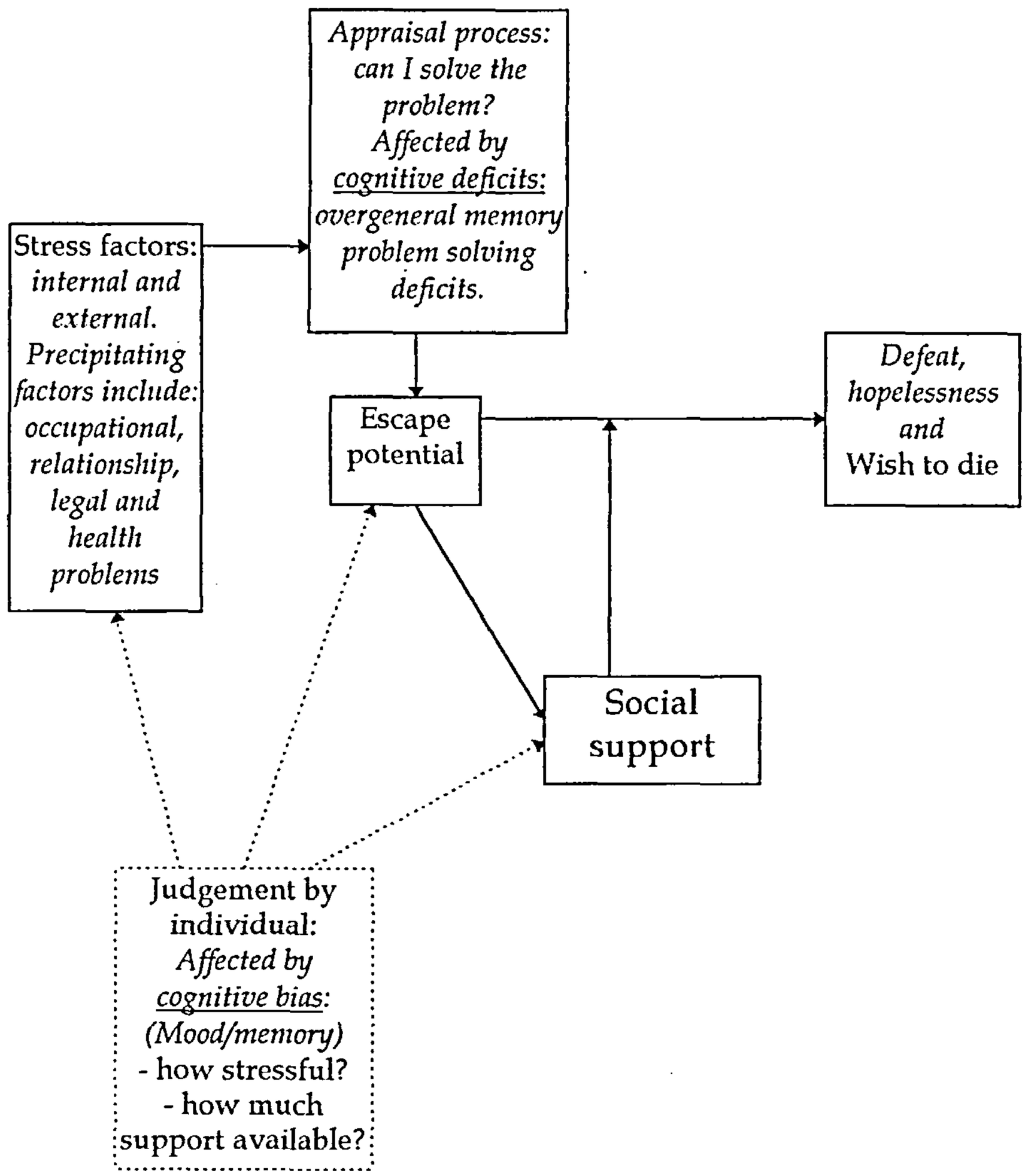


Figure 10.2 *Revised 'Cry of Pain' model of suicidal behaviour*

At the beginning of this series of studies we reviewed a number of models of suicidal behaviour and criticized them for being too general and for failing to consider the elements of uncontrollability and inescapability. These elements are included in the reformulated 'cry of pain' model which is now more specific and based on empirical results.

What implications do these results have for clinical practice? Firstly, problem solving therapy needs to take the issue of specificity of memory into account. A number of studies have shown that problem solving therapy has shown promising results in the treatment of suicidal patients but this form of therapy has not recognised the role of overgeneral memory in ineffective problem solving.

Secondly, cognitive bias, which is short term and affects the judgement of stressed individuals needs to be distinguished from longer term cognitive deficits such as overgeneral memory and impaired problem solving.

Thirdly, whereas most work in this area has suggested that increasing specificity of memory is a good thing, no studies have examined specificity over a period of time. Our results suggest that caution is necessary. There is a subgroup of individuals for whom increasing specificity could have negative effects. Indeed, Linehan et al (1993) issue a caution about prematurely dealing with specific traumatic events. We add to this caution by suggesting that both therapist and patient should be vigilant for naturally occurring incidences of specificity that might have the same effect.

Fourthly, problem solving therapy should focus on those areas in which suicidal individuals are specifically and uniquely deficient: a careless and impulsive problem solving style, generating alternative solutions and

decision making. It is also important to distinguish between those who are generally deficient and those who are mood sensitive.

Fifthly, strategies for prevention of suicidal behaviour in the rural setting do not need to include ways of getting people to their GPs. Our evidence shows that people go to their GPs but once there their problem is not identified. It is following the appraisal stage that help is most likely to be sought from the general practitioner. As a new Australian study by Pfaff, Acres and Wilson (1999) has shown over 60% of suicide attempters had visited their doctor in the month prior to the attempt and during this visit they presented with somatic complaints or psychological symptoms. There is clearly a role for training and educating general practitioners and community mental health teams so as to improve the identification and treatment of these patients. Furthermore, if successful identification has been achieved, the compromised problem solving stage could be addressed using therapeutic approaches geared to improving problem solving and overgenerality of memory.

In Powys there is at present no particular route of treatment for those who make suicide attempts. Some individuals are seen by the GP and discharged into the community without further intervention. Others are referred to the community mental health team or direct to psychologists or psychiatrists. A consistent protocol for the treatment of suicide attempters should be developed, adopted and adhered to by all primary care and mental health care providers who come into contact with at-risk patients.

This study has shown that models of suicidal behaviour need to be context specific and training needs to be context specific. We have demonstrated that the patterns of urban and rural suicide are different and primary and mental health care workers need to be made aware of this. There may also be some differences between patterns in rural people in general and farmers in particular. These results are preliminary but important. Clearly the generalizability of our results is limited by looking at only one rural and one urban setting. However, already by looking at single situations we can show that one cannot generalize from one setting to another.

There are a number of other limitations to this study that should be borne in mind when interpreting the results. Firstly, the study is based on coroner's data which is known to be of varying quality. We argue however, that the general quality of the coroners' files in Powys was high. In addition we were afforded the valuble opportunity of scrutinizing the witness statements in the files which provided corroborating evidence in a small number of cases where some details were not clear. A second limitation of this series of studies is that they are based on a relatively small number of participants. However, since the work in this area is new these numbers were considered appropriate and practical for a first investigation and even with these numbers significant differences were detected between the groups.

In this chapter we have highlighted several areas in which further research is needed. Firstly, it is necessary to examine patterns of suicide in other urban and rural settings to determine whether the rates for young women are increasing and in light of the fact that farmers suicides do not reflect rural suicides in general. Secondly, the persistence of cognitive deficits over time needs to be investigated with more observation points over time. Thirdly, the relationship between problem solving and specificity of memory over time requires more detailed study to investigate the possibility that increases in specificity exacerbate problem solving ability.

In a recent systematic review of the efficacy of psychosocial and pharmacological treatments in preventing repetition of deliberate self harm, Hawton et al (1998) concluded that there is considerable uncertainty as to which treatments are most effective, however, among others, promising results were found for problem solving therapy. The current study lends weight to the view that problem solving remains one of the most consistently found deficits in the suicidal population. These results support the view that problem solving therapy may be the best way to treat these deficits.

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APPENDIX A

Official suicide statistics and the role of the coroner.

Appendix A

Official suicide statistics and the role of the coroner.

Official suicide statistics for England and Wales are based on verdicts returned at inquests by coroners or their juries. All unnatural deaths are referred to the local coroner by the police. The coroner is responsible for investigating the death and in the case of unnatural deaths an inquest is held to determine the cause of death. In order to return a verdict of suicide the coroner has to be satisfied 'beyond reasonable doubt' that the death was self-inflicted, and, that the individual intended to take his own life. The handbook that is used by coroners in England and Wales states that ' suicide should never be presumed but must always be based upon some evidence that the deceased intended to take his own life' (Matthews and Foreman, 1986). This high level of proof means that deaths that would be considered a suicide from a clinical point of view but which do not satisfy the legal criteria for a verdict of suicide, are often given an 'open' verdict. This is defined in the notes appended to the Coroner's Rules as: 'Namely the evidence did not fully or further disclose the means whereby the cause of death arose' (Coroners Rules, 1984). There are other possible verdicts that may be arrived at. These are that death was 'accidental' or due to 'misadventure'. However, Cooper and Milroy (1995) note that the majority of wrongly classified deaths, from a clinical point of view, are likely to be given 'open' verdicts. Additional support for this view comes from Bradley (1987) who studied 202 cases of suicide in Leeds. He found that 68 cases had received a verdict other than suicide, and of these 62 were given 'open' verdicts.

Cooper and Milroy (1995) also draw attention to the fact that verdicts of accidental or undetermined death are sometimes combined with cases given a verdict of suicide to increase the accuracy of suicide statistics. While this evens out the variability found amongst coroners, it will also include some cases which are not suicides. It is widely accepted that the official suicide statistics are an underestimation of the true rate of suicide mortality (Nicholson, 1992; O'Donnell and Farmer, 1995; Cooper and Milroy, 1995).

Nicholson (1992) conducted a study to investigate the high rate of suicide in the North Devon area and was particularly interested in how the coroners verdicts might have contributed to these figures. He found that there was a wide variation in the ratio of undetermined injury deaths to deaths by suicide in the South Western Health Districts. The North Devon standardized mortality rate for suicide and injury undetermined, however, was not inflated when compared with the figures for England and Wales and the South Western Region. Furthermore, the percentage contribution of suicide deaths to deaths from all causes in North Devon was not disproportionately large. In addition Nicholson suggested that the category of 'death by injury undetermined' may represent a significant source of error when suicides are counted and that this might cast some doubt on the validity of official suicide rates. Pearson (1993) in a later study of suicide in the North and West Devon areas suggested that the suicide rate is affected by the judgment of individual coroners as indicated by the ratio of open verdicts to verdicts of suicide. She

highlights Barraclough's (1972) proposal that "the sum of the suicide rate and undetermined death rate may be a closer approximation to the true incidence of suicide than the suicide rate alone".

Phillips and Ruth (1993) investigated the classification of suicides in California by examining computerized death certificates over the period 1966 - 1990, and making use of the finding that suicides peak at 'symbolic ages' e.g. 30, 40, 50 60, 70 and 80 (Phillips and Smith, 1991). They hypothesized that these ages are stocktaking occasions when individuals reflect on whether they have reached their goals in life or have failed themselves and their families. Phillips and Ruth investigated whether the same peaks occur in other cause - of-death categories suspected of containing misclassified suicides, e.g. accidental barbiturate poisoning, undetermined deaths and single-car driver deaths. They also examined two categories of death not usually suspected of containing misclassified suicides; pedestrian deaths and "symptoms, signs and ill-defined conditions". They included two control groups in their analysis; deaths produced in multi-car accidents, and all natural causes of death. Their results showed that there were mortality peaks at symbolic ages for undetermined deaths, barbiturate deaths and single-car driver deaths and in the categories of pedestrian deaths and "symptoms signs and ill-defined conditions". No such peaks were found in the control conditions. They interpreted their results as supporting their hypothesis that a proportion of the deaths in these categories are in fact misclassified suicides. They sugest that suicides are more likely to be underreported for Blacks and for females.

Lester (1994) examined data from seventeen nations in an attempt to determine whether suicides are disguised as accidental and undetermined deaths. His results did not suport an hypothesis of misrecording.

O'Donnell and Farmer (1995) conducted a study to examine the extent of underrecording of suicides. They examined the records of 242 deaths that occurred on the London Underground over a five year period. They found that there was a great variation in the frequency with which the coroners returned verdicts of suicide. For example, for individual coroners, the proportion of deaths among men which were considered to be suicides ranged from 33% to 76% and the proportion of 'open' verdicts from 5% to 67%. Among women the proportion of deaths given a verdict of suicide ranged from 56% to 100% and the proportion of 'open verdicts ranged from 0% to 44%. In total, they found that verdicts other than suicide were recorded for 50% of the men and 25% of the women. In particular, they noted that a verdict of suicide was returned more often in inquests on women. O'Donnell and Farmer assert that their results are a clear demonstation of the fallibility and unreliability of the official statistics for unnatural deaths. They suggest that if coroners could apply the standard of the civil courts, using a 'balance of probabilities' approach, which is more in accordance with clinical judgment and common sense reasoning, the large variations would disappear. As this is a legal matter and changes are not foreseen, they recommend interpreting official statistics with great caution.

Cooper and Milroy (1995) examined all of the coroners cases in South Yorkshire that received a verdict of 'open' or 'suicide' over a seven year period. Of 330 cases with an 'open' verdict that they examined, they decided that on the balance of probability 213 were suicides. They concluded that the true suicide rate was was almost 1.7 times the official rate. Bradley (1987), in a study in Leeds found that the true suicide rate was 1.5 times the official rate. Two Scottish studies suggest that the official figures underestimate suicides by 32% (Ovenstone,1973) and 41% (Kennedy et al.,1974). Cooper and Milroy (1995) calculate that the maximum by which suicide figures for England and Wales can have been underestimated is 33%. They found that the category of self-poisoning using solids or liquids was responsible for the major proportion of the discrepancy between total suicides and suicide verdicts. Open verdicts returned for cases in this group accounted for 57% of all misclassified cases. Other studies have shown that this cause of death is responsible the greatest number of misclassified suicides and the most variation amongst coroners (Ovenstone, 1973; Speechly and Stavraky, 1991; Atkinson et al., 1975; Barraclough, 1978). Drowning is the only suicide method with a lower suicide rate. Of all causes this is the one least likely to receive a verdict of suicide and is thus most likely to be underreported.

Cullen and Connolly (1997) found significant underreporting of suicide in rural Ireland (County Mayo) in the years 1978 - 1994. They conclude that

32.6% of deaths were miscoded. In Mayo the most common method of suicide for both sexes is by drowning.

Neeleman and Wessley, (1997) examined the ratio of open verdicts to suicides over the priod of 1974 - 1991. They were looking for changes in this ratio and whether the coroners qualifications affected the verdicts. They found that the ratio between open verdicts and suicide verdicts has risen substantially over the time period studied. Open verdicts are being given increasingly more frequently than suicide verdicts. In other countries these ratios have decreased and they argue that this makes it risky to compare temporal trends in suicide with those in other countries. The open - suicide ratio was higher among young people, women and those using drowning and jumping from heights as a method of death. This is consistent with the view of Rockett and Smith (1995), cited by Neeleman and Wessley, who suggest that the accuracy of suicide certification varies with characteristics of the deceased and the methods used. Methods such as drowning and poisoning are less easily classified as definitely suicidal than more lethal methods such as hanging. Neeleman and Wessley (1997) found that coroners with dual qualifications (medical - legal) produced higher open-suicide ratios than coroners with a legal qualification only. They suggest that doctors, when functioning in a judicial capacity, may be less flexible in their approach than those with legal qualifications. It seems clear that coroners vary in their interpretation of what constitutes evidence of intent.

Kelleher, Corcoran and Keeley (1997) suggest that in Ireland the official suicide figures are more reliable than in England and Wales since coroners use 'the balance of probabilities approach' rather than requiring the 'beyond reasonable doubt' level of proof. Using a balance of probabilities approach results in fewer suicides being given a verdict of undetermined death when there is insufficient proof that the person intended to take their own lives.

APPENDIX B

Summaries of statistical procedures.

Appendix B

Summaries of statistical procedures.

Chapter 4

Table 4.3 Comparison of Powys and Manchester suicides by age and gender.

Comparison	Chi - Square	D.F.	Significance
Powys males/females	0.70	3	0.87
Manchester males/females	6.84	3	0.07
Powys/Manchester males	8.84	3	0.03
Powys/Manchester females	0.17	3	0.98

Table 4.4 Marital status figures for Powys and Manchester

Comparison	Chi - Square	D.F.	Significance
Powys males/females	2.36	2	0.30
Manchester males/females	2.70	2	0.25
Powys/Manchester males	16.99	2	0.0002
Powys/Manchester females	2.37	2	0.30

Table 4.5 and 4.6 Methods of suicide for males and females in Powys and Manchester

Comparison	Chi - Square	D.F.	Significance
Powys males/females	25.20	3	0.00001
Manchester males/females	5.70	3	0.12
Powys/Manchester males	29.16	3	0.00001
Powys/Manchester females	3.05	2	0.21

Table 4.7 Psychiatric history for Powys and Manchester suicides

Comparison	Chi - Square	D.F.	Significance
Powys/Manchester	35.77	3	0.00001

Visits to the general practitioner

Comparison	Chi - Square	D.F.	Significance
Powys/Manchester	9.63	2	0.008

Comparing rural suicides with farmer suicides.

Comparison	Chi -Square	D.F.	Significance
Rural/Farmers			
Age	11.18	1	0.0005
Marital status	0.71	2	0.69
Method	12.19	4	0.015

Chapter 5

Comparing gender, age and farm type and levels of self-reported stress.

Analysis of variance

Source	D.F.	Sum of squares	Mean square	F ratio	F prob.
Gender	1	14.14	14.14	0.0377	0.84
Global stress sc.	305	114582.41	375.68		
Total	306	114596.56			
Age	4	1437.86	359.46	0.97	0.42
Global stress sc.	320	117892.48	368.41		
Total	324	119330.35			
Farm type	5	2968.61	593.72	1.63	0.15
Global stress sc.	317	115272.03	363.63		
Total	322	118240.65			

Chapter 6

Comparison of groups by age and educational level.

Analysis of variance.

Source	D.F.	Sum of Squares	Mean square	F ratio	F prob.
Group	2	412.75	206.37	1.38	0.26
Age	69	10304.12	149.33		
Total	71	10716.87			
Group	2	11.19	5.59	1.22	0.30
Educat.lev.	69	316.08	4.58		
Total		327.27			

Table 7.2

Multivariate analysis of variance: Depression, Hopelessness and Suicidal ideation by Group.

Wilks lambda	F value	D.F.	Error D.F.	Sig.
0.21	25.31	6	134	0.0001

Univariate anovas. (2,69 D.F.)

Depression, Hopelessness and Suicidal ideation by Group.

Variable	SS	Error SS	MS.	Error MS	F	Sig.
Beck	7313.58	4738.29	3656.79	68.67	53.25	0.0001
BHS	1422.75	1611.25	711.37	23.35	30.46	0.0001
SSI	1289.52	675.79	644.76	9.79	65.83	0.0001

Table 7.3

Multivariate analysis of variance: Mood states by Group.

Wilks lambda	F value	D.F.	Error D.F.	Sig.
0.33	7.85	12	128	0.0001

T-tests pairwise comparisons: Mood state by group.

Group 1 = Suicidal group
Group 2 = Psychiatric control group
Group 3 = Normal control group

Anger

Comparison	t-value	df	2-tail sig.	SE of diff.	95% CI
1 & 2	2.85	46	0.005	1.22	1.02 - 5.97
2 & 3	2.01	46	0.05	0.78	-0.001- 3.18
1 & 3	4.75	46	0.0001	1.06	2.93 - 7.23

Confusion

Comparison	t-value	df	2-tail sig.	SE of diff	95% CI
1 & 2	2.97	46	0.005	1.12	1.07 - 5.58
2 & 3	2.95	46	0.005	0.93	0.87 - 4.62
1 & 3	6.91	46	0.0001	0.88	4.31 - 7.85

Depression

Comparison	t-value	df.	2-tail sig.	SE of diff.	95% CI.
1 & 3	3.00	46	0.005	1.44	1.42 - 7.23
2 & 3	3.94	46	0.0001	1.21	2.34 - 7.23
1 & 3	8.89	46	0.0001	1.02	7.05 - 11.19

Fatigue

Comparison	t-value	df	2-tail sig.	SE of diff.	95% CI
1 & 2	1.95	46	0.06	1.37	-0.09 - 5.42
2 & 3	2.47	46	0.02	1.33	0.60 - 5.97
1 & 3	5.01	46	0.0001	1.18	3.56 - 8.35

Tension/anxiety

Comparison	t-value	df.	2-tail sig.	SE of diff.	95% CI.
1 & 2	1.53	46	0.13	1.33	-0.64 - 4.73
2 & 3	3.58	46	0.001	1.08	1.69 - 6.05
1 & 3	5.81	46	0.0001	1.01	3.86 - 7.96

Vigour

Comparison	t-value	df	2-tail sig.	SE of diff	95% CI
1 & 2	-.099	46	0.32	0.76	-2.28 - 0.78
2 & 3	-5.49	46	0.0001	0.86	-6.49 - -3.00
1 & 3	-6.44	46	0.0001	0.85	-7.22 - -3.78

Table 7.7

Multivariate analysis of variance: SPSI-R Scales (Problem solving) by Group.

Wilk's lambda	F value	D.F.	Error D.F.	Sig.
0.42	3.19	20	120	0.0001

Univariate anovas (2, 69 D.F.) : SPSI-R scales.

Variable	SS	Error SS	MS	Error MS	F	Sig.
PPO	339.69	1549.62	169.84	22.45	7.56	0.001
NPO	3833.08	6382.41	1916.54	92.49	20.72	0.0001
ICS	1450.58	4479.41	725.29	64.91	11.17	0.0001
AS	683.86	3638.08	341.93	52.72	6.49	0.003
RPS	1951.44	17715.66	975.72	256.74	3.80	0.027
Dm	137.86	1326.45	68.93	19.22	3.59	0.033
Gas	232.69	1251.62	116.34	18.13	6.41	0.003
Pdf	127.08	1248.91	63.54	18.10	3.51	0.035
Siv	45.02	1672.91	22.51	24.24	0.93	0.40
GPSS	30144.52	87722.08	15072.26	1271.33	11.86	0.0001

Multivariate analysis of covariance (Effects of mood covaried out).

Wilk's Lambda	F value	D.F.	Error D.F.	Sig.
0.73	4.86	3	41	0.006

Univariate anovas. (1, 43 D.F.) (Effects of mood covaried out)

Variable	SS	Error SS	MS	Error MS	F	Sig.
SPSIdm	179.22	553.64	179.22	12.87	13.92	0.001
SPSIgas	78.37	559.35	78.37	13.00	6.02	0.018
SPSIics	518.92	2928.75	518.92	68.11	7.61	0.008

Chapter 8

Table 8.1

Analysis of variance – Autobiographical Memory Test (Response latencies by group).

Source	SS	D.F.	MS	F	Sig.
Group	2691.69	2	1345.85	46.90	0.0001
Error (group)	1980.03	69	28.70		
Latency	76.07	2	38.03	2.58	0.07
Group x Latency	108.12	4	27.03	1.83	0.12
Error (latency)	2032.99	138	14.73		

Tables 8.2 – 8.4

Multivariate analysis of variance – Memory type by group.

Wilk's lambda	F value	D.F.	Error D.F.	Sig.
0.43	11.41	6	134	0.0001

Analysis of variance – Specific memories by type of cue.

Source	SS	D.F.	MS	F	Sig.
Group	155.81	2	77.90	39.03	0.0001
Error (group)	137.72	69	1.99		
Valance	8.50	2	4.25	3.64	0.029
Group x Valance	5.63	4	1.40	1.20	0.31
Error (valance)	161.19	138	1.16		

Analysis of variance – Categoric memories by cue.

Source	SS	D.F.	MS	F	Sig.
Group	125.62	2	62.81	24.25	0.0001
Error (group)	178.70	69	2.59		
Valance	4.14	2	2.07	1.51	0.22
Group x Valance	2.93	4	0.73	0.53	0.70
Error (valance)	188.91	138	1.36		

Analysis of variance – Extended memories by cue.

Source	SS	D.F.	MS	F	Sig.
Group	0.19	2	9.72	0.60	0.550
Error (group)	11.13	69	0.16		
Valance	0.19	2	9.72	0.55	0.57
Group x Valance	0.44	4	0.11	0.63	0.63
Error (valance)	24.02	138	0.17		

Table 8.5

Analysis of variance – Omissions by Group.

Source	D.F.	SS	MS	F	F prob.
Between	2	18.86	9.43	2.26	0.11
Within	69	287.08	4.16		
Total	71	305.94			

Multivariate analysis of covariance (Effects of mood covaried out)

Wilk's lambda	F value	D.F.	Error D.F.	Sig.
0.64	5.36	6	132	0.0001

Univariate analysis of variance (2, 68 D.F.) (Effects of mood covaried out)

Variable	SS	Error SS	MS	Error MS	F	Sig.
Specific	188.63	413.11	94.31	6.07	15.52	0.0001
Categoric	183.61	533.06	91.80	7.83	11.71	0.0001
Extended	0.38	32.42	0.19	0.47	0.40	0.67

Table 8.6

Multivariate analysis of variance – MEPS scores by Group.

Wilk's lambda	F value	D.F.	Error D.F.	Sig.
0.36	22.30	4	136	0.0001

Univariate anovas (2,69 D.F.) - MEPS scores by Group.

Variable	SS	Error SS	MS	Error MS	F	Sig.
Means	483.58	1146.41	241.79	16.61	14.55	0.0001
Effective-ness	1524.19	1288.79	762.09	18.67	40.80	0.0001

Multivariate analysis of covariance – MEPS (Effects of mood covaried out).

Wilk's lambda	F value	D.F.	Error D.F.	Sig.
0.53	12.29	4	134	0.0001

Univariate analysis of covariance (2,68 D.F.) – MEPS – (Effects of mood covaried out).

Variable	SS	Error SS	MS	Error MS	F	Sig.
Means	79.73	1103.47	39.86	16.22	2.45	0.09
Effectiveness	499.60	1280.69	249.80	18.83	13.26	0.0001

Chapter 9

Table 9.1

Multivariate analysis of variance – Depression, Hopelessness and suicidal ideation – Group by Time comparison.

Effect	Wilk's lambda	F value	D.F.	Error D.F.	Sig.
Group	0.54	24.67	3	90	0.0001
Time	0.75	9.76	3	90	0.0001
Group x Time	0.96	1.18	3	90	0.318

Analysis of variance – Time 2 – Depression.

Source	D.F.	SS	MS	F	F prob.
Between	1	652.68	652.68	6.47	0.01
Within	46	4635.29	100.76		
Total	47	5287.97			

Analysis of variance – Time 2 – Hopelessness.

Source	D.F.	SS	MS	F	F prob.
Between	1	48.00	48.00	1.53	0.22
Within	46	1440.66	31.31		
Total	47	1488.66			

Analysis of variance – Time 2 – Suicidal Ideation.

Source	D.F.	SS	MS	F	F prob.
Between	1	247.52	247.52	26.58	0.0001
Within	46	428.29	9.31		
Total	47	675.81			

Multivariate analysis of covariance – Profile of Mood State scores (Effects of depression and suicidal ideation scores covaried out).

Effect	Wilk's lambda	F	D.F.	Error D.F.	Sig.
Group	0.91	1.32	6	85	0.25
Time	0.93	0.93	6	85	0.47
Group x Time	0.94	0.80	6	85	0.56

Multivariate analysis of covariance – SPSI-R scores (Effects of depression and suicidal ideation covaried out).

Effect	Wilk's lambda	F	D.F.	Error D.F.	Sig.
Group	0.78	2.23	10	81	0.024
Time	0.93	0.57	10	81	0.83
Group x Time	0.93	0.54	10	81	0.85

Multivariate analysis of covariance – Type of memory (Effects of depression and suicidal ideation covaried out).

Effect	Wilk's lambda	F	D.F.	Error D.F.	Sig.
Group	0.90	3.07	3	88	0.032
Time	0.99	0.13	3	88	0.94
Group x Time	0.98	0.48	3	88	0.69

Multivariate analysis of covariance – MEPS (Effect of depression and suicidal ideation covaried out).

Effect	Wilk's lambda	F	D.F.	Error D.F.	Sig.
Group	0.90	4.76	2	89	0.01
Time	0.98	0.45	2	89	0.63
Group x Time	0.94	2.45	2	89	0.09

Analysis of variance – Profile of Mood States (Time 2).

Anger

Source	D.F.	SS	MS	F	F prob.
Between	1	22.68	22.68	1.59	0.21
Within	46	656.29	14.26		
Total	47	678.97			

Confusion

Source	D.F.	SS	MS	F	F prob.
Between	1	17.52	17.52	1.01	0.31
Within	46	793.79	17.25		
Total	47	811.31			

Depression

Source	D.F.	SS	MS	F	F prob.
Between	1	44.08	44.08	1.82	0.18
Within	46	1111.16	24.15		
Total	47	1155.25			

Fatigue

Source	D.F.	SS	MS	F	F prob.
Between	1	2.08	2.08	0.09	0.75
Within	46	969.91	21.08		
Total	47	972.00			

Tension/Anxiety

Source	D.F.	SS	MS	F	F prob.
Between	1	46.02	46.02	2.41	0.12
Within	46	875.29	19.02		
Total	47	921.31			

Vigour

Source	D.F.	SS	MS	F	F prob.
Between	1	9.18	9.18	0.62	0.43
Within	46	672.12	14.61		
Total	47	681.31			

Analysis of variance – SPSI-R (Problem solving subscales)

Avoidance style

Source	D.F.	SS	MS	F	F prob.
Between	1	188.02	188.02	4.43	0.04
Within	46	1951.95	42.43		
Total	47	2139.97			

Impulsivity/carelessness style

Source	D.F.	SS	MS	F	F prob.
Between	1	475.02	475.02	7.66	0.008
Within	46	2848.95	61.93		
Total	47	3323.97			

Negative problem orientation

Source	D.F.	SS	MS	F	F prob.
Between	1	120.33	120.33	1.13	0.29
Within	46	4865.58	105.77		
Total	47	4985.91			

Positive problem orientation

Source	D.F.	SS	MS	F	F prob.
Between	1	67.68	67.68	2.40	0.12
Within	46	1297.29	28.20		
Total	47	1364.97			

Rational problem solving

Source	D.F.	SS	MS	F	F prob.
Between	1	1140.75	1140.75	3.64	0.06
Within	46	14415.16	313.37		
Total	47	15555.91			

Decision making

Source	D.F.	SS	MS	F	F prob.
Between	1	70.08	70.08	2.76	0.10
Within	46	1164.58	25.31		
Total	47	1234.66			

Generation of alternatives

Source	D.F.	SS	MS	F	F prob.
Between	1	46.02	46.02	1.90	0.17
Within	46	1112.45	24.18		
Total	47	1158.47			

Problem definition and formulation

Source	D.F.	SS	MS	F	F prob.
Between	1	111.02	111.02	4.44	0.04
Within	46	1148.29	24.96		
Total	47	1259.31			

Solution implementation and verification

Source	D.F.	SS	MS	F	F prob.
Between	1	65.33	65.33	3.10	0.08
Within	46	966.58	21.01		
Total	47	1031.91			

Global problem solving score

Source	D.F.	SS	MS	F	F prob.
Between	1	8008.33	8008.33	5.90	0.01
Within	46	62345.58	1355.33		
Total	47	70353.91			

Analysis of variance – Autobiographical memory test - omissions.

Source	D.F.	SS	MS	F	F prob.
Between	1	0.08	0.08	0.01	0.90
Within	46	259.58	5.64		
Total	47	259.66			

Analysis of variance – Autobiographical memory test - latency.

Effect	Wilk's lambda	F value	D.F.	Error D.F.	Sig.
Group	0.92	4.01	1	46	0.05
Latency	0.94	1.31	2	45	0.28
Group x Latency	0.97	0.56	2	45	0.58

Analysis of variance – Autobiographical memory test – specific memories.

Effect	Wilk's lambda	F value	D.F.	Error D.F.	Sig.
Group	0.91	4.99	1	46	0.03
Valence	0.90	2.45	2	45	0.09
Group x Valence	0.97	0.61	2	45	0.55

Table 9.4

Univariate anovas. (Cue Valence)

Variable	SS	Error SS	MS	Error MS	F	Sig.
Neutral	8.33	73.66	8.33	1.60	5.20	0.027
Positive	2.08	68.58	2.08	1.49	1.39	0.24
Negative	2.08	68.58	2.08	1.49	1.39	0.24

Analysis of variance – Autobiographical memory test - categoric memories

Effect	Wilk's lambda	F value	D.F.	Error D.F.	Sig.
Group	0.93	3.53	1	46	0.06
Valence	0.96	0.72	2	45	0.49
Group x Valence	0.91	2.15	2	45	0.13

Analysis of variance – Autobiographical memory test – extended memories

Effect	Wilk's lambda	F value	D.F.	Error D.F.	Sig.
Group	0.99	0.05	1	46	0.83
Valence	0.99	0.14	2	45	0.87
Group x Valence	0.99	0.10	2	45	0.90

Table 9.5

Analysis of variance – MEPS means and effectiveness scores.

Source	D.F.	SS	MS	F	F prob.
Between	1	285.18	285.18	23.03	.00001
Within	46	569.62	12.38		
Total	47	854.81			
Between	1	172.52	172.52	8.89	0.005
Within	46	891.95	19.39		
Total	47	1064.47			

APPENDIX C

Ethical approval,

Consent form

&

Data collection tools

Farmer Stress Survey

This survey is designed to gather information on issues of concern to farmers. Please complete the details on this page by ticking the appropriate answer. This survey is in the strictest confidence.

Age:

16 - 24 ☐ 45 - 64 ☐
25 - 44 ☐ 65 + ☐

Sex:

Male ☐
Female ☐

Marital Status:

single ☐ separated ☐
married ☐ divorced ☐
co-habiting ☐ widowed ☐

Is your spouse/partner employed off the farm: Yes ☐ No ☐

In what area of Wales do you farm i.e. nearest town _____

Type of farm:

Mainly sheep ☐ Mainly arable ☐ Mixed arable and livestock ☐ Pigs and Poultry ☐
Mainly dairy ☐ Mixed livestock ☐ Other ☐

Below is a list of issues, which may be of concern to you. Please mark them according to the level of stress each causes. Use the rating scale below:

1 - no stress 2 - mild stress 3 - moderate stress 4 - severe stress 5 - extreme stress

	1	2	3	4	5
Making major purchases for the farm	☐	☐	☐	☐	☐
Filling in government forms	☐	☐	☐	☐	☐
Not seeing enough people	☐	☐	☐	☐	☐
Machinery breakdown at busy times	☐	☐	☐	☐	☐
Significant production loss due to disease/pests/weeds	☐	☐	☐	☐	☐
Too much to do and too little time to do it	☐	☐	☐	☐	☐
Adjusting to new government regulations and policies	☐	☐	☐	☐	☐
Long hours of work	☐	☐	☐	☐	☐
Not enough ready cash	☐	☐	☐	☐	☐
Risk of farming related injury	☐	☐	☐	☐	☐
Not being free to make my own decisions	☐	☐	☐	☐	☐

	1	2	3	4	5
Personal illness during busy times	☐	☐	☐	☐	☐
Feeling isolated on the farm	☐	☐	☐	☐	☐
Unsuitable weather	☐	☐	☐	☐	☐
Worrying about market conditions	☐	☐	☐	☐	☐
Worrying about keeping the farm in the family	☐	☐	☐	☐	☐
Hazardous materials on the farm (dust/chemicals/powders)	☐	☐	☐	☐	☐
Problems of balancing work and family duties	☐	☐	☐	☐	☐
Keeping up with new technology and procedures	☐	☐	☐	☐	☐
Deciding when to sell produce	☐	☐	☐	☐	☐
Complying with environmental regulations	☐	☐	☐	☐	☐
Lack of close neighbours	☐	☐	☐	☐	☐
Worrying about continued viability of farming	☐	☐	☐	☐	☐
Taking few holidays away from the farm	☐	☐	☐	☐	☐
Financing my retirement	☐	☐	☐	☐	☐
Having to travel long distances for services, shopping and healthcare	☐	☐	☐	☐	☐
Changes in CAP	☐	☐	☐	☐	☐
Unplanned interruptions	☐	☐	☐	☐	☐
Having no help on the farm	☐	☐	☐	☐	☐
Worrying about owing money	☐	☐	☐	☐	☐

Do you have any other comments you wish to make?

.....

.....

.....

.....

Thank you for taking the time to fill in our questionnaire.

Arolwg Straen Ffermwyr

Lluniwyd yr arolwg hwn i gasglu gwybodaeth am faterion sy'n berthnasol i ffermwyr. Byddwch gystal a chwblhau'r manylion ar y dudalen hon drwy dicio'r ateb priodol. Mae'r arolwg hwn yn hollol gyfrinachol.

Oedran:

16 - 24 ☐ 45 - 64 ☐
25 - 44 ☐ 65 + ☐

Rhyw:

Gwryw ☐
Benyw ☐

Statws Priodasol:

Sengl ☐ Wedi gwahanu ☐
Priod ☐ Wedi ysgaru ☐
Cyd-fyw ☐ Gweddw ☐

Ydy eich priod/partner yn cael cyflog oddi ar y fferm? Ydy ☐ Na ☐

Ym mha ran o Gymru mae eich fferm? h.y. y dref agosaf _____

Y math o fferm:

Defaid yn bennaf ☐ Tir âr yn bennaf ☐ Tir âr cymysg ☐ Arall ☐
Llaeth yn bennaf ☐ Stoc cymysg ☐ Ieir a moch ☐

Mae rhestr o faterion a all fod o ddiddordeb ichi isod. Byddwch gystal â'u marcio yn ôl lefel y straen mae pob un yn ei achosi ichi. Defnyddiwch y raddfa raddio isod:

1 - dim straen **2** - peth straen **3** - straen cymedrol **4** - tipyn o straen **5** - straen eithafol

	1	2	3	4	5
Pwrcasu pethau mawr i'r fferm	☐	☐	☐	☐	☐
Llenwi ffurflenni'r llywodraeth	☐	☐	☐	☐	☐
Ddim yn gweld digon o bobl	☐	☐	☐	☐	☐
Peiriannau'n torri ar adeg brysur	☐	☐	☐	☐	☐
Colli llawer o gynnyrch o achos haint/pla/chwyn	☐	☐	☐	☐	☐
Gormod i'w wneud ac amser yn brin	☐	☐	☐	☐	☐
Addasu i reoliadau a pholisiau newydd y llywodraeth	☐	☐	☐	☐	☐
Oriau gwaith hir	☐	☐	☐	☐	☐
Prinder arian parod	☐	☐	☐	☐	☐
Risg o niwed ar y fferm	☐	☐	☐	☐	☐
Ddim yn rhydd i benderfynu pethau	☐	☐	☐	☐	☐

	1	2	3	4	5
Afiechyd personol ar adeg brysur	☐	☐	☐	☐	☐
Teimlo'n unig ar y fferm	☐	☐	☐	☐	☐
Tywydd anffafriol	☐	☐	☐	☐	☐
Poeni am amgylchiadau'r farchnad	☐	☐	☐	☐	☐
Poeni am gadw'r fferm yn y teulu	☐	☐	☐	☐	☐
Deunydd peryglus ar y fferm (llwch/cemegion/powdrau)	☐	☐	☐	☐	☐
Problemau cydbwyso gwaith a dyletswyddau teulu	☐	☐	☐	☐	☐
Cadw gyda thechnoleg a threfn newydd	☐	☐	☐	☐	☐
Penderfynu pryd i werthu cynnyrch	☐	☐	☐	☐	☐
Cydymffurfio â rheoliadau amgylcheddol	☐	☐	☐	☐	☐
Diffyg cymdogion agos	☐	☐	☐	☐	☐
Poeni am fodolaeth ffermio yn y dyfodol	☐	☐	☐	☐	☐
Cymryd ychydig o wyliau ymaith o'r fferm	☐	☐	☐	☐	☐
Ariannu fy ymddeoliad	☐	☐	☐	☐	☐
Gorfod teithio'n bell am wasanaethau, siopa a gofal iechyd	☐	☐	☐	☐	☐
Newidiadau yn CAP	☐	☐	☐	☐	☐
Ymyraethau heb eu cynllunio	☐	☐	☐	☐	☐
Ffermio heb unrhyw help	☐	☐	☐	☐	☐
Pryderu am ddyledion	☐	☐	☐	☐	☐

Ysgrifennwch unrhyw sylwadau eraill, os mynnwch, ar y llinellau isod:

.....

.....

.....

.....

Diolch ichi am roi o'ch amser i lenwi ein holiadur.

Prifysgol Cymru · University of Wales
BANGOR

Adran Seicoleg
Coleg Prifysgol Gogledd Cymru
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April 27, 1994

Mr. L.R.Pollock
Clinical Psychologist
Powys Health Care
NHS Trust
Clinical Psychology
Park Street Clinic
Newtown
Powys SY16 1EG

Dear Colleague,

Your research proposal (referred to on the attached sheet) has been reviewed by the departmental ethics committee and they are satisfied that the research proposed accords with the relevant ethical guidelines provided that the following two observations are incorporated into the consent form.

1. The subject should receive a copy of the consent form.

2. The form should include a third party name and telephone number (such as that of the ethics committee) in case of any doubts/complaints concerning the conduct of the researcher.

If you wish to make any substantial modifications to the research project please inform the committee in writing before proceeding. Please inform the committee as soon as possible if research participants experience any unanticipated harm as a result of participating in your research.

Good luck with your research.

Isabel Hargreaves
Secretary of the Departmental Ethics Committee

c.c. Professor J.Mark Williams

Athro a Phennaeth yr Adran
Professor and Head of Department
C Fergus Lowe, PhD, FBPsS

POSITIVE HEALTH
POWYS HEALTH

POWYS HEALTH
IECHYD POWYS

Your ref./Eich cyf.

Our ref./Ein cyf.
JM/ETH118

Date/Dyddiad
16th May 1994

L R Pollock
Chartered Clinical Psychologist/Research Fellow
Clinical Psychology
Park Street Clinic
Newtown
Powys

Dear Mr Pollock

Research Proposal: The Assessment of Specific Psychological Factors Affecting Problem Solving in those who Parasuicide

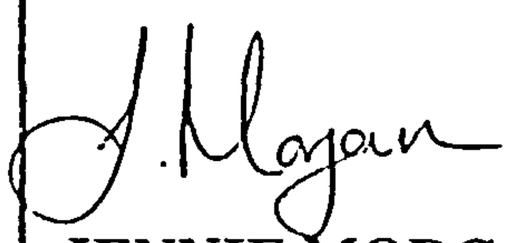
Further to your letter and enclosures of 11th April 1994 I am now pleased to confirm that ethical approval has been given for the above project. Formal approval will be recorded at the next meeting of the Committee on 15th June.

'May I take this opportunity to remind you that the Committee will require notification of and changes you make to your proposal, six-monthly progress reports and a copy of the final report.

Wishing you success with your research.

King regards,

Yours sincerely



JENNIE MORGAN
Secretary to Powys Local Research Ethical Committee
[Ext. 4701]

Department of Public Health Medicine, "The Laurels", Bronllys, Brecon, Powys, LD3 0HS.
tel. (0874) 711661. fax. no. (0874) 711978.

Adran Meddygaeth Iechyd Y Cyhoedd, "Y Llawrys", Bronllys, Aberhonddu, Powys, LD3 0HS.
ffôn (0874) 711661. fax. no. (0874) 711978.

POWYS HEALTHCARE NHS TRUST

CONSENT TO PARTICIPATE IN A CLINICAL STUDY OF PSYCHOLOGICAL FACTORS AFFECTING PROBLEM-SOLVING

I, ...

of (address) .....

hereby fully and freely consent to participate in a project about difficulties affecting people who have tried to harm/kill themselves.

I understand and acknowledge that the assessment is designed to add to psychological knowledge. I note that I may withdraw my consent at any stage in the investigation without any effect on my treatment and I acknowledge that the purpose of the research and the nature and purpose of the assessments have been explained to me by

Mr L Pollock

and that I have had an opportunity to discuss these matters with him.
If I have any further queries I can contact him at 0686-628540, extension 5024, or Dr I Hargreaves at the University of Wales, Bangor - 0248-382205.

I also understand that this information will be kept confidential and used anonymously in the research project.

Signed .....

Witness to signature of patient/volunteer and to fact that he/she has read the document and freely given his/her consent.

Signed .....

I confirm that I have explained to the patient/volunteer the nature and effect of these procedures.

Signed .....

Date .....

S.S.I.

Name _____ Date _____

( ) 1. Present Attitude Toward Living
- 0. Wants to live
- 1. Unsure; doesn't care
- 2. Wants to die

( ) 2. Reasons for Living
- 0. Yes
- 1. Components of 0. and 2.
- 2. No

( ) 3. Reaction to Failure of Attempt
- 0. Not disappointed
- 1. Ambivalent; unsure
- 2. Disappointed

( ) 4. Feelings About Others' Reactions to the Attempt
- 0. Pleased
- 1. Has not thought about it; doesn't care
- 2. Disappointed

( ) 5. Attitude Towards the Future
- 0. Optimistic
- 1. Unsure; ambivalent
- 2. Pessimistic

( ) 6. Desire for Help with Problems
- 0. Wants help
- 1. Unsure; ambivalent
- 2. Does not want help
- *8. Does not apply

( ) 7. Patient's Attitude Toward his Problems
- 0. Feels that problems can be overcome
- 1. Is unsure if problems can be overcome
- 2. Feels that problems cannot be overcome
- *8. Does not apply

( ) 8. Current Fantasies About Dying
- 0. None
- 1. Occasional
- 2. Persistent

( ) 9. Current Suicidal Ideation
- 0. None
- 1. Occasional
- 2. Persistent

( ) 10. Anticipation/Expectation of Future Attempt
- 0. No
- 1. Unsure
- 2. Yes

( ) 11. Planning for Future Attempt
- 0. No plan
- 1. Plan considered but is not definite; details not worked out
- 2. Definite plan

( ) 12. Expectancy of Implementing Plan
- 0. No plan exists; or would not implement
- 1. Unsure whether plan will be implemented
- 2a. Plan will be definitely implemented as soon as possible

( ) 13. Feelings of Being Cared for
- 0. Someone would care if attempt were successful
- 1. Unsure if anyone would care
- 2. No one would care if attempt were successful

*NOTE: "8's" are <u>not</u> counted when calculating the total score.

BECK INVENTORY

Name ..... Date.....

On this questionnaire are groups of statements. Please read each group of statements carefully. Then pick out the one statement in each group which best describes the way you have been feeling the PAST WEEK INCLUDING TODAY: Circle the number beside the statement you picked. If several statements in the group seem to apply equally well, circle each one. Be sure to read all the statements in each group before making your choice.

1. 0 I do not feel sad.
   1 I feel sad.
   2 I am sad all the time and I can't snap out of it.
   3 I am so sad or unhappy that I can't stand it.

2. 0 I am not particularly discouraged about the future.
   1 I feel discouraged about the future.
   2 I feel I have nothing to look forward to.
   3 I feel that the future is hopeless and that things cannot improve.

3. 0 I do not feel like a failure.
   1 I feel I have failed more than the average person.
   2 As I look back on my life, all I can see is a lot of failures.
   3 I feel I am a complete failure as a person.

4. 0 I get as much satisfaction out of things as I used to.
   1 I don't enjoy things the way I used to.
   2 I don't get real satisfaction out of anything anymore.
   3 I am dissatisfied or bored with everything.

5. 0 I don't feel particularly guilty.
   1 I feel guilty a good part of the time.
   2 I feel quite guilty most of the time.
   3 I feel guilty all of the time.

6. 0 I don't feel I am being punished.
   1 I feel I may be punished.
   2 I expect to be punished.
   3 I feel I am being punished.

7. 0 I don't feel disappointed in myself.
   1 I am disappointed in myself.
   2 I am disgusted with myself.
   3 I hate myself.

8. 0 I don't feel I am any worse than anybody else.
   1 I am critical of myself for my weaknesses or mistakes.
   2 I blame myself all the time for my faults.
   3 I blame myself for everything bad that happens.

9. 0 I don't have any thoughts of killing myself.
   1 I have thoughts of killing myself, but I would not carry them out.
   2 I would like to kill myself.
   3 I would kill myself if I had the chance.

10. 0 I don't cry any more than usual.
    1 I cry more now than I used to.
    2 I cry all the time now.
    3 I used to be able to cry, but now I can't cry even though I want to.

11. 0 I am no more irritated now than I ever am.
    1 I get annoyed or irritated more easily than I used to.
    2 I feel irritated all the time now.
    3 I don't get irritated at all by the things that used to irritate me.

12. 0 I have not lost interest in other people.
    1 I am less interested in other people than I used to be.
    2 I have lost most of my interest in other people.
    3 I have lost all of my interest in other people.

13. 0 I make decisions about as well as I ever could.
    1 I put off making decisions more than I used to.
    2 I have greater difficulty in making decisions than before.
    3 I can't make decisions at all anymore.

14. 0 I don't feel I look any worse than I used to.
    1 I am worried that I am looking old or unattractive.
    2 I feel that there are permanent changes in my appearance that make me look unattractive.
    3 I believe that I look ugly.

15. 0 I can work about as well as before.
    1 It takes an extra effort to get started at doing something.
    2 I have to push myself very hard to do anything.
    3 I can't do any work at all.

16. 0 I can sleep as well as usual.
    1 I don't sleep as well as I used to.
    2 I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
    3 I wake up several hours earlier than I used to and cannot get back to sleep.

17. 0 I don't get more tired than usual.
    1 I get tired more easily than I used to.
    2 I get tired from doing almost anything.
    3 I am too tired to do anything.

18. 0 My appetite is no worse than usual.
    1 My appetite is not as good as it used to be.
    2 My appetite is much worse now.
    3 I have no appetite at all anymore.

19. 0 I haven't lost much weight, if any, lately.
    1 I have lost more than 5 pounds.
    2 I have lost more than 10 pounds.
    3 I have lost more than 15 pounds.

    I am purposely trying to lose weight by eating less.
    Yes ___ No ___

20. 0 I am no more worried about my health than usual.
    1 I am worried about physical problems such as aches and pains: or upset stomach, or constipation.
    2 I am very worried about physical problems and it's hard to think of much else.
    3 I am so worried about my physical problems that I cannot think about anything else.

21. 0 I have not noticed any recent change in my interest in sex.
    1 I am less interested in sex than I used to be.
    2 I am much less interested in sex now.
    3 I have lost interest in sex completely.

B.H.S.

Here are some statements about the way you see the future. Read each statement carefully. If the statement describes how you think about the future, circle the word true at the side of the questionnaire. If it does not describe how you think about the future, circle the word false at the side of the questionnaire.

1.	I look forward to the future with hope and enthusiasm.	True	False
2.	I might as well give up because I can't make things better for myself.	True	False
3.	When things are going badly I am helped by knowing that they can't stay that way forever.	True	False
4.	I can't imagine what my life would be like in 10 years.	True	False
5.	I have enough time to accomplish the things I most want to do.	True	False
6.	In the future I expect to succeed in what concerns me most.	True	False
7.	My future seems dark to me.	True	False
8.	I expect to get more of the good things in life than the average person.	True	False
9	I just don't get the breaks, and there's no reason to believe I will in the future.	True	False
10.	My past experiences have prepared me well for my future.	True	False
11.	All I can see ahead of me is unpleasantness rather than pleasantness.	True	False
12.	I don't expect to get what I really want.	True	False
13.	When I look ahead at the future I expect that I will be happier than I am now.	True	False
14.	Things just don't work out the way I want them to.	True	False
15.	I have great faith in the future.	True	False
16.	I never get what I want so it is foolish to want anything.	True	False
17.	It is very unlikely that I will get any real satisfaction in the future.	True	False
18.	The future seems vague and uncertain to me.	True	False
19.	I can look forward to more good times than bad times.	True	False
20.	There's no use in really trying to get something I want because I probably won't get it.	True	False

About your mood

Indicate how you are feeling right now by circling a number next to each word.
0 = Not at all 1 = a little 2 = moderately 3 = quite a bit 4 = extremely

Tense	0 1 2 3 4	Grouchy	0 1 2 3 4	Sluggish	0 1 2 3 4	Miserable	0 1 2 3 4
Angry	0 1 2 3 4	Fatigued	0 1 2 3 4	Discouraged	0 1 2 3 4	Vigorous	0 1 2 3 4
Worn-out	0 1 2 3 4	Sad	0 1 2 3 4	Cheerful	0 1 2 3 4	Bewildered	0 1 2 3 4
Unhappy	0 1 2 3 4	Active	0 1 2 3 4	Forgetful	0 1 2 3 4	Nervous	0 1 2 3 4
Lively	0 1 2 3 4	Confused	0 1 2 3 4	On edge	0 1 2 3 4	Bitter	0 1 2 3 4
Unable to concentrate	0 1 2 3 4	Shaky	0 1 2 3 4	Annoyed	0 1 2 3 4	Weary	0 1 2 3 4

ORIGINAL INSTRUCTION OF THE MEPS
(PLATT and SPIVACK, 1975a)

"In this procedure we are interested in your imagination. You are to make up some stories. For each story you will be given the beginning of the story and how the story ends. Your job is to make up a story that connects the beginning that is given to you with the ending given to you. In other words, you will make up the middle of the story."

DESCRIPTION OF ORIGINAL MEPS-SITUATIONS
(PLATT and SPIVACK, 1975a)

2. H. loved his girlfriend very much, but they had many arguments. One day she left him. H. wanted things to be better. The story ends with everything fine between him and his girlfriend. You begin the story with his girlfriend leaving him after an argument.

3. Mr P. came home after shopping and found that he had lost his watch. He was very upset about it. The story ends with Mr P. finding his watch and feeling good about it. You begin the story where Mr P. found that he had lost his watch.

4. Mr C. had just moved in that day and didn't know anyone. Mr C. wanted to have friends in the neighbourhood. The story ends with Mr C. having many good friends and feeling at home in the neighbourhood. You begin the story with Mr C. in his room immediately after arriving in the neighbourhood.

6. On day Al saw a beautiful girl he had never seen before while eating in a restaurant. He was immediately attracted to her. The story ends when they get married. You begin when Al first notices the girl in the restaurant.

9. Joe is having trouble getting along with the foreman on his job. Joe is very unhappy about this. The story ends with Joe's foreman liking him. You begin the story where Joe isn't getting along with his foreman.

ORIGINAL INSTRUCTION OF THE MEPS
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"In this procedure we are interested in your imagination. You are to make up some stories. For each story you will be given the beginning of the story and how the story ends. Your job is to make up a story that connects the beginning that is given to you with the ending given to you. In other words, you will make up the middle of the story."

DESCRIPTION OF ORIGINAL MEPS-SITUATIONS
(PLATT and SPIVACK, 1975a)

2. H. loved her boyfriend very much, but they had many arguments. One day he left her. H. wanted things to be better. The story ends with everything fine between her and her boyfriend. You begin the story with her boyfriend leaving her after an argument.

3. Mrs P. came home after shopping and found that she had lost her watch. She was very upset about it. The story ends with Mrs P. finding her watch and feeling good about it. You begin the story where Mrs P. found that she had lost her watch.

4. Mrs C. had just moved in that day and didn't know anyone. Mrs C. wanted to have friends in the neighbourhood. The story ends with Mrs C. having many good friends and feeling at home in the neighbourhood. You begin the story with Mrs C. in her room immediately after arriving in the neighbourhood.

6. One day Ann saw a beautiful man she had never seen before while eating in a restaurant. She was immediately attracted to him. The story ends when they get married. You begin when Ann first notices the man in the restaurant.

9. Jane is having trouble getting along with the foreman on her job. Jane is very unhappy about this. The story ends with Jane's foreman liking her. You begin the story where Jane isn't getting along with her foreman.

AUTOBIOGRAPHICAL MEMORY TEST

Instructions

I am interested in your memory for events that have happened in your life. I am going to read to you some words. For each word, I want you to think of an event that happened to you which the word reminds you of. The event could have happened recently (yesterday, last week) or a long time ago. It might be an important event, or a trivial event.

Just one more thing : the memory you recall should be of a specific event. So if I said the word "good" - it would not be O.K. to say "I always enjoy a good party", because that does not mention a specific event. But it would be O.K. to say "I had a good time at Jane's party" (because that is a specific event).

Let us try some words for practice : *enjoy*, *friendly*, *bold*

Time allowed : 30 sec. per word

Postive	Negative	Neutral
happy	guilty	grass
relieved	hopeless	gigantic
proud	failure	absence
eager	grave	wildlife
glorious	ugly	bread
sunny	worse	search
devoted	grief	pottery
hopeful	rejected	ladder
amazed	helpless	occasion
pleased	blame	moderate
calm	awful	nursery
bright	mistake	shallow

AUTOBIOGRAPHICAL MEMORY TEST RECORDING SHEET

Patient Name .....

Cue	Latency	Response	Time since events <1wk <1mth <3mths <6mths <1yr >1yr
happy	....		Time since event:
guilty	....		Time since event:
grass	....		Time since event:
relieved	....		Time since event:
hopeless	....		Time since event:
gigantic	....		Time since event:
proud	....		Time since event:
failure	....		Time since event:
absence	....		Time since event:

AUTOBIOGRAPHICAL MEMORY TEST RECORDING SHEET

Patient Name .....

Cue	Latency	Response	Time since events <1wk <1mth <3mths <6mths <1yr >1yr
eager	....		Time since event:
grave	....		Time since event:
wildlife	....		Time since event:
glorious	....		Time since event:
ugly	....		Time since event:
bread	....		Time since event:
sunny	....		Time since event:
worse	....		Time since event:
search	....		Time since event:

AUTOBIOGRAPHICAL MEMORY TEST RECORDING SHEET

Patient Name .....

Cue	Latency	Response	Time since events <1wk <1mth <3mths <6mths <1yr >1yr
Devoted	.....		Time since event:
Grief	.....		Time since event:
Pottery	.....		Time since event:
Hopeful	.....		Time since event:
Rejected	.....		Time since event:
Ladder	.....		Time since event:
Amazed	.....		Time since event:
Helpless	.....		Time since event:
Occasion	.....		Time since event:

AUTOBIOGRAPHICAL MEMORY TEST RECORDING SHEET

Patient Name .....

Cue	Latency	Response	Time since events <1wk <1mth <3mths <6mths <1yr >1yr
Pleased	.....		Time since event:
Blame	.....		Time since event:
Moderate	.....		Time since event:
Calm	.....		Time since event:
Awful	.....		Time since event:
Nursery	.....		Time since event:
Bright	.....		Time since event:
Mistake	.....		Time since event:
Shallow	.....		Time since event:

SPSI-R

Name or I.D. Number: _____

Age: _____ Sex: M _____ F _____ Today's Date: _____

Instructions

Below are a series of statements that describe the way some people might think, feel, and behave when they are faced with problems in everyday living. We are talking about important problems that could have a significant effect on your well-being or the well-being of your loved ones, such as a health-related problem, a dispute with a family member, or a problem with your performance at work or in school. Please read each statement and carefully select one of the numbers below which indicates the extent to which the statement is true of you. Consider yourself as you typically think, feel, and behave when you are faced with problems in living these days and place the appropriate number in the parentheses ( ) next to the number of the statement.

0 = Not at all true of me
1 = Slightly true of me
2 = Moderately true of me
3 = Very true of me
4 = Extremely true of me

1. ( ) I spend too much time worrying about my problems instead of trying to solve them.

2. ( ) I usually feel threatened and afraid when I have an important problem to solve.

3. ( ) When making decisions, I do not usually evaluate and compare the different alternatives carefully enough.

4. ( ) When I am attempting to decide what is the best solution to a problem, I often fail to take into account the effect that each alternative is likely to have on the well-being of other people.

5. ( ) When I am trying to find a solution to a problem, I often think of a number of possible solutions and then try to combine different solutions to make a better solution.

6. ( ) I usually feel nervous and unsure of myself when I have an important decision to make.

7. ( ) When my first efforts to solve a problem fail, I usually think that if I persist and do not give up too easily, I will be able to find a good solution eventually.

0 = Not at all true of me
1 = Slightly true of me
2 = Moderately true of me
3 = Very true of me
4 = Extremely true of me

8. ( ) When I am attempting to solve a problem, I usually act on the first idea that comes to mind.

9. ( ) When I have a problem, I usually believe that there is a solution for it.

10. ( ) I usually wait to see if a problem will resolve itself first, before trying to solve it myself.

11. ( ) When I have a problem to solve, one of the things I do is analyse the situation and try to identify what obstacles are keeping me from getting what I want.

12. ( ) When my first efforts to solve a problem fail, I get very angry and frustrated.

13. ( ) When I am faced with a difficult problem, I often doubt that I will be able to solve it on my own no matter how hard I try.

14. ( ) When a problem occurs in my life, I usually put off trying to solve it for as long as possible.

15. ( ) After carrying out a solution to a problem, I do not usually take the time to evaluate all of the results carefully.

16. ( ) I usually go out of my way to avoid having to deal with problems in my life.

17. ( ) Difficult problems make me very upset.

18. ( ) When I am attempting to decide what is the best solution to a problem, I try to predict the overall outcome of carrying out each alternative course of action.

19. ( ) I usually confront my problems "head on", instead of trying to avoid them.

20. ( ) When I am attempting to solve a problem, I often try to be creative and think of original or unconventional solutions.

21. ( ) When I am attempting to solve a problem, I usually go with the first good idea that comes to mind.

22. ( ) When I attempt to think of possible solutions to a problem, I cannot usually come up with many alternatives.

0 = Not at all true of me
1 = Slightly true of me
2 = Moderately true of me
3 = Very true of me
4 = Extremely true of me

23. ( ) I usually prefer to avoid problems instead of confronting them and being forced to deal with them.

24. ( ) When making decisions, I usually consider not only the immediate consequences of each alternative course of action, but also the long-term consequences.

25. ( ) After carrying out a solution to a problem, I usually try to analyse what went right and what went wrong.

26. ( ) After carrying out a solution to a problem, I usually examine my feelings and evaluate how much they have changed for the better.

27. ( ) Before carrying out a solution to a problem in the actual problematic situation, I often practice or rehearse the solution in order to increase my chances of success.

28. ( ) When I am faced with a difficult problem, I usually believe that I will be able to solve the problem on my own if I try hard enough.

29. ( ) When I have a problem to solve, one of the first things I do is get as many facts about the problem as possible.

30. ( ) I often put off solving problems until it is too late to do anything about them.

31. ( ) I think that I spend more time avoiding my problems than solving them.

32. ( ) When I am attempting to solve a problem, I often get so upset that I cannot think clearly.

33. ( ) Before I try to think of a solution to a problem, I usually set a specific goal that makes clear exactly what I want to accomplish.

34. ( ) When I am attempting to decide what is the best solution to a problem, I do not usually take the time to consider the pros and cons of each solution alternative.

35. ( ) When the outcome of my solution to a problem is not satisfactory, I usually try to find out what went wrong and then I try again.

36. ( ) I hate having to solve the problems that occur in my life.

0 = Not at all true of me
1 = Slightly true of me
2 = Moderately true of me
3 = Very true of me
4 = Extremely true of me

37. ( ) After carrying out a solution to a problem, I usually try to evaluate as carefully as possible how much the situation has changed for the better.

38. ( ) When I have a problem, I usually try to see it as a challenge, or opportunity to benefit in some positive way from having the problem.

39. ( ) When I am attempting to solve a problem, I usually think of as many alternative solutions as possible until I cannot come up with any more ideas.

40. ( ) When I am attempting to decide what is the best solution to a problem, I usually try to weigh the consequences of each solution alternative and compare them against each other.

41. ( ) I often become depressed and immobilised when I have an important problem to solve.

42. ( ) When I am faced with a difficult problem, I usually try to avoid the problem or I go to someone else for help in solving it.

43. ( ) When I am attempting to decide what is the best solution to a problem, I usually consider the effect that each alternative course of action is likely to have on my personal feelings.

44. ( ) When I have a problem to solve, one of the things I do is examine what sort of external circumstances in my environment might be contributing to the problem.

45. ( ) When making decisions, I usually go with my "gut feeling" without thinking too much about the consequences of each alternative.

46. ( ) When making decisions, I generally use a systematic method for judging and comparing alternatives.

47. ( ) When I am attempting to find a solution to a problem, I try to keep in mind what my goal is at all times.

48. ( ) When I am attempting to find a solution to a problem, I try to approach the problem from as many different angles as possible.

49. ( ) When I am having trouble understanding a problem, I usually try to get more specific and concrete information about the problem to help clarify it.

0 = Not at all true of me
1 = Slightly true of me
2 = Moderately true of me
3 = Very true of me
4 = Extremely true of me

50. ( ) When my first efforts to solve a problem fail, I tend to get discouraged and depressed.

51. ( ) When a solution that I have carried out does not solve my problem satisfactorily, I do not usually take the time to examine carefully why it did not work.

52. ( ) I think that I am too impulsive when it comes to making decisions.

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APPENDIX E

Coroners' data collection form

I.D.

D	D	M	M	Y	Y	Sex	Initial		Surname	

Date of Birth: __/__/... Date of Death: / /

Age: _____ years

Address:

Town:

Post Code:

Marital Status:

Single -
Married -
Divorced -
Separated -
Living together -

Occupation: Employed:

Method:

Availability:

Location:

Time of Death:

Main Informant:

Suicide Note:

Suicidal Ideation:

Previous Attempts:

Psychiatric History:

Time since seeing Carer, e.g. GP: