Quality of life in adolescence: an adaptation of the WHO Quality of Life Assessment and an exploration of the impact of weight.

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Declaration

This thesis has been composed by myself and the work contained herein is my own.

Signed:

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Abstract

Quality of life is an increasingly popular construct to assess. A number of health-related quality of life measures have been developed for use with children who have health problems. However, it is recognised that quality of life is an important concern for all children and there is a clear need for the development of measures which are applicable to those who are well or unwell. This study aims to develop a reliable and valid version of the World Health Organisation Quality of Life Assessment (WHOQOL) for adolescents. The study also examines the impact of obesity on quality of life during adolescence. The negative impact of obesity on physical well being is well-established. However, the impact of weight on other aspects of life, which contribute to its quality, is less well understood. Following discussion with groups of young people and a pilot test of the measure, revisions were made to the WHOQOL so that it was more relevant for adolescents. The revised questionnaire was distributed to a large group of young people in school. Further, it was administered to a small sample of overweight young people. This sample also completed an additional module of questions relating specifically to aspects of life affected by weight, and measures exploring self esteem, coping and social support. The performance of this adaptation of the WHOQOL for adolescents is discussed, as are the responses of the overweight sample.

1. Introduction

1.1 Quality of life assessment

Significant groups of people are now surviving illnesses and diseases that were previously fatal. As a result, many people are living with chronic conditions. This has contributed to the shift in emphasis of outcome indicators from mortality or survival rates, to quality of life assessment. Indeed, quality of life (QOL) assessment is now very popular and there are an ever-increasing number of assessment tools available (Speith and Harris, 1996).

1.2 Applications of quality of life assessment

The potential applications of QOL assessment are widespread (Pal, 1996). It can be central to investigations in audit, clinical trials, economic analyses and epidemiological studies (Gill and Feinstein, 1994). Information from QOL assessments can provide a basis for improvements in medical and psychological care (Speith and Harris, 1996) at both a public health level and an individual level. For instance, QOL assessment can lead to an increased understanding of the consequences and experiences associated with different conditions (Drotar, 1998). With regard to the individual with a chronic disease, there is now a greater focus on psychosocial issues. Eiser (1996) suggests that this development has perhaps occurred most significantly in the context of QOL measures.

Although QOL has been considered an important construct to measure and report for some years now, there is a serious lack of *adequate* measures available (Graham, Stevenson and Flynn, 1997). This shortage means the far-reaching applications of QOL assessment are currently not being realised.

1.3 What is 'quality of life'?

Many authors explain that far from the lack of adequate measures being a problem, there is poor agreement about an acceptable definition of 'quality of life'. The contention surrounding a definition has led to the development of measures that emphasise different aspects of QOL. This makes for a less integrated understanding of research findings (Drotar, 1998). Moreover, various constructs continue to be measured under the QOL umbrella with the result that QOL is frequently misrepresented. Findings are taken to reflect a particular group's QOL when in fact the findings reflect something else. A common mistake that is made by many investigators is the use of the term QOL when measuring functional status (Gill and Feinstein, 1994). The distinction between QOL and functional status is explained later in this section.

Speith and Harris (1994), among others, stress that QOL is a multidimensional concept, derived from the World Health Organisation (WHO, 1947) definition of health. The WHO defines health as "a state of complete physical, mental and social well-being not merely the absence of disease...". It follows that the measurement of health and the effects of health care must include not only an indication of changes in the frequency and severity of diseases but also an estimation of well-being and this

can be assessed by measuring the improvement in the quality of life. Traditionally, measures were weighted towards physical functioning and often physical state was the only index to be considered in an assessment of an individual's health. However, objective, biomedical markers are no longer the main focus of interest (Starfield, Forrest, Ryan, et al, 1996).

In their study of the quality of life in America, Campbell, Converse and Rodgers (1976) argued that objective indicators are limited in that they are only indirect measures of the quality of a person's life. There is evidence that individuals' evaluations of their health and well-being do not necessarily correlate with objective measures of physical function (Drotar, 1998). It seems the appraisal of the quality of one's life is an internal, psychological experience that often does not correspond that closely to external conditions.

The WHO concept of health provides a framework for measuring the *positive* aspects of health and QOL, which enables a broader understanding of function and well-being than could be offered by a strict disease-oriented model. A positive conception of health takes into account important variables such as resilience and coping (Eiser, 1996). It also includes concepts such as fitness, ability to cope, and social support and manages to capture degrees of health as well as ill health (Bowling, 1995). Indeed, this tapping of positive experiences is very much in the spirit of QOL assessment (Titman, Smith and Graham, 1997). The basically positive meaning underlying the QOL concept seems to be a large part of its appeal and interdisciplinary acceptance (Lindström, 1992).

The World Health Organisation Quality of Life (WHOQOL) Group, an international group with representatives initially from 15 countries world-wide, defined quality of life as:

> "... an individual's perception of their position in life in the context of their culture and value systems in which they live and in relation to their goals, standards and concerns. It is a broad ranging concept affected in a complex way by the person's physical health, psychological state, level of independence, social relationships and their relationship to salient features of their environment."
>
> (The WHOQOL Group, 1995)

It is a broad definition including concepts such as social relationships and the person's relationship to their environment, which are often missing from other definitions of QOL. In particular, a person's evaluation of their environment is a notable omission from many QOL definitions. Significantly, it places primary importance on the perception of individuals. This definition reflects the view that QOL refers to a subjective evaluation, which is embedded in a cultural, social and environmental context. As such, QOL cannot be equated with the terms 'health status', 'lifestyle', 'life satisfaction' or 'well-being'. Rather, it is a multidimensional concept incorporating the individual's experience of these and other aspects of life.

The *subjective* nature of QOL assessment is sometimes overlooked in relation to aspects of the environment. Objective measures of the quality of the environment

such as standard of living, although related to quality of life (Lindström and Eriksson, 1993a), do not provide information about an individual's subjective evaluation of their circumstances. Measures of QOL involving an objective assessment of the environment are based on the standard needs model, where quality of life is defined as the extent to which individual needs are met (Browne, McGee and O'Boyle, 1997). The main tenet of this model is that a standard set of life circumstances is required in order to function satisfactorily. Crucially, this model suggests that quality of life does not depend on a subjective evaluation; rather it is an objective characteristic of the individual.

As discussed, the individual's *perception* of quality is key to QOL assessment. Psychological processes, rather than circumstances alone, are central to an individual's experience of those aspects of life that contribute to its quality, and to what extent. The use of objective indicators to measure the quality of the environment as part of a QOL assessment is along the same lines as the use of objective measures of health status.

Likewise, functional status and QOL are different constructs; functional status is usually an objective rating of the degree of impairment, and assesses the person's ability to perform age-appropriate tasks such as self-care, role and leisure activities. An example of such a measure for children is the FS-II (R) (Stein and Jessop, 1990). Importantly, though, functional status does not have a subjective component whereas this is central to QOL assessment. Clearly, functional status is an important contributor to overall QOL, in addition to other contributory factors. However, the

term is often used interchangeably with QOL. It is vital that investigators explain what they mean by QOL and describe those particular areas that are to be measured. Unfortunately, this is often not the case. In a review of QOL assessment in children, Pal (1996) reported that few authors made explicit their constructs of health or quality of life.

1.4 Health related quality of life

Many studies, whilst describing an assessment of 'quality of life', are actually assessing the more limited construct health-related QOL (HRQOL). HRQOL refers to the specific impact of an illness or injury, medical treatment, or health care policy on an individual's QOL (Drotar, 1998). Speith and Harris (1996) describe health-related quality of life as having four core domains; disease state and physical symptoms, functional status, psychological functioning and social functioning. Pal (1996) suggests that "subtle" differences distinguish QOL and HRQOL. This subtlety may help explain why many investigators do not make the distinction clear, describing findings from HRQOL assessments as evaluations of overall QOL. Nevertheless, Gill and Feinstein (1994) stress that it is a "cogent distinction". Overall QOL incorporates all aspects of life including aspects related to health as well as non-medical aspects such as spirituality, financial resources and family relationships. It seems clear that an individual's QOL is influenced by factors that are *un*related to health and therefore it is crucially important to distinguish between overall QOL and HRQOL. However, in their review of QOL instruments, Gill and Feinstein (1994) found that none of the articles they looked at made the distinction between overall QOL and QOL affected by health or illness. The following quote summarises the

focus of most investigations or commentaries about quality of life, and illustrates the range of concepts which are usually absent in QOL investigations:

> "Although quality of life encompasses many aspects of an individual's existence, such as cultural, aesthetic, political, economic and environmental aspects, for all practical purposes the discussion will be restricted to health-related quality of life." (Dedhiya and Kong, 1995, p141)

There may be 'practical' benefits in looking only at HRQOL but there are also costs. Gill and Feinstein (1994) argue that if non-medical factors are not taken into account, any effects they have on an individual's quality of life may be misidentified and associated with the health problem. Thus, there is the possibility that such assessments will overestimate the impact of the health problem on QOL. Le Plége and Hunt (1997) go so far as to suggest that people are simply unable to consider their QOL in such a way that requires them to split health and non-health related aspects of their lives.

1.5 Approaches to measurement

QOL measures can be categorised in various ways. One distinction is between utility measures and so-called psychometric measures. The utility-based approach was derived from health economic studies in adults and its original objective was to help guide the distribution of funds. The individual is asked to imagine a particular health condition, and to indicate whether they place more value on the quality or the quantity of their lives in the context of the hypothetical health condition. An example is the Quality of Well-being Scale (Kaplan, Bush and Berry, 1978). This was

developed with adult samples, with the aim of assessing health policies by comparing the health outcomes of different disease populations. Wilson and Cleary (1995) outline some conceptual problems with this approach. For example, scores may reflect constructs other than QOL such as the value the individual places on life, their degree of risk aversion, or attitudes towards certain medical interventions. Further, an assessment based on this approach requires the individual to make abstract choices that are difficult for those below a certain cognitive level or developmental stage. In effect, the utility model is not a useful framework for assessing children's QOL.

Measures based on the psychometric approach to QOL assessment involve a number of items that represent aspects of QOL, or domains. The individual is required to rate each item depending on his or her own feelings or experiences relating to that aspect of life.

It is important to obtain a self-report when measuring QOL as the assessment is intended to tap a subjective and personal construct. However, in a review of QOL instruments, Gill and Feinstein (1994) found that only 17% of the articles they examined described ratings by patients. Similarly, Sartorius (1993) described that measures vary in structure, length and sophistication but none seem to give enough attention to the subjective feelings of the individual whose QOL is to be measured.

Sometimes a battery approach is used which incorporates a variety of separate instruments, when there appears to be no validated comprehensive measures

available. For example, Lewis, Pantell and Kieckhefer (1989) used a collection of several existing scales. However, a battery assessment does not yield an overall score, which limits comparisons. Further, the measures included in the battery will usually have different conceptual frameworks and psychometric properties, which also makes it difficult to compare relationships between aspects of the assessment (Starfield et al, 1996). Plus, completing a battery of measures can require a lot of time from staff and patients (Speith and Harris, 1996). Despite these drawbacks, some authors continue to recommend the use of batteries as they consider there to be an absence of a single ideal instrument (e.g. Rutishauser, Sawyer and Bowes, 1998)

1.6 Generic and specific measures

QOL measures can also be categorised in terms of the population the measure is intended for and a distinction is made between generic and population or disease specific measures. Generic measures include global ratings of QOL. However, global ratings do not capture differential functioning across various aspects of life (Speith and Harris, 1996). More comprehensive generic measures allow comparisons across disease categories and can assess many dimensions of the QOL construct. If a measure is to be truly generic, then its applicability across health conditions is only one requirement. Ideally, generic measures should be applicable to the whole population, irrespective of gender, ethnicity or socio-economic status. Landgraf, Abetz and Ware (1996) argue that evidence is needed concerning the validity of measures across different socio-economic or ethnic groups.

However, generic measures can be insensitive to important features of specific conditions. A review of the literature reveals a large number of disease and population specific measures including; the Pediatric Oncology QOL Scale (Goodwin, Boggs and Graham-Pole, 1994), The Diabetes QOL Instrument (Ingersoll and Marrero, 1990) and the QOL In Epilepsy Inventory for Adolescents (Cramer, Westbrook, Devinsky, Perrine, Glassman and Camfield, 1999). Disease or population specific measures are sensitive to the important issues for the group in question. However, the opportunity for comparison with other groups, or across conditions, is limited. Speith and Harris (1996) argue that generic measures should be supplemented with disease-specific measures so that the benefits of both can be combined. Supplemental measures can also usefully include function specific measures that address an area of interest relevant to the condition under inquiry. Importantly, though, bearing in mind the multidimensional nature of QOL, function specific measures that address a specific area relevant to a condition or population (e.g. self-esteem) are too narrow to be described as QOL measures (Speith and Harris, 1996). Although such an index may provide valuable information in the *context* of a QOL assessment, it should not be interpreted as a proxy measurement of QOL.

1.7 Approaches to Scoring

One approach to scoring a QOL assessment is to aggregate the scores from each of the questions, resulting in a single value. This allows easy comparisons between scores but may result in a loss of sensitivity. The main problem with combining scores is that each domain is accorded the same importance (Graham et al, 1997).

Alternatively, the scores can be kept separate producing a profile of the assessment. This allows examination of the interactions between ratings of different aspects of life (Rosenbaum and Saigal, 1996).

Some scoring systems require that responses are weighted differently according to their importance. However, the weights given by researchers to certain domains or items are also standard, with particular needs assumed to be more important that others for all individuals (Browne et al, 1997). If possible, individuals should be allowed to weight the relative contribution of items and domains themselves, in order to reflect the individual's subjective experience as closely as possible. However, there is sometimes a pay-off, as a questionnaire of this sort may be less practicable and user-friendly.

1.8 Measuring quality of life in children

There have been a number of attempts to produce child or adolescent measures that are distinct from those applied to other age groups, yet quality of life work has been much more limited in this field (Titman et al, 1997). There are a large number of measures for children that tap specific constructs such as self-esteem and social support, addressing aspects of QOL. However, there are few comprehensive measures of quality of life. Vogels, Verrips, Verloove-Vanhorick et al (1998) suggest "the need to develop proper research tools to measure QOL in children is urgent" (p458). Likewise, a WHO/ International Association for Child Psychology and Psychiatry Working Party (WHO, 1993; cited in Titman et al, 1997) argued that quality of life measures existing at that time for children were inadequate and

underlined that the development of appropriate measures is a priority. The report suggests that new measures should meet the following requirements; they should be child-centred; use subjective self-report where possible; be developmentally appropriate; have a generic core and specific add-on modules; and have an emphasis on health enhancing aspects of QOL.

There is a range of methodological and practical problems in attempting to assess children's QOL (Drotar, 1998). The first important point to note, which is perhaps self-evident but often overlooked, is that childhood is qualitatively different to adulthood. Children and adults are different in terms of their development and their experiences. Therefore, the content of the questionnaire should be developmentally relevant and reflect aspects of life that are important to children. Surprisingly though, measures vary widely in the degree to which they are child oriented. For instance, children's well-being is especially sensitive to the social context in which they live, including the family and the wider social environment (Schor, 1998). With regard to the child's social context Pal (1996) explains that most of the instruments claiming to measure QOL in children do not enquire about family and other social relationships. Primarily, there is the problem of deciding from an adult perspective what constitutes QOL in children (Rosenbaum and Saigal, 1996). Children's views on the important aspects of quality of life have been little researched; although the need for a measure developed from those ideas has been identified (Neff and Dale, 1990).

Another important issue here is whether the child's view should be sought directly or indirectly. Parents are often used as informants on behalf of the child, as a child's

self-report is commonly thought to be unreliable. Indeed, the vast majority of instruments are not self-report (Ravens-Sieberer and Bullinger, 1998). However, research concerning descriptions of child psychopathology illustrates that children can give invaluable information about themselves, particularly when the information is of a subjective or internal nature. This is especially true for children above age eight or nine (Achenbach, McConaughy and Howell, 1987). Achenbach et al (1987) conducted a meta-analysis examining the relationship between children's self reports and informants' reports on childhood behavioural and emotional problems. They found a mean correlation of only .22. The relationship was particularly weak for children over 11 years of age. It seems the two sources of information, the child and an informant, were reporting largely different things. Further, disagreements between proxy and self-reports are considered more likely for dimensions such as pain and emotion (Feeny, Juniper, Ferrie et al, 1998). Indeed, a fairly recent article investigating quality of life in children with asthma concluded that there is little parents can add to information obtained from children over 11 years (Guyatt, Juniper, Griffith, et al, 1997). Nevertheless, Lindström (1994) describes that, "One piece still missing is the direct dialogue with the children." (p7). It seems reliable self-report measures for children continue to be lacking. As a result, the cornerstone of QOL measurement, that is the internal and subjective nature of the evaluation, is often not actually part of a so-called QOL assessment.

If the measure is self-report, then due care should be taken to ensure that questions are asked in an appropriate way. Factors to consider include a possibly limited understanding of negatively worded items and differences in time perception.

Pictorial representations of very happy, fairly happy, neutral, sad and very sad faces could be used as an adjunct to a written response format in a QOL questionnaire for children. This approach has been used with a degree of success in the assessment of depression in children (Titman et al, 1997).

In her review of QOL assessment in children, Pal (1996) suggested that few of the instruments were tested for validity or reliability. Similarly, Ravens-Sieberer and Bullinger (1998) reported that only a small number of articles on QOL and children refer to the testing of instruments. It remains vital, however, that a measure has demonstrated psychometric integrity in relation to the ages and backgrounds of the children it is applied to. The changes in abilities and roles during childhood and adolescence are not always considered (Apajasalo, Sintonen, Holmberg et al, 1996).

It seems that the value of investigating the impact of health problems on quality of life is well established. However, Pal (1996) argues that it is also necessary to study healthy children's quality of life. This requires a comprehensive generic assessment tool. A recent study illustrated that well and unwell children differ systematically in various aspects of their functioning (Starfield et al, 1996). However, there is generally a lack of available data on people who consider themselves to be healthy. Ideally, there should be a sound understanding of the range of experiences that might be expected to occur in the healthy population, and how this would reflect in a quality of life assessment. This knowledge base would support the meaningful interpretation of findings from children who are unwell, and as a result would help better guide interventions (Landgraf and Abetz, 1998). It is also important to

compare assessments of children at different ages so that the interaction between conditions and development can be explored (Schor, 1998).

Further, much of the focus in health care for children is on prevention and education (Pal, 1996). The quality of life construct is a useful framework for understanding aspects of health promotion and there are a number of benefits in examining health from a QOL perspective. For example, a broad range of aspects of life can be covered, at a range of levels such as personal and community levels. QOL information can be linked to health promotion and rehabilitation perspectives, suggesting means of promoting positive health in both well and unwell individuals. Broad and comprehensive measures will allow investigators to better understand causal relationships between aspects of life which affect its quality (Wilson and Cleary, 1995), and to develop improved health promoting strategies.

1.9 Measuring QOL in adolescents

A full and meaningful assessment in this age group is difficult for a number of reasons. There is a wide range of maturity, and differences in independence and experience (Cramer et al, 1999). Significantly, Apajasalo et al (1996) suggest that by adolescence QOL cannot be assessed accurately with information from proxies and investigators must try in the first instance to obtain a self-report. Importantly, it is not sufficient to simply consider adolescents as young adults and so it is unsatisfactory to just change the wording of adult questionnaires.

Adolescents have different activities and levels of responsibility, different interests and areas of concern from those of adults. Indeed, during the teenage years, there are a whole host of developmental challenges and necessary adjustments that, in many respects, make for a very mixed group of young people. First, there are normative tasks such as the development of identity and achieving independence from the family, while staying connected and fitting into a peer group. Second, there are transitions from childhood to adulthood, which are characterised by significant developmental changes. This new identity incorporates a new body image, different cognitive abilities, a revised value system, new relationships including intimate relationships, and establishment of a sense of adult independence (Ingersoll and Marrero, 1990). Landgraf and Abetz (1997) describe that as children get older, they report significantly poorer psychosocial functioning. They suggest that during adolescence, the young person is continually testing the boundaries of authority figures and his or her identity is frequently challenged, which subsequently influences their behaviour and their relationships with others.

1.10 Existing measures for children

Early measures of QOL were disease-specific and this remains the focus at the moment. Oncology and transplantation populations have received considerable attention and a large number of instruments developed for children concentrate on these areas (Ravens-Sieberer and Bullinger, 1998), although there is still a need for data for these groups (Speith and Harris, 1996). Disease-specific measures led to the development of generic HRQOL assessments, measures relating to several illnesses or diseases. More recently, attention has also been paid to children who are well,

with the result that several generic QOL assessment tools have been produced. However, there remains a lack of instruments to assess QOL in children (Ravens-Sieberer and Bullinger, 1998), particularly measures that extend beyond HRQOL. Below is a description of some of the measures, which are used to assess children's QOL.

The Rand Health Status Measure for Children (Eisen, Ware, Donald and Brook, 1979) was developed to assess the impact of different insurance plans on the health status of children up to age 13, in the general population. It was the first published attempt to assess children's HRQOL on a large scale. There are six dimensions included in this measure: physical health; mental health; social health; general health; satisfaction with development; and behaviour problems. The normative sample comprised healthy children, so the measure is thought to be fairly insensitive to different levels of dysfunction in unwell children. Further, there is no self-report version for children, as parents answer the questions. Finally, it does not include a dimension about the environment. For example, a question in the RAND instrument reads 'Does this child's health limit him in any way in using public transport or a bicycle?'. This instrument does not permit environmental constraints, such as poverty or access, to explain individual limitations.

The Child Health and Illness Profile (CHIP; Starfield, Riley, Green, et al, 1995) is a generic, 275 item self-report measure for adolescents aged 11-17, developed to assess health status in epidemiological surveys. The measure was developed especially for children, based on the existing literature. It is consistent with Wilson

and Cleary's (1995) proposed classification of health outcomes, which describes biological and physical factors, symptom status, functioning, general health perception and overall QOL. It is intended to help identify high-risk populations and to assess the impact of health services and policies. The authors suggest that the items can be divided into six scales; however, there is no factor analysis to support the distinction between scales. The 6 domains are satisfaction with health (self-perceptions of overall health and self-esteem); discomfort (physical and emotional symptoms, limitations in activity); achievement (age-appropriate social roles and school); risks (issues related to threats to health and to achievement); resilience (characteristics which protect future health) and disorders (specific conditions). A drawback is the rather long time-factor as it takes over 45 minutes to complete. However, it includes positive aspects of function and well-being, and can indicate which aspects of health need attention and which aspects are particular strengths that can help sustain health. Further, it can discriminate between teenagers attending schools and those attending clinic for acute or chronic conditions (Starfield et al 1996), so it is said to demonstrate good discriminative validity. The most important criterion for the validity of a HRQOL instrument is said to be its power to discriminate between groups with different HRQOL (Bouman, Koot, Van Gils and Verhulst, 1999).

The Child Health Related Quality of Life measure (CQOL; Graham, Stevenson and Flynn, 1997) is again a HRQOL instrument. It was developed from interviews with parents and children with chronic physical conditions, psychiatric disorders and learning disability. It is a brief assessment tool with parallel versions for both the

parent and child. It consists of 15 domains: getting about and using hands; doing things for self; soiling or wetting; school; out of school activities; friends; family relationships; discomfort due to bodily symptoms; worries; depression; seeing; communication; eating; sleep; and appearance. This measure has been shown to have adequate reliability and validity.

The Child Health Questionnaire (CHQ; Landgraf, Abetz and Ware, 1996) is another generic HRQOL instrument. Traditional qualitative techniques were used in the development of this measure and it was intended for norm-based interpretation of physical and emotional functional status and well-being. The questionnaire enquires about eight dimensions: limitations in physical activity; limitations in school or social activities due to physical, emotional or behavioural problems; limitations in family activities due to health or behaviour problems; bodily pain; general mental health; general behaviour; satisfaction with self, family, friends and life in general; and general health perceptions. There are versions for parents and children. Also, this scale has been well standardised and validated.

The TACQOL, developed in the Netherlands, (Vogels et al, 1998) is a generic HRQOL instrument for children aged between 6 and 15 years. Those aged over 8 complete a self-report measure, whilst for younger children there is a version for parents to complete. The domains covered are: pain and symptoms; basic motor functioning; cognitive functioning; social functioning; autonomy (self-efficacy or role functioning); global positive emotional functioning; and global negative emotional functioning. For the first 5 domains, the respondent is asked to indicate the

presence of some problem, and then to rate the emotional reaction. The child's version for those over 8 follows a similar procedure but the content is slightly different, as the parent's version could not be translated exactly. Both versions are said to be both reliable and valid.

Lindström and Eriksson (1993b) used a QOL conceptualisation to examine adolescent health. Three domains are included in this model which were initially described for psychiatric patients; an external domain which enquires about the child's view of his or her social, economic and housing conditions; an interpersonal domain which assesses the child's social networks; and a personal domain which measures aspects such as activity, self-esteem and mood. The attention paid to environmental aspects of life and standard of living is a particular strength of this model. Lindström and Eriksson advocate the use of both subjective and objective reports in the assessment of QOL. The instrument was validated with a random sample of 10, 290 children from 5 Nordic countries. Families received a questionnaire, which was completed by parents together with children. Apparently, children from as young as 2 years of age can be involved in this assessment.

The Quality of Life Profile –Adolescent Version (Raphael, Rukholm, Brown, Hill-Bailey and Donato, 1996) is another measure that aims to investigate adolescent health from a QOL perspective. Importantly, the authors stress that a QOL assessment must measure the quality of the environment in which the person lives. However, it seems that primarily this is suggested because otherwise an assessment may conclude that an individual has a good QOL, when in fact the environment is of

poor quality; for example, the person may be unaware that a better quality is possible. Yet, this could be so for any aspect of an individual's life. Raphael et al (1996) use socio-economic status as an indicator of environmental quality. Further, scores from 'environment' dimensions are not included in the overall QOL score, but are intended to provide information by which QOL scores can be interpreted. Aspects of the environment are considered important in terms of understanding the context of a QOL score, but they are not seen to be a central component of QOL. In this case, the authors seem to argue that the individual's *subjective* evaluation of their environment specifically is not relevant, and that an objective assessment of standard of living is more appropriate. This stance means that the measure deals with different aspects of life, which contribute to its quality, in a rather inconsistent way.

In an initial validation study of the Quality of Life Profile – Adolescent Version, results from different subdomains within the measure were expected to correlate with validation measures (Raphael et al, 1996). However, this was generally not the case. The authors propose that this might be a function of the validation measures selected. Alternatively, they suggest the subdomains might not have differential predictive validity for adolescents. It may be that the domains do not reflect specific aspects of QOL. It was concluded that the measure should be tested with larger samples (160 participants were originally involved) and with different groups of adolescents.

The 16D is a generic self-report measure of health related QOL for young people aged 12 – 15 years (Apajasalo et al, 1996). It is based on an adult measure, the 15D (Sintonen and Pekurinen, 1993) and is derived from the utility-based approach. A

group of experts reviewed the adult questionnaire and made a number of changes, such as deleting items about sexual life. The authors attempted to phrase questions in such a way as to exclude, as far as possible, the influence of non-health related factors (e.g. my state of health has no influence on my getting friends). The extent to which this is an achievable or even desirable goal has already been discussed.

The German KINDL (Bullinger and Ravens-Sieberer, 1998) is a self-report questionnaire for children aged between 8 and 16 years. This measure was derived from interviews with children. It is a comprehensive QOL measure and comprises four scales: functional capacity for everyday living; psychological well-being; physical state; and social relationships. Importantly, it has been tested with both healthy and unwell children and demonstrates good reliability and validity.

1.11 Summary

There is great diversity in the measures described. Most of the questionnaires aim to assess HRQOL, rather than overall QOL. Notably, aspects of the environment, which relate to quality of life, are not sufficiently addressed in the measures described. Further, there are only a limited number of self-report questionnaires available for children and also a lack of measures that are applicable to both well and unwell groups. Finally, there is an identified need for culturally based self-report instruments (Landgraf and Abetz, 1998). However, there is a particular dearth of adequate instruments developed and standardised for children in this country.

A promising development in QOL research is the adaptation of the WHOQOL instrument for adults (The WHOQOL Group, 1998). This has recently been piloted with children in Edinburgh. It is a positive development in that it addresses many of the problems highlighted here. The initial pilot involved changing the wording of adult questions in the WHOQOL so that they were suitable for children as young as 8 years of age, whilst maintaining the meaning or essence of the items. As well as changes in wording, some constructs were substituted with domains that were more relevant for children. For example, questions about school replaced those about work. Initial feedback from children resulted in some further wording changes and a number of new questions being added. I will describe the development of the original WHOQOL in some detail.

1.12 The WHOQOL Assessment Instrument

International collaborators in 15 culturally diverse field centres, under the auspices of the World Health Organisation (WHO), have developed two instruments for measuring QOL (the WHOQOL-100 and the WHOQOL-BREF), that can be used in a variety of cultural settings, whilst allowing the results from different countries and populations to be compared. WHO's initiative to develop a QOL assessment arose from a need for a genuinely international measure of QOL. It involved considerable testing and checking over several years to ensure that it accurately measures what it purports to measure.

The instrument is organised into 6 broad domains of quality of life (see Table 1). These are physical domain; psychological domain; levels of independence; social

relationships; environment; and spiritual domain. Within each domain a series of subdomains or facets of quality of life summarise that particular domain of QOL. Recent analysis suggests that physical and independence should perhaps be merged, as should psychological and spiritual domains.

Table 1. Structure of the WHOQOL-100

Domain 1:	**Physical Health**	**Domain 4:**	**Social Relationships**
	Pain and Discomfort		Personal Relationships
	Energy and Fatigue		Social Support
	Sleep and Rest		Sexual Activity
Domain 2:	**Psychological Health**	**Domain 5:**	**Environment**
	Positive Feelings		Physical Safety and Security
	Thinking, Learning, Memory		Home Environment
	Concentration		Financial Resources
	Self-Esteem		Health and Social Care:
	Body Image and Appearance		Availability and Quality
	Negative Feelings		New Information and Skills
			Participation in and New
			Opportunities for Recreation/
			Leisure
			Physical Environment
			Transport
Domain 3:	**Level of Independence**	**Domain 6:**	**Spirituality/ Religion/ Personal Beliefs**
	Mobility		
	Activities of Daily Living		
	Dependence on Medication		
	and/or other Treatments		
	Work Capacity		

The instrument is self-administered for those who have sufficient ability, otherwise the assessment can be carried out by way of an interview. Items are rated on a five-point scale. It is a versatile measure and scores relating to a number of aspects of QOL can be produced, for example scores relating to particular facets of QOL (positive feelings, social support, financial resources), scores relating to larger domains (physical, psychological, social relationships), and a score relating to overall

QOL and general health. The WHOQOL's overall coverage of QOL ensures a conceptual coherence, missing from many other measures of health and well-being.

The development process consisted of several stages. Firstly, concept clarification involved establishing an agreed upon definition of QOL and an approach to QOL assessment. (This is quoted earlier in section 1.3.) Then, a qualitative pilot involved the simultaneous exploration of the QOL construct across cultures and the writing of questions to reflect issues that were felt to be important to QOL. Thus, the important aspects of QOL and ways of asking about QOL were drafted on the basis of statements made by patients with a range of diseases, by well people and by health professionals in a variety of cultures. This involved focus groups, and expert and lay question-writing panels in each of the field centres. At this stage, definitions of domains and facets and a global item pool were produced. The participatory approach to the development of conceptual framework and item generation is an especially positive aspect of the WHOQOL instruments.

The pilot version at this point contained 236 items. Next, the development process involved the administration of a standardised form in each of the field centres, for scale construction. At least 300 individuals participated in each centre. In the final stage, field-testing involved establishing further psychometric properties of the WHOQOL. From the data, 100 items were selected. The WHOQOL-100 was compiled after pilot testing worldwide with 4,718 participants (WHOQOL Group, 1995). The questions of the WHOQOL-100 appear to be universal in that an

extensive set of psychometric analyses identified them as the best questions in all centres.

Significantly, items about social relationships and salient features of the environment are included in the assessment. Answers to these questions made a significant contribution to explaining the variance observed in the general facet relating to overall quality of life and general health. It is clear that questions about social relationships and important aspects of the environment should be included in a QOL assessment; however, this is often not the case with other measures.

A particular strength of the measure is its modular structure. It has a core module, which is applicable to all groups with specific modules for different subgroups. Modules are being developed to allow more detailed assessments of specific populations.

Bullinger (1997) suggests that the WHOQOL Group are the only investigators to address the question of the quality of life concept across cultures. Simultaneous study across field centres and a participatory approach increased the opportunity for the production of culturally specific items. In the end, there was a substantial overlap among nationally produced items, to the extent that these items did not significantly increase the explained variance of the questionnaire. Bullinger (1997) concludes that different nations and cultures perhaps share an understanding about aspects of life, which contribute to its quality. However, she adds that the level of endorsement may differ across countries.

Landgraf and Abetz (1998) argue that instruments should be shown to be applicable in different cultures. Currently, there is ongoing testing regarding the performance of the WHOQOL in different cultures and groups. For instance, Mombers, De Vries and Van Heck (1997) investigated the reliability and validity of a Dutch version of the WHOQOL-100, with a healthy group and a group of patients with a chronic disease. The authors concluded that the Dutch WHOQOL-100 is a good and distinctive measure of QOL in a broad sense.

The WHOQOL-BREF is an abbreviated 26-item version of the WHOQOL-100 and was developed using data from the field-trial version of the WHOQOL-100. In some cases the WHOQOL-100 is too long, for example, in large epidemiological studies. To maintain the comprehensive nature of the measure, at least one question from each facet was selected (The WHOQOL Group, 1998). The questions were selected if they accounted for a large proportion of the variance in a domain, or if they explained a large proportion of variance within the general facet relating to overall quality of life and general health perceptions. The WHOQOL-BREF is psychometrically sound, having satisfactory internal consistency, discriminant validity and reliability. Significantly, the hypothetical structure of this measure involves four domains. This was motivated in part by the need to avoid a single item domain, which would have occurred for the Spirituality domain. Also, some evidence from analyses of the WHOQOL-100 indicated that a four domain solution might be more appropriate.

It is anticipated that the WHOQOL and the WHOQOL-BREF will be used in a variety of ways, such as use in clinical trials, epidemiological research, health policy research, health and social service audits, and clinical practice. In clinical practice, the instrument can be used with other forms of assessment providing valuable information that can indicate areas in which a person is most affected. The WHOQOL can provide new insights into the nature of a disease by assessing how disease impairs or impacts on the aspects of an individual's QOL. It can also be used to measure change in quality of life over the course of treatment. It seems this subjective measure promises to offer a most comprehensive assessment of QOL for generic use.

The main aim of this study is to test a modified version of the WHOQOL for adolescents, based on the questionnaire that has recently been piloted in Edinburgh.

1.13 Specific populations and quality of life

Importantly, it has been acknowledged that there are groups of people whose quality of life might not be sufficiently or appropriately assessed with the WHOQOL. For these groups, it is anticipated that, in addition to the core WHOQOL, specific modules will be used which will be more sensitive to QOL issues for that population. The WHO has identified a number of priority areas for module development, including children and people suffering from chronic diseases (Szabo, 1996).

1.14 Eating disorders and quality of life

In recent years, there has been an increasing interest in the eating disorders field in quality of life issues. Stunkard and Wadden (1992) highlight, in a much cited paper, that it is very important to consider QOL issues of those with weight-related problems. Further, quality of life assessment is now an increasingly popular target for defining success in eating disorders. Miller (1996) notes that traditionally, definitions of success were too simplistic and narrow in scope as success was conceptualised in all or nothing, diagnostic terms. Treatment outcome studies for overweight have tended to focus almost exclusively on weight reduction and weight loss maintenance (Kolotkin et al, 1995).

Quality of life assessment, on the other hand, takes into account the multifaceted nature of eating disorders and as such should be considered central in treatment outcome studies. In the first handbook of assessment methods for eating behaviours and weight-related problems, Agras (1995) suggests that a quality of life measure should be included as one of a basic set of assessment, follow-up and outcome measures for obesity, anorexia nervosa, bulimia nervosa and binge eating disorders.

Importantly, patients frequently report that their weight or eating problems cause significant impairments in their quality of life. Kral, Sjostrom and Sullivan (1992) found that patients rated improved QOL as the most important benefit of surgical treatment for obesity. Similarly, Gortmaker, Must, Perrin, et al (1993) suggest that a reduction in QOL as a result of being overweight is probably a main reason for seeking medical treatment.

1.15 Quality of life and overweight

There is a growing interest in quality of life issues for those who are overweight. This is probably due in part to the increasing prevalence of overweight in both developed and developing countries, affecting adults and children (WHO, 1997). Chinn and Rona (1994) estimate that about 20% of children in the UK are overweight.

In the 20th century there was a huge increase in research into obesity, producing major advances relating to the study of food intake and its control, and the use of behavioural methods for weight loss (Brownell, 1995). Currently, it is considered to be a multi-faceted condition with genetic, behavioural and environmental causes (Schonfield-Warden and Warden, 1997). Unfortunately, current treatments are generally found to be only minimally successful (Yanovski, 1993). Further, Foreyt et al (1996) emphasize that it is unclear whether those treatments that have some benefit in the short-term with improvements in metabolic function, lead to long term improvements in health, quality of life and longevity. At the moment, there is a recognition that different treatments, and different combinations of treatments, are effective for different individuals, and current research aims to identify what works for whom.

With this aim in mind, Brownell and Wadden (1992) argue that there is a need to integrate disciplines in the treatment of obesity. Modern conceptualisations of obesity as a disorder with multiple causes, consequences and treatments clearly

indicate multidisciplinary working. At the very least, a coherent multidimensional view should be taken of the experiences reported by people who are overweight. This is possible with quality of life assessment, which offers a multifaceted framework for considering the various aetiologies and effects of the condition in relation to different aspects of life.

1.16 Definition of obesity

Although the definition of obesity has varied across studies, it is usually defined as the presence of an abnormally large amount of adipose tissue (Friedman and Brownell, 1995). Recent investigators have tended to use body mass index (or BMI) scores to determine level of overweight. The WHO classification of overweight is a body mass index (or BMI) of 25-30 kg/m^2, and obesity is a BMI of more than 30 kg/m^2 (WHO International Obesity Task Force, 1997). However, the terms 'overweight' and 'obese' are used somewhat interchangeably in the literature. This overview will also use both terms to refer to overweight.

1.17 Physical effects of overweight in childhood

Individuals who are overweight suffer a range of health consequences. Common childhood and adolescent problems include increased growth then stunting, early menarche, increased heart rate and cardiac output. Conditions such as hypertension and orthopaedic difficulties are less common (Dietz, 1995). Medically though, the most negative impact is the increased likelihood of obesity in adulthood. Rossner (1998) explains that "Many obese children grow into obese adults with high risks for complications and a low quality of life" (p1).

1.18 Psychosocial effects of overweight

A study involving adults showed that despite unfavourable perceptions by other people and poor physical health, there is little evidence to suggest that overweight individuals have more non-physical problems such as poor social functioning, adverse mental health, or role limitations due to emotional problems, than average-weight individuals (Han, Tijhuis, Lean and Seidell, 1998). However, others maintain that for many individuals the negative psychosocial consequences of obesity can be at least as disabling as the physical sequelae (e.g. Brownell and Wadden, 1992). Schonfield-Warden and Warden (1997) report that "some of the most commonly reported and striking consequences of paediatric obesity are psychosocial" (p349). This is largely attributed to the negative views that are held about those who are overweight. Certainly, years of research show that the stigma of obesity is widespread (DeJong and Kleck, 1986). However, findings are less clear regarding the extent to which this stigma impacts on the lives of those who are overweight.

1.19 Social functioning

During early childhood, obesity is already associated with a range of less desirable traits and obese children are rated as those who other children would least like to have as friends (Dietz, 1995). Two landmark studies are frequently cited in relation to others' perceptions of overweight. In one, 10 and 11 year old children rank-ordered six line drawings which depicted the same child as physically normal and with each of 5 physical disabilities, one of which was being overweight. Both children and adults rated the obese child as the least likeable (Richardson, Goodman,

Hastorf and Dornbusch, 1961). In another study, boys aged 6 to 10 years assigned each of 39 adjectives to one of three silhouette drawings depicting a thin, muscular and fat shape. The fat shape was least likely to be described as 'best friend' and most likely to be described as 'gets teased'. The fat shape was also describes as "lazy", "dirty", "stupid", "ugly", "cheats" and "liars" (Staffieri, 1967).

A limitation of the above studies is that the judgements elicited from the children are abstractions. The possible significance of this is illustrated by an Australian study of 8 to 12 year olds. This study confirmed the negative stereotypical perception of overweight figures, the strength of which increased with age (Lawson, 1980). However, these children did not apply the same stereotypical judgements to their own slim and heavy classmates.

High levels of perceived teasing are associated with negative effects in obese individuals, particularly in relation to body image disturbance (Cash, Winstead and Janda, 1986; Thompson and Psaltis, 1988). Teasing about weight in childhood is suggested to be a possible risk factor for poor self-concept. Friedman and Brownell (1995) suggest that this area should be further investigated. It is likely that individuals are more or less sensitive to experiences such as teasing and that for some this has a more significant bearing on individual psychological functioning. Variables such as coping style and social support may be important mediating factors, as with many other negative life events.

A study by Hill and Silver (1995) found that a higher BMI in girls was associated with having few friends but also with being reportedly more liked by parents. However, in another study by Philips and Hill (1998), heavier girls did not differ in popularity although they were less likely to be peer nominated as pretty.

Sobal, Nicolopoulos and Lee (1995) examined attitudes towards overweight and its effect on dating behaviour. As expected, female students were more concerned about their own body weight than males. However, males emphasised thinness in partners more than females. The study identified strong attitudes against overweight and discomfort with dating overweight partners.

1.20 General psychological functioning

Studies comparing average-weight individuals and obese individuals in the general population have generally failed to find differences in global aspects of psychological functioning such as anxiety or depression (Striegel-Moore and Rodin, 1986; Friedman and Brownell, 1995). Stunkard and Wadden (1992) note that the general absence of poor psychological health is surprising given the significant discrimination overweight individuals are subjected to. As suggested earlier, it may important to consider mediating factors such as coping style and social support. Sarlio-Lahteenkorva, Stunkard and Rissanen (1995) indicate that the lack of reported psychopathology is because traditional measures are not sensitive to the kinds of specific problems faced by overweight people, such as binge eating and a poor body image. For instance, Foster and Wadden (1995) concluded that adolescent females

who are obese show no differences in global measures of self-esteem or mood but experience more weight and body dissatisfaction than average-weight girls.

Similarly, an assessment of psychological functioning and satisfaction with weight in overweight and average-weight adolescent girls revealed no significant differences on measures of anxiety or depression (Wadden, Foster, Stunkard and Linowitz, 1989). However, the overweight girls reported significantly greater dissatisfaction with their weight and figure. Importantly, though, non-obese girls also reported dissatisfaction. All girls, except the very underweight, wanted to lose weight. These results are consistent with other studies examining body image in adolescent girls (e.g. Cash, Counts and Huffine, 1990). Wadden et al (1989) concluded that, while the dissatisfaction did not apparently produce clinically significant anxiety or depression for the overweight girls, it may still adversely affect the quality of the their lives.

1.21 Binge eating

In addition to poor body image, a distinct subset of the obese population are binge eaters. Obese binge eaters show more psychiatric symptomatology that non-bingeing obese people, and normal weight binge eaters. Also, obese binge eaters show more body image disturbance that non-bingeing obese people (Fairburn and Wilson, 1993). In a study examining the functioning of overweight girls seeking treatment for obesity, 30% were found to engage in binge eating (Berkowitz, Stunkard and Stallings, 1993)

1.22 Self-esteem

Self-esteem has received particular attention, as the social stigma associated with obesity is widely believed to have a negative effect on self-concept. However, findings have been inconsistent and the prevalence and magnitude of the problem remains controversial.

A study in 1982 by Mendelson and White found no differences in self-esteem between obese and non-obese children. Body-esteem and relative weight were correlated but self-esteem and relative weight were not significantly related. Rumpel and Harris (1994) suggest that although low self-esteem does not appear to be a significant problem for the general overweight population, some subgroups of obese children may be vulnerable to decreased self-esteem. Likewise, Kimm, Sweeney, Janosky and McMillan (1991) found no differences between groups either and note that there may be a threshold effect in terms of the severity of obesity on self-concept measures.

Nevertheless, in a review of 25 cross-sectional studies relating to self-esteem and obesity in childhood (French, Story and Perry, 1995), 13 showed lower self-esteem. A body-esteem measure was included in 6 studies, 5 of which showed lower body-esteem scores for the overweight groups. The authors caution readers however that many of the studies were methodologically weak as they used small and select samples.

Many of the studies relating to self-esteem have involved children around 9 or 10 years old. The impact of weight on self-esteem is thought to be more significant for adolescents. Friedman and Brownell (1995) indicate that there are relatively few studies involving this age group but evidence suggests lower self-esteem in those adolescents who are overweight. Striegel-Moore, Silberstein and Rodin (1986) argue that adolescence brings special risk as this is a time when concerns about appearance are heightened, associated largely with dating. There seems to be a convergence of increasing pressure to be lean, and the physical reality of the maturing body that increases in body fat. A discrepancy between actual and desired body shape is a risk factor for the development of body image disparagement. This is expected to affect self-concept.

For example, an assessment by Strauss (2000) indicated that there was no effect of weight on global or scholastic self-esteem scores at 9 and 10 years old. A follow up at 13 and 14 years old, however, revealed some differences, with Hispanic and white females reporting lower self-esteem. The social and emotional effects of low self-esteem in obese children remain fairly unclear, though Strauss (2000) found that those who had lower self-esteem seemed to suffer from increased sadness, loneliness and nervousness and they were more likely to drink and smoke.

Interestingly, Heatherton and Baumeister (1991) note that those with low self-esteem may be more likely to be overweight as a result of binge eating. However, French et al (1995), in their review of studies investigating self-esteem and obesity, found that

results from two prospective studies examining initial self-esteem and later obesity were inconsistent.

However, Friedman and Brownell (1995) stress that looking for group differences between obese and non-obese populations assumes that the latter are a homogeneous group with respect to psychological functioning. It is suggested that findings reflect a heterogeneous phenomenon and that the effects of excess weight vary across individuals (Stunkard and Wadden, 1992; Friedman and Brownell, 1995).

1.23 Specific groups

It seems that increased risk is present for particular groups in the obese population. For example, those who are severely obese may be at particular risk for developing psychological problems (Stunkard and Wadden, 1992). According to a Swedish long term follow up study (Di Pietro, Mossberg and Stunkard 1989), the more severely obese subjects had poorer scores on tests of anxiety, depression and social interaction. Significantly, body image was among the major predictors of depression and obesity-related problems in social life.

A general finding is that obesity seems to carry greater stigma for females than it does for males (Brownell, 1991). Studies have consistently found that gender differences exist in body weight concern, with girls desiring thinness and boys often seeking muscularity (Hill, Draper and Stack, 1994; Rosen and Gross, 1987; Striegel-Moore and Rodin, 1986). Also, the consequences appear to be more profound for older children (Strauss, 2000; Schonfield-Warden and Warden, 1997).

1.24 Socio-economic status

A study by Kinra, Nelder and Lewendon (2000) involving almost 21,000 children in Plymouth, identified a strong positive association between childhood obesity and socio-economic deprivation. However, the consequences of overweight appear to be more profound for those from higher socio-economic backgrounds (Schonfield-Warden and Warden, 1997). For example, poor body image most often occurs in young women of middle and upper middle socio-economic status. Further, in Miller and Downey's (1999) meta-analysis of studies examining heavyweight and self-esteem, effect sizes were smaller for lower socio-economic status samples.

It is suggested that the negative psychological effects are more substantial in higher socio-economic groups as obesity is less common, with the result that there are far stronger sanctions against it (Stunkard and Sobal, 1995). The relationship between socio-economic status and overweight is a complex one, though some have proposed that the higher prevalence in lower socio-economic groups is protective for many who are overweight. Some hypothesise that a higher prevalence of overweight is associated with less criticism and a smaller risk of developing body image disparagement (Wadden, Foster, Stunkard and Linowitz, 1989). Nevertheless, Friedman and Brownell (1995) argue that many studies in this field have generally failed to include subjects from diverse demographic populations, so the effects of culture, race and socio-economic status need to be examined in greater detail.

1.25 Quality of life studies

Greeno, Jackson, Williams et al (1998) propose that "...it is reasonable to suggest that the substantial social prejudice to which the obese are subjected may cause decrements in well being ..." (p 415). However, similar 'reasonable' suggestions have been made in relation to other aspects of psychosocial functioning but study findings on such matters are generally inconsistent. If problems associated with weight are to be properly understood, it is vital to adequately assess well being and quality of life issues, rather than make assumptions about expected 'decrements' and impairments which may be misleading.

Friedman and Brownell (1995) stress that future studies investigating obesity-related problems and resources should use a broad range of assessment measures, in order to help clarify some of the issues highlighted above. As mentioned earlier, quality of life assessment should be central to such studies (Agras, 1995). However, widely available generic measures may lack the specificity required to identify obesity-related problems. In recognition of this a number of obesity- specific questionnaires for adults have recently been developed.

The IWQOL (Impact of Weight on Quality of Life) was one of the first instruments to assess the specific effect of weight on QOL (Kolotkin, Head and Brookhart, 1997). Using this measure, the authors found that the higher the BMI, the poorer the quality of life. Mathias, Williamson, Colwell et al (1997) describe another QOL assessment for overweight adults. They conclude that there is a substantial impact of

obesity on health-related QOL. Notably, they 'control' for demographic variables such as socio-economic status rather than explore these.

Mannucci, Ricca, Barciulli et al (1999) produced an obesity-specific measure called the Orwell-97 (Obesity-Related Well Being Questionnaire) . Findings indicate that females have significantly poorer QOL than males. Specifically, female subjects seemed to experience a more profound effect of weight on self-esteem and sexual life. A higher BMI was associated with more reported physical symptoms, but not with poorer psychosocial functioning.

Similarly, Le Pen et al (1998) used a short weight-specific QOL scale and the SF-36, a generic QOL measure, and found that patients with severe obesity had poorer QOL, mainly with respect to the physical consequences of obesity. There did not seem to be significant psychological or social effects with increasing weight. There was a relationship between the BMI and the overall QOL score, although this was not very high. By way of explanation, the authors stress that QOL is not simply the expression of the BMI. Additionally, though, reliance on a single score as an indicator of QOL limits analysis of the relationship between BMI and QOL. The value of a profile of scores across different aspects of life is highlighted.

To date, studies investigating QOL issues in obesity have been limited to adult populations. Therefore, measures have not been tested with younger age groups, nor has QOL relating to overweight been examined in detail with young people. An accurate measure of weight-related quality of life during adolescence is necessary for

a comprehensive evaluation of therapeutic interventions and clinical activity. Also, as indicated earlier, a condition-specific questionnaire is usefully complemented by a more generic instrument in order to allow comparison with other groups.

This study aims to explore the impact of overweight on quality of life during adolescence. A modified version of the IWQOL scale (Kolotkin et al, 1997) will be used in order to identify particular weight-related problems. Responses to a number of other measures will allow an exploration of wider aspects of psychological and social functioning. A modified version of the WHOQOL will also be used. In the first instance, this will be piloted with a group of healthy young people. Responses to this questionnaire will then be compared between the healthy group and the overweight group.

1.26 Aims of present study

- The present study aims to pilot a modified version of the WHOQOL with a healthy group of young people. The measure's psychometric properties will be described. Also, the significance of the demographic variables age, sex and level of deprivation, will be explored.
- A second aim of the study is to explore the impact of overweight on quality of life, and aspects of psychosocial functioning, during adolescence. Concurrently, the applicability of the modified WHOQOL can be tested with a group of young people who have a health-related problem.

1.27 Hypotheses

The following results are predicted:

- On the modified WHOQOL, girls will score more poorly than boys on the facet relating to body image.
- On the modified WHOQOL, scores will be poorer with increased age.
- On the modified WHOQOL, the overweight group will have poorer scores than the healthy group on domains relating to physical capacity, psychological functioning, level of independence and social relationships.
- Body image and binge eating will be highlighted as particular problems for the overweight group by the weight-specific questionnaire.
- In the overweight group, poorer quality of life scores will be associated with negative coping styles and poorer social support.
- In the overweight group, girls will have poorer scores than boys on the quality of life measures.
- In the overweight group, those in higher socio-economic groups will have poorer scores than those in lower socio-economic groups on the weight-related quality of life measure.

2. Method

2.1 Design

A cross-sectional survey design was used. Between subjects and within subjects comparisons and correlations were carried out.

Fife Health Board Local Ethics Committee granted approval for this study to be carried out.

2.2 Subjects

2.2.1 Healthy sample – Participants were recruited from three secondary schools in West Lothian and Edinburgh. The respective head teachers granted permission for the students' involvement.

2.2.2 Clinical sample – This group was recruited through the nutrition and dietetic department in Fife. Three community dietitians supplied information regarding 24 eligible subjects. The eligibility criteria for the study required that the young person was aged between 12 and 18 years, and seeing the dietitian because he or she was overweight. Consent to involvement in the study was required from the young person and his or her carer. The parents of 15 young people were contacted by telephone, 14 of whom agreed that the young person could be interviewed. There was no telephone number available for the remaining 9 eligible subjects, so their parents were contacted by letter. Only one parent responded to the letter. In the end, 15 of a

possible 24 young people (62.5%) agreed to participate in the study. None of the participants had an underlying medical condition causing their weight problem.

2.3 Instruments

2.3.1 Adaptation of WHOQOL-100 for young people

The WHOQOL-100 is a comprehensive, generic quality of life measure, which produces a multi-dimensional profile of scores relating to various aspects of life. Extensive field-testing has established the WHOQOL-100 as a reliable and valid cross-cultural quality of life assessment for adults. (The reader is referred to the introduction section for a more detailed discussion regarding the development of the measure and its psychometric properties.)

This study used a modified version of the WHOQOL-100, adapted for use with young people (see Appendix 1a). The wording of items was simplified and some scales were substituted so that the content was more relevant for children. The main differences included a *physical warmth* facet instead of the *sexual activity* facet and a facet about *school* rather than *work.* The measure was then piloted with a group of children who provided feedback about its relevance and completeness. As a result, a facet about the *behaviour of others* was added, to take account of experiences such as bullying.

The questionnaire contains 108 core statements relating to 25 facets, or aspects of life that affect its quality. The facets are organised into 6 broad domains of quality of life, as shown in Table 2.

Table 2. Structure of the modified WHOQOL-100 for young people

Domain 1:	**Physical**	**Domain 4:**	**Social relationships**
	Pain		Personal relationships
	Energy		Social support
	Sleep		Physical warmth
			Behaviour of others
Domain 2:	**Psychological**	**Domain 5:**	**Environment**
	Positive feelings		Safety
	Thinking		Home
	Self-esteem		Money
	Body image		Services
	Negative feelings		Information
			Leisure
			Environment
			Transport
Domain 3:	**Level of independence**	**Domain 6:**	**Spirituality/Religion/ Personal beliefs**
	Mobility		
	Self care		
	Medication		
	School		

In addition to the core questions, a supplementary section with 13 new items relating to adolescent concerns is included in the questionnaire. These items were generated as a result of group discussion with young people about their quality of life, and feedback from an initial pilot of the questionnaire. This process is reviewed in greater detail in the section about the study's procedure.

In total, there are 121 items in the questionnaire. The respondent is asked to consider to what extent each statement is true for him or her. Participants indicate their answer for each item by ticking the appropriate response from a choice of 5 on a Likert-type response scale. As illustrated below, drawings of very happy, fairly happy, neutral, sad and very sad faces represent each point on the response scale and, apart from the scale's midpoint, there are also verbal descriptors.

'Very true' and 'not true at all' are the anchor points of the response scale; 'true' and 'not true' are the intermediate descriptors.

Items are ordered randomly throughout the questionnaire. In order to reduce the probability of participants developing a response set, the wording of each statement varies, so some are phrased negatively and some positively. Further, the direction of the response scale varies.

The questionnaire produces a quality of life profile across 6 domain scores. It is also possible to derive 25 specific facet scores. Responses are not weighted so each item score contributes equally to the facet score. As there are different numbers of items within each facet, summative scaling is not appropriate so facet scores are calculated by computing the mean item score within the facet. Similarly, the domain scores are produced by computing the mean facet score within the domain.

Each response is given a score between 1 and 5. The higher the score, the better the quality of life in that area. Some items are scored simply in the direction of the response scale, for example, a tick at the first point gets a score of 1. However, as some questions are negatively framed, and the direction of the response scale varies, a number of responses need to be reverse scored. Details of these items are given below:

Items to be reverse scored - *1, 3, 5, 6, 10, 12, 13, 14, 16, 17, 20, 22, 24, 25, 28, 29, 30, 31, 32, 34, 36, 38, 39, 42, 43, 45, 46, 50, 55, 56, 58, 59, 61, 64, 66, 67, 69, 71, 72, 74, 75, 76, 78, 80, 81, 82, 84, 85, 88, 90, 91, 92, 93, 96, 98, 102, 104, 107, 108, 109, 111, 112, 116, 118, 119, 121.*

2.3.2 Impact of Weight on Quality of Life Questionnaire

The Impact of Weight on Quality of Life questionnaire, or IWQOL, assesses the effect of weight on various aspects of life (Kolotkin, Head, Hamilton and Tse, 1995). The measure comprises 74 items, which were generated on the basis of common concerns reported by adult outpatients at an obesity clinic. Items are grouped into the following 8 scales: Health; Social / Interpersonal; Work; Mobility; Self-Esteem; Sexual Life; Activities of Daily Living and Comfort with Food. Preliminary studies indicate that the measure has adequate psychometric properties, with test-retest reliability scores of 0.75 on average for single items, and 0.89 on average for the scales. Scale internal consistency and construct validity is also reported to be good (Kolotkin et al, 1997). As the measure was developed for use with an adult population, some items were considered less relevant for children. For the purposes of this study, items relating to sexual attractiveness and work were deleted. These items were substituted with questions about school, and a general question about attractiveness to other boys or girls. Further, a review of the literature indicated that some extra items should be included. Therefore, a question about sweating and some questions relating to binge eating were added. Ideally, young people who are overweight should have been involved in the generation of relevant items and scales for such a questionnaire. However, the limited time period for the study meant that this could not be organized on this occasion.

A modified version of the IWQOL was therefore used, comprising 70 items which are grouped into the following 8 scales: Health; Social / Interpersonal; School; Mobility; Self-Esteem; Attractiveness; Activities of Daily Living and Comfort with

Food (see Appendix 1b). Participants indicate their answers on a 5-point Likert-type scale, which is the same as that of the WHOQOL questionnaire described earlier. However, in line with the original IWQOL, **a lower score for this questionnaire indicates better quality of life**. Although only a few of the questions are positively framed (items 58, 61, 64 and 66), the direction of the response scale varies so half of the items have to be reverse scored. Details of these items are given below:

Items to be reverse scored: *2, 4, 6, 10, 13, 14, 18, 21, 22, 23, 24, 25, 28, 30, 31, 34, 35, 37, 39, 43, 44, 46, 47, 49, 51, 52, 56, 57, 58, 60, 63, 65, 67, 68, 70.*

As the scales have different numbers of items, a scale score is produced by computing the mean item score for that scale.

2.3.3 Adolescent Coping Scale

The short form of the Adolescent Coping Scale or ACS was used (Frydenberg and Lewis, 1993; see Appendix 1c). This is a brief self-report inventory comprising 18 items assessing different coping strategies. Items are rated by the respondent using a five-point Likert scale. The General Form was used which assesses how an individual usually copes with concerns or worries. Factor analysis of responses has indicated that the questionnaire identifies three distinct coping styles: problem-focused coping, coping by reference to others, and non-productive coping, which is associated with an inability to cope with a problem. Therefore, items in the questionnaire are grouped into three subscales, producing a score for each coping style. The subscales are reported to discriminate satisfactorily and have reasonable internal consistency. Further, test-retest reliability analyses indicate that the measure

produces stable responses. The development and testing of the measure is discussed in greater detail by Frydenberg and Lewis (1990).

2.3.4 Harter Self-Esteem Questionnaire ("What I am like")

The Harter Self-Esteem Questionnaire is a 36-item, self-completed questionnaire which measures global self-esteem, as well as five separate subscales, scholastic performance, social acceptance, athletic competence, physical appearance and behaviour. The questionnaire was originally developed with North American children, so Hoare, Elton, Greer and Kerley (1993) produced a modified version, with some wording changes, which is said to be more acceptable to children in this country. Hoare et al (1993) also published norms for Scottish school children. The measure is reported to have good internal consistency and construct validity. The modified version was therefore used in this study (see Appendix 1d). Items are worded so that the young person's evaluation of their self-esteem is based upon a comparison of their attributes with those of their peers. Answers are given a score between 1 and 4, with higher scores reflecting better self-esteem. A mean item score is then computed for each of the six scales. The midpoint of each item or scale is 2.5, so a score greater than 2.5 indicates higher self-esteem or better adjustment.

2.3.5 Social Support Questionnaire

A version of the Significant Others Scale (Power and Champion, 1988) was also used in this study (see Appendix 1e). This measure is designed to assess the provision of emotional and practical social support by up to 7 key people, who are either specified on the questionnaire, or selected by the respondent. For each of the

four social support functions included in the questionnaire, each individual is rated in terms of the level of support received and the ideal level of support. Responses are made on a scale from 1 (never) to 7 (always). Scores are produced for actual and ideal levels of support, as well as the discrepancy between the actual and ideal scores. Total scores for emotional support (items 1 and 2) and practical support (items 3 and 4) are divided by the number of individuals rated, to give a mean score for each type of support. The 'discrepancy' score reflects the level of satisfaction with available support in each area. In this study, the participants selected 3 key people whom they considered important in their lives. Studies with adults indicate that the measure has satisfactory reliability and validity. For the purposes of this study, a few wording changes were made so that it was more suitable for young people. Notably, there was no opportunity to test the performance of this measure with this population prior to the study.

2.4 Procedure

In the first instance, three focus groups were convened in order to:

- Check on the validity and comprehensiveness of the facets and domains
- Evaluate the comprehensiveness of the existing items
- Generate any additional items that were considered necessary

Two established groups of young people who met regularly as part of the 'Get a Life' project, co-ordinated by the Health Promotion Department in Fife, agreed to participate. There were 6 young people in each group. Another 7 young people attending an adolescent psychiatric unit in Fife agreed to act as a third focus group. The groups involved open discussion about quality of life and discussion about the

relevance of items in the questionnaire. Participants were encouraged to suggest areas or questions that they thought were inadequately covered.

The information and suggestions gathered were fairly consistent across the groups. A number of participants suggested that items referring to 'hugs' and 'cuddles' from friends or family were not appropriate for their age group. The boys in particular explained that they did not want hugs from their friends and felt that these questions were not relevant to their quality of life. This possibly reflects a cultural view among boys in this country that it is not appropriate to demonstrate affection publicly towards one another. Several young people suggested that the item "My friends and relatives give me lots of hugs and kisses" be changed to "My friends give me hugs and encouragement when I want them to", to make it more acceptable. Also, a number of young people thought that the item "My beliefs are important to me" was too vague and that it should be changed to "My religious or spiritual beliefs are important to me".

There were a number of areas which the young people felt were not adequately covered. Therefore, a further 13 items were generated to reflect concerns such as keeping fit, fashion, privacy and intimate relationships. These items were included in a separate section at the end of the questionnaire.

2.4.1 Pre-test

The revised questionnaire was pre-tested with 55 young people attending a school in Edinburgh, to provide preliminary feedback about possible problems. Feedback from

this group indicated that generally the questionnaire was comprehensible and acceptable, although there ought to be an item relating to the use of alcohol and drugs. It was decided to add such an item to the questionnaire. There were no further necessary changes. (The final version of the questionnaire is included in Appendix 1a.)

Respondents were also asked to supply their postcode. Carstairs and Morris (1991) describe a measure of deprivation that provides an estimate of socio-economic status based on the individual's area of residence. Each postcode sector in Scotland is allocated to a deprivation category between 1, which reflects a very affluent area, and 7, which reflects a very deprived area. This area-based measure is reported to provide a convenient and valid means of assessing level of deprivation. Kinra et al (2000) argue that an area-based measure of deprivation is particularly relevant in studies looking at the health effects of socio-economic position, by virtue of the inclusion of the contextual effects of residing in poor neighbourhoods, such as access to cheap and healthy food options and sporting facilities. However, it was possible that many children would not know their postcode and other methods would have to be considered. The initial pilot indicated that this was generally not the case as 67% were able to supply their postcode therefore this was considered a reasonable way to obtain information about socio-economic status.

2.4.2 Main pilot

Copies of the questionnaire were taken to a school in West Lothian, where the headteacher had agreed to distribute it to his students. It was intended that the

questionnaire should be completed by approximately equal numbers of male and female students, and equal numbers of 12, 13, 14, 15, 16, and 17 year olds.

The questionnaires were subsequently distributed to a number of class teachers. Each class teacher administered the questionnaire on a group basis at a time convenient during the school day, after which they were returned to the head teacher.

Full instructions were written on the front page of the questionnaire. The respondent was asked to consider each statement, and tick the response that was most true for him or her, in light of the last two weeks. If an item was too difficult the respondent could leave it blank. In addition, the respondent was asked to supply his or her postcode.

2.4.3 Clinical sample

The questionnaire was also administered to a sample of overweight young people. Several community dietitians agreed to provide the names of possible participants, that is any young person, aged between 12 and 18, who was seeing the dietitian because he or she was overweight. Those who could be were contacted by telephone and the study was explained to the parent or carer in the first instance. Those who could not be contacted by telephone were written to. Once initial consent was given from the carer, an arrangement was made to visit the young person at home where aspects of the study could be discussed in more detail. At this point a written information sheet was given to parents and young people (see Appendix 2a). The voluntary nature of participation and the maintenance of strict confidentiality were

particularly stressed. If the young person was interested, he or she was asked to sign a consent form (see Appendix 2b). Written consent was also sought from the young person's carer (see Appendix 2c). The questionnaires were then administered in the following order:

- Modified version of WHOQOL-100 (20 – 25 minutes)
- Modified version of IWQOL (10 - 15 minutes)
- Modified version of Harter Self-Esteem Questionnaire (10 minutes)
- Adolescent Coping Scale (5 minutes)
- Modified version of Significant Others Scale (5 minutes)

Instructions were included in writing at the beginning of each questionnaire. These were read aloud before each questionnaire was completed. Participants were encouraged to ask questions if they were unclear about what was being asked of them. The scales were self-completed in about an hour. The times for completing individual scales are given above. Reponses were then scored according to the guidelines described earlier. Information about the young person's height and weight was obtained from the relevant dietitian. All data were kept in terms of the Data Protection Act, and were coded to obviate identification of participants, thereby maintaining confidentiality.

2.5 Data analyses

Data analyses were carried out using SPSS (Windows) Version 9. Internal consistency was assessed using Cronbach alpha. Differences between groups were explored using independent t-tests and one-way ANOVA tests. Chi-square and

Mann-Whitney tests were used to explore differences between groups on categorical or non-parametric demographic variables. Exploratory factor analysis of data was carried out using a principal components analysis with varimax rotation. Pearson's correlation coefficients were produced in order to investigate relationships between variables. Significance levels were pre-set at the 0.05 level.

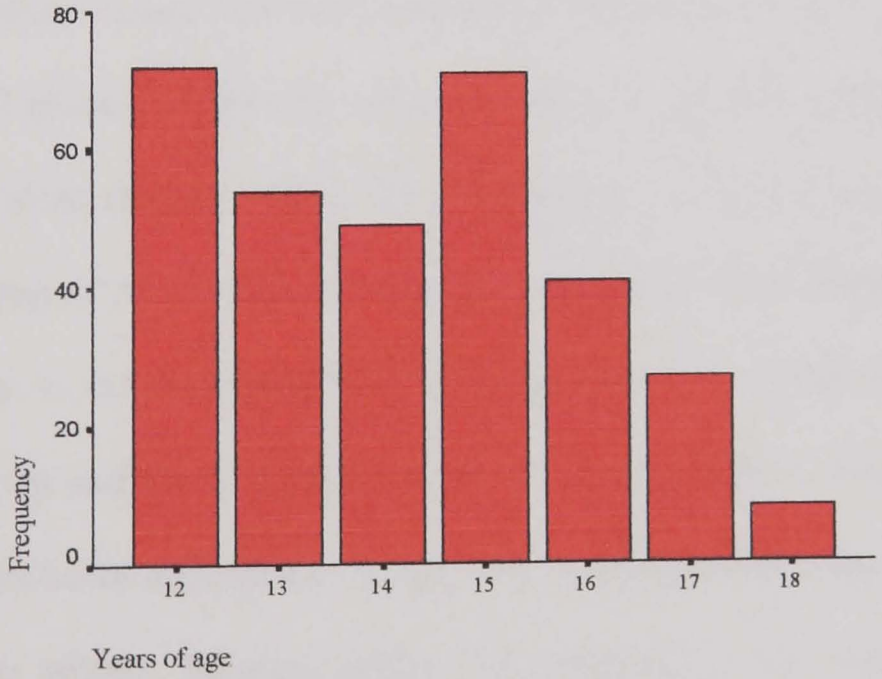
3. Results

Descriptive and inferential statistics are summarised initially for the healthy group, followed by statistics for the clinical sample and results of comparisons between the two groups.

3.1 Demographic characteristics of healthy group

The healthy group included 322 young people, aged between 12 years and 18 years (mean 14.2 years, s.d.±1.5). A Kolmogorov-Smirnov test confirmed that the distribution of the sample across the age range was not uniform ($z = 4.74$; $p<0.01$). This is illustrated below in Figure 1.

Figure 1. Age range - initial sample



Five participants did not supply information about their sex; of the remaining participants, 52.8% (170) were male and 45.7% (147) were female. Table 3 illustrates that those who provided their postcode were mostly in deprivation

category 2. Statistics from the Kolmogorov-Smirnov test confirmed that this sample was not normally distributed across the deprivation categories ($z = 7.54$; $p<0.01$).

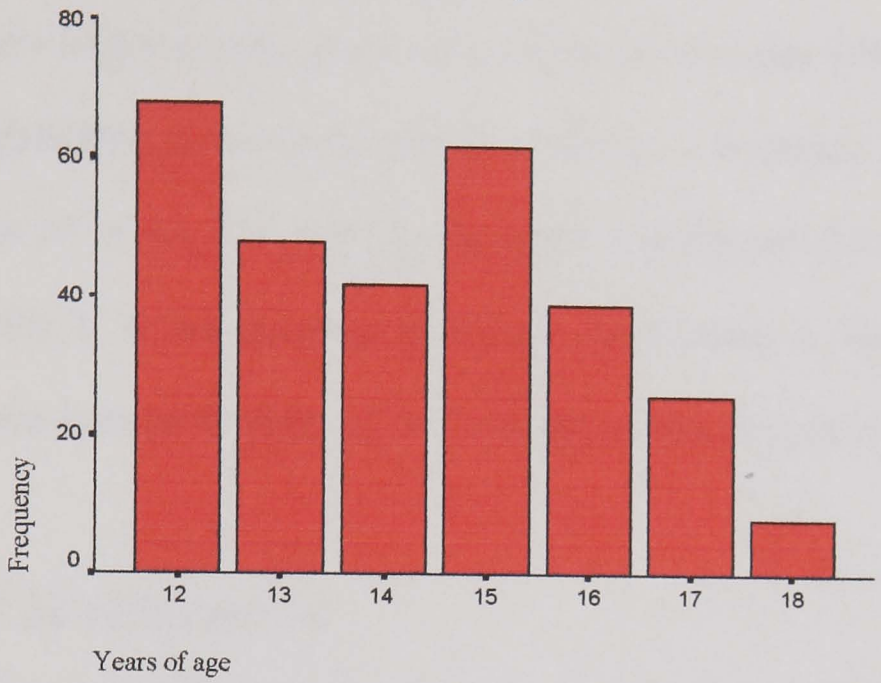
Table 3. Healthy group – initial sample

Deprivation Category	Frequency	(%)
1	22	(8.0%)
2	213	(77.2%)
3	6	(2.2%)
4	34	(12.3%)
5	1	(0.4%)
6	0	(0%)
7	0	(0%)
Missing	46	(14.3%)

Following the guidelines set out for the scoring of the WHOQOL (World Health Organisation, 1998), those participants who had missed out 20% or more of the items in the questionnaire were excluded from further analysis. Interestingly, participants did not seem to avoid specific items or facets; rather, it would appear the pattern of missing values reflected increasing tiredness towards the end of the questionnaire. A full account of missing values per item is included in Appendix 3. As a result of 20% or more missing values, 29 young people were removed from the sample, leaving a group of 293. In order to determine whether this exclusion criterion had introduced a bias to the final sample in terms of age, sex or deprivation category, the excluded group and the remaining group were compared on those descriptive variables. No significant differences in age, sex or deprivation category were found between the two groups. Missing values that occurred in the remaining questionnaires were replaced with the appropriate mean variable scores in subsequent analyses.

The age distribution of the final sample is illustrated in Figure 2. A further Kolmogorov-Smirnov test confirmed that the distribution of participants across the age range remained unequal ($z = 4.29$; $p<0.01$).

Figure 2. Age range - final sample



The mean age of the final sample was 14.2 years (s.d.±1.7). Fifty four per cent (n = 159) of the group were male and 45% (n = 131) female; 3 participants did not provide this information. The distribution of the sample according to deprivation category is summarised in Table 4. There remained a non-normal distribution across categories ($z = 7.12$; $p<0.01$), with the majority falling in category 2.

Table 4. Healthy group – final sample

Deprivation Category	Frequency	(%)
1	23	(7.8%)
2	194	(66.2%)
3	5	(1.7%)
4	29	(9.9%)
5	1	(0.3%)
6	0	(0%)
7	0	(0%)
Missing	41	(14%)

3.2 Frequency Analysis

A frequency analysis was performed on the data from the healthy group, in order to investigate the distribution of responses across the five-point rating scale, for each of the items. Guidelines for scoring the WHOQOL suggest that those items with two or more adjacent scale points accounting for less than 10% of the responses should be highlighted as having frequency problems. A frequency analysis of the data indicated that 69 of the 121 items in the questionnaire met this criterion; these are listed in Table 5. A full report of frequency distributions is included in Appendix 4. Those items with particularly skewed frequency distributions were from the *self care* facet.

3.3 Reliability analysis

Scale reliability analyses were carried out in order to evaluate the internal consistency of the questionnaire. A series of corrected item-facet correlations were produced for each scale, which is summarised in Table 6. Of particular interest were those items regarded as having possible reliability problems, therefore items were highlighted if they correlated with their own facets at values of Pearson $r < 0.4$. For example, the item "I wake up too early in the morning" from the *sleep* facet had a corrected item-facet correlation of only 0.19. Clearly, responses to this statement were not consistent with responses to the other statements in the scale. As such, this item weakens the scale. If it is deleted the Cronbach alpha for the *sleep* facet is increased to 0.76.

Table 6 lists Cronbach alpha values for all the facets. There are a number of moderate alpha values, relating specifically to the *physical warmth* scale ($\alpha = 0.41$),

Table 5. Items highlighted by frequency analysis

1. I am able to go to school. 2. I have to take medicine every day. 3. I am happy with myself as a person. 4. I get help from my family when I have a problem. 6. I like the place where I live. 9. I live in a healthy area. 11. I enjoy life. 13. I can wash and dress myself. 16. I go to a good school. 17. I have lots of friends. 25. I am happy with the way I have of getting around (bus, bike, car). 27. I have medical treatment often. 28. I am clever. 29. I can count on my friends when I need them. 31. I have most of the things I need at home. 36. I feel happy most of the time. 38. I can go to the toilet by myself. 39. I am able to stick to things until they are finished. 40. I get bullied at school. 41. There are lots of books for me to read if I want to. 42. I get on well with my mum (or the person I call mum). 45. I can get around very well. 46. I am loved and looked after. 49. I don't have much to do in my spare time. 50. I can get out and about easily where I live. 51. I am happy with the way I work at school. 52. I often have to have help from other people life doctors and nurses. 53. I like the way I lead my life. 54. When I have a problem there aren't many people who will help me. 56. My home is nice. 57. I have to rest a lot during the day. 59. I am happy with the area I live in. 61. I think things will turn out fine for me in the future. 62. I feel safe and secure where I live. 63. I have difficulty with feeding myself. 66. I have a good choice of subjects at school. 67. I get on well with my dad (or the person I call dad).	70. Physical problems stop me getting around as much as I would like. 72. There are good hospitals when I need them. 75. I can get a lift or bus to wherever I want to go. 76. I can play games or sports at school. 77. I often have to go to hospital. 81. I have enough to eat. 82. I have lots of energy. 85. Sometimes I don't join in with others because of the way I look. 86. I feel good about life. 88. I can look after myself. 89. I am able to concentrate. 91. I can use a computer or television if I need to. 92. I get on well with teachers at school. 93. We have enough money to live on. 94. I am in pain a lot of the time. 95. I am bothered by problems of getting around. 97. Doctors and nurses are not nice to me. 99. I can play outside with my friends when the weather is good. 100. Lack of transport stops me from seeing my friends. 102. Mostly I can do what I want to when I'm at home. 103. I am able to keep my friends. 104. Dentists are nice to me. 107. I can play computer games if I want to. <u>Items from adolescent module</u> 109. When I am at home I feel listened to. 111. There is someone I can talk to at school if I have a problem. 112. I have enough privacy at home. 113. I am able to talk to someone about sex if I want to. 116. I can keep up with fashion if I want to. 117. I can keep fit if I want to. 118. There are lots of things that I like to eat. 119. I usually don't like the kind of food that I have to eat. 121. I can make the choices that I want to about things like smoking, alcohol and drugs.

Table 6. Facet reliability analyses

Item	Corrected item-facet correlation	Cronbach alpha
Pain		
19. Sometimes I worry when I get aches and pains.	.41	
44. Pain stops me doing what I want to do.	.54	.69
69. I never have any aches or pains.	.41	
94. I am in pain a lot of the time.	.55	
Energy		
7. I get tired easily.	.51	
32. I don't feel tired during the day.	.50	.72
57. I have to rest a lot during the day.	.54	
82. I have lots of energy.	.54	
Sleep		
23. I find it hard to get off to sleep at night.	.44	
48. I wake up during the night.	.61	.70
73. I get nightmares.	.45	
98. I sleep well at night.	.66	
105. I wake up too early in the morning.	.19	
Positive feelings		
11. I enjoy life.	.63	
36. I feel happy most of the time.	.61	.80
61. I think things will turn out fine for me in the future.	.55	
86. I feel good about life.	.68	
Thinking		
14. I find it easy to decide what to do.	.35	
39. I am able to stick to things until they are finished.	.44	.65
64. I find it easy to remember things.	.46	
89. I am able to concentrate.	.50	
Self esteem		
3. I am happy with myself as a person.	.59	
28. I am clever.	.36	.74
53. I like the way I lead my life.	.63	
78. I wish I was different.	.61	
Body image		
10. I like the way I look.	.55	
35. There are some things about the way I look that I don't like.	.58	.73
60. I wish my body was different.	.63	
85. Sometimes I don't join in with others because of the way I look.	.35	
Negative feelings		
8. I worry about things a lot of the time.	.55	
33. I often feel very unhappy.	.74	.84
58. Sometimes I can't get on with things because I feel sad or depressed.	.70	
83. I feel sad or depressed quite often.	.70	
Mobility		
20. I can run about as much as I like.	.32	
45. I can get around very well.	.38	.60
70. Physical problems stop me getting around as much as I would like.	.47	
95. I am bothered by problems of getting around.	.40	

(continued on next page)

Table 6 (continued) Facet reliability analyses

Self care		
13. I can wash and dress myself.	.57	
38. I can go to the toilet by myself.	.66	.75
63. I have difficulty with feeding myself.	.53	
88. I can look after myself.	.48	
Medication		
2. I have to take medicine every day.	.43	
27. I have medical treatment often.	.64	.73
52. I often have to have help from other people like doctors and nurses.	.49	
77. I often have to go to hospital.	.53	
School		
1. I am able to go to school.	.25	
26. I have problems getting on with my work at school.	.48	.62
51. I am happy with the way I work at school.	.52	
76. I can play games or sports at school.	.38	
Personal relationships		
17. I have lots of friends.	.43	
42. I get on well with my mum (or the person I call mum).	.42	.67
67. I get on well with my dad (or the person I call dad).	.36	
92. I get on well with teachers at school.	.31	
103. I am able to keep my friends.	.49	
106. There are some people in my family I don't get on with.	.45	
Social support		
4. I get help from my family when I have a problem.	.31	
29. I can count on my friends when I need them.	.60	.71
54.When I have a problem there aren't many people who will help me.	.54	
79. My friends help me when I have a problem.	.54	
Physical warmth		
21. My family give me all the hugs I need.	.36	
46. I am loved and looked after.	.36	.41
71. My friends give me hugs and encouragement when I want them to.	.24	
96. I can have 'play fights' (rough and tumble) with someone in my family if I want to.	.06	
Behaviour of others		
15. Other people stop me working at school.	.24	
40. I get bullied at school.	.40	.62
65. Some people in my family boss me around too much.	.41	
90. Some people at school boss me around too much.	.46	
102. Mostly I can do what I want to when I'm at home.	.39	
Safety		
12. I feel safe when I'm out on my own.	.40	
37. I worry about safety.	.40	.66
62. I feel safe and secure where I live.	.40	
87. I worry about getting into danger.	.55	
Home		
6. I like the place where I live.	.46	
31. I have most of the things I need at home.	.48	.72
56. My home is nice.	.62	
81. I have enough to eat.	.49	

(continued on next page)

Table 6 (continued) Facet reliability analyses

Money		
18. I have enough money for the things I want.	.44	
43. People in my family worry about money.	.39	.65
68. People give me enough money when I need it.	.44	
93. We have enough money to live on.	.50	
Services		
22. I have found most doctors and nurses helpful.	.47	
47. I think most of the teachers at school do a good job.	.37	.67
72. There are good hospitals when I need them.	.51	
97. Doctors and nurses are not nice to me.	.44	
104. Dentists are nice to me.	.36	
Opportunities for acquiring new information and skills		
16. I go to a good school.	.39	
41. There are lots of books for me to read if I want to.	.34	.58
66. I have a good choice of subjects at school.	.42	
91. I can use a computer or television if I need to.	.30	
Leisure		
24. I enjoy playing with games.	.19	
49. I don't have much to do during my spare time.	.22	.54
74. I am able to go to clubs (such as youth club, guides, boys' brigade) as much or as little as I want.	.34	
99. I can play outside with my friends when the weather is good.	.44	
107. I can play computer games if I want to.	.37	
Physical environment		
9. I live in a healthy area.	.43	
34. It is noisy where I live.	.44	.60
59. I am happy with the area I live in.	.40	
84. I like the weather where I live.	.28	
Transport		
25. I am happy with the way I have of getting around (bus, bike, car).	.38	
50. I can get out and about easily where I live.	.41	.66
75. I can get a lift or bus to wherever I want to go.	.42	
100. Lack of transport stops me from seeing my friends.	.55	
Spirituality / religion/ personal beliefs		
5. My religious or spiritual beliefs are important to me.	.61	
30. The things I believe in give meaning to my life.	.54	.80
55. I believe in God.	.57	
80. The things I believe in are important to me.	.57	
101. I feel I am here on earth for a purpose.	.45	
108. I have things I believe in which guide my life.	.65	

information and skills (α = 0.58) and *leisure* (α = 0.54). Alphas for the remaining facets range between 0.60 and 0.84, demonstrating good internal consistency for those scales.

Further analysis was carried out to investigate whether those items that related most poorly to their own scales loaded higher on other scales. Three of the items from the *physical warmth* scale had higher corrected item-facet correlations with the *social support* facet (Q21, r = 0.50; Q46, r = 0.47; Q71, r = 0.47). Also, the item "I am able to go to clubs (such as youth club, guides, boys' brigade) as much or as little as I want" from the *leisure* facet had a higher loading on the *mobility* facet. There were no significant findings for the other items that related poorly to their own predicted scale.

Most of the additional items pertaining to adolescent issues were not significantly related to existing subscales. However, there were a few significant results, which are described in Table 7.

Table 7. Loading of adolescent items on existing facets

Item	Facet	Corrected item-facet correlation
109. When I am at home I feel listened to.	Personal Relationships	0.50
110. Teachers listen to me.	Services	0.44
112. I have enough privacy at home.	Home	0.47
117. I can keep fit if I want to.	Mobility	0.58

The results discussed above focus on correlations between items and facets. Another important level of enquiry is the predicted relationships between facets and the 6 different domains. An examination of facet and domain inter-correlations indicated that facets loaded most highly on their own predicted domains. Corrected facet-

domain correlations are summarised in Table 8 (Domain 6, the *Spirituality* domain, is not included in the table, as it consisted of only one facet).

Table 8. Domain reliability analysis

Facet	Corrected facet-domain correlation	Cronbach alpha
Domain 1 – Physical capacity		
Pain	0.54	
Energy	0.61	0.74
Sleep	0.54	
Domain 2 – Psychological		
Positive feelings	0.76	
Thinking	0.54	
Self esteem	0.83	0.86
Body image	0.65	
Negative feelings	0.72	
Domain 3 – Level of independence		
Mobility	0.61	
Self care	0.50	0.72
Medication	0.46	
School	0.50	
Domain 4 – Social relationships		
Personal relationships	0.67	
Social support	0.68	0.80
Physical warmth	0.58	
Behaviour of others	0.54	
Domain 5 - Environment		
Safety	0.43	
Home	0.76	
Money	0.56	
Services	0.63	0.86
Information	0.63	
Leisure	0.60	
Physical environment	0.61	
Transport	0.66	

3.4 Exploratory factor analysis

In order to investigate possible alternatives to the proposed six domain structure of the measure, principal components analysis with varimax rotation was carried out. Analysis generated four factors with eigenvalues greater than one, explaining 59.7% of the variance. The principal component extracted accounted for 43% of the variance, reflecting strong relationships among many of the facets. Table 9 illustrates

the results of the rotated four factor solution. The first factor includes facets related to the *psychological* and *physical* domains. Facets from the *level of independence* and *environment* domains appear to load on the second factor, as does the facet about *thinking*. The third factor includes facets relating to the *social relationships* domain whilst the fourth factor seems to be related to the *spirituality* facet.

Table 9. Principal components analysis of facets

	Factor 1	**Factor 2**	**Factor 3**	**Factor 4**
Pain	0.57			0.42
Energy	0.68			
Sleep	0.67			
Positive feelings	0.66		0.45	
Thinking	0.41	0.60		
Self esteem	0.73			
Body image	0.75			
Negative feelings	0.82			
Mobility				
Self care		0.61		
Medication		0.39		0.51
School		0.66		
Personal relationships		0.44	0.56	
Social support			0.78	
Physical warmth			0.79	
Impact of others' behaviour	0.52		0.46	
Safety	0.60			
Home		0.58	0.48	
Money	0.47		0.46	
Services		0.71		
Information		0.68	0.40	
Leisure		0.50		
Environment	0.41	0.39		
Transport		0.55		
Spirituality				-0.69

Significant loadings of >0.40 are shown
(Loadings of 'Environment' and 'Medication' facets on factor 2 are shown as values are approaching 0.40)

3.5 Comparisons across sex and age group

Responses between male and female participants were compared in terms of their mean facet and domain scores, using the independent samples t-test. The

Table 10. Mean facet and domain scores across sex and age

	Male	Female	t	*p*	12-13yrs.(a)	14-15yrs.(b)	16-18yrs.(c)	*F*	*p*	Post hoc
Pain	3.7 ± 0.7	3.6 ± 0.7	0.7	ns	3.6 ± 0.7	3.7 ± 0.7	3.7 ± 0.8	1.1	ns	ns
Energy	3.7 ± 0.8	3.5 ± 0.8	1.9	ns	3.8 ± 0.8	3.6 ± 0.8	3.5 ± 0.9	3.2	<0.05	a>c
Sleep	3.7 ± 0.8	3.5 ± 0.9	2.8	<0.01	3.7 ± 0.8	3.6 ± 0.8	3.5 ± 0.8	0.9	ns	ns
Positive feelings	4.0 ± 0.8	4.1 ± 0.6	0.2	ns	4.1 ± 0.8	4.1 ± 0.6	4.0 ± 0.6	0.8	ns	ns
Thinking	3.8 ± 0.7	3.8 ± 0.6	0.5	ns	3.8 ± 0.7	3.8 ± 0.7	3.7 ± 0.7	0.9	ns	ns
Self esteem	4.0 ± 0.7	3.7 ± 0.6	3.1	<0.01	3.9 ± 0.7	3.8 ± 0.7	3.8 ± 0.7	0.8	ns	ns
Body image	3.6 ± 0.7	3.1 ± 0.8	4.7	<0.01	3.5 ± 0.8	3.4 ± 0.8	3.3 ± 0.7	1.3	ns	ns
Negative feelings	3.5 ± 0.9	3.3 ± 0.9	2.0	<0.05	3.5 ± 0.9	3.5 ± 0.9	3.4 ± 1.0	0.7	ns	ns
Mobility	4.3 ± 0.6	4.3 ± 0.5	0.1	ns	4.3 ± 0.6	4.3 ± 0.6	4.3 ± 0.6	0.3	ns	ns
Self care	4.7 ± 0.6	4.8 ± 0.3	2.4	<0.05	4.8 ± 0.4	4.7 ± 0.5	4.7 ± 0.5	0.2	ns	ns
Medication	4.3 ± 0.8	4.4 ± 0.6	0.7	ns	4.3 ± 0.7	4.4 ± 0.7	4.3 ± 0.8	0.04	ns	ns
School	4.2 ± 0.5	4.2 ± 0.6	0.8	ns	4.3 ± 0.5	4.2 ± 0.5	4.0 ± 0.6	6.9	<0.01	a>c
Pers. rels.	4.1 ±0.6	4.1 ± 0.6	0.3	ns	4.2 ± 0.5	4.1 ± 0.6	3.9 ± 0.7	4.7	0.01	a>c
Social support	3.9 ± 0.7	4.3 ± 0.6	5.3	<0.01	4.1 ± 0.7	4.0 ± 0.7	4.0 ± 0.8	0.6	ns	ns
Physical warmth	3.5 ± 0.7	4.0 ± 0.6	6.8	<0.01	3.7 ± 0.7	3.7 ± 0.7	3.7 ± 0.6	0.04	ns	ns
Impact of others	3.8 ± 0.7	3.8 ± 0.6	0.6	ns	3.7 ± 0.7	3.8 ± 0.6	3.9 ± 0.7	1.3	ns	ns
Safety	3.8 ± 0.7	3.7 ± 0.7	2.2	<0.05	3.7 ± 0.7	3.8 ± 0.7	3.8 ± 0.7	1.4	ns	ns
Home	4.3 ± 0.6	4.3 ± 0.5	0.3	ns	4.5 ± 0.5	4.2 ± 0.6	4.2 ± 0.6	8.2	<0.01	a>b=c
Money	3.8 ± 0.8	3.7 ± 0.7	0.03	ns	3.9 ± 0.8	3.8 ± 0.6	3.5 ± 0.8	4.9	<0.01	a>c
Services	4.0 ± 0.6	4.0 ± 0.6	0.1	ns	4.1 ± 0.6	4.0 ± 0.6	3.9 ± 0.6	0.9	ns	ns
Information	4.3 ± 0.6	4.4 ± 0.5	1.2	ns	4.4 ± 0.5	4.2 ± 0.6	4.4 ± 0.5	3.2	<0.05	a>b
Leisure	4.2 ± 0.6	4.0 ± 0.5	3.4	<0.01	4.3 ± 0.5	4.0 ± 0.5	3.9 ± 0.6	10.7	<0.01	a>b=c
Environment	3.8 ± 0.7	3.8 ± 0.6	0.9	ns	4.0 ± 0.7	3.7 ± 0.7	3.7 ± 0.6	5.9	<0.01	a>c
Transport	4.1 ± 0.7	4.0 ± 0.6	1.2	ns	4.2 ± 0.7	4.1 ± 0.6	3.9 ± 0.7	6.5	<0.01	a=b>c
Spirituality	3.0 ± 0.9	3.2 ± 0.8	1.3	ns	3.1 ± 0.9	3.1 ± 0.8	3.0 ± 0.8	0.1	ns	ns
Domain 1	3.7 ± 0.6	3.5 ± 0.6	2.3	<0.05	3.7 ± 0.6	3.6 ± 0.6	3.6 ± 0.7	0.5	ns	ns
Domain 2	3.8 ± 0.6	3.6 ± 0.6	2.6	.01	3.8 ± 0.7	3.7 ± 0.6	3.6 ± 0.6	1.1	ns	ns
Domain 3	4.4 ± 0.5	4.4 ± 0.4	0.6	ns	4.4 ± 0.4	4.4 ± 0.5	4.3 ± 0.5	1.4	ns	ns
Domain 4	3.8 ± 0.5	4.1 ± 0.5	3.3	<0.01	3.9 ± 0.5	3.9 ± 0.5	3.9 ± 0.6	0.2	ns	ns
Domain 5	4.0 ± 0.5	4.0 ± 0.4	1.2	ns	4.1 ± 0.4	4.0 ± 0.4	3.9 ± 0.5	5.9	<0.01	a>c
Domain 6	3.0 ± 0.9	3.2 ± 0.8	1.3	ns	3.1 ± 0.9	3.1 ± 0.8	3.0 ± 0.8	0.1	ns	ns

comparisons are summarised in Table 10. There were significant differences between the sexes on several facets. Male respondents rated the facets *sleep, self-esteem, body image, negative feelings* and *leisure*, more positively than their female counterparts. Significantly higher scores on the *self care, social support* and *physical warmth* facets were found for the female respondents. In terms of the domain scores, females had higher *social relationship* scores, whilst males had higher *physical capacity* and *psychological* scores.

The sample was divided into three age groups. Responses across these groups were compared using the one-way ANOVA test. Significant results were found for some facet scores so a Scheffe post hoc test was performed to identify specifically where the differences existed. The results indicated that generally there was a trend for scores to get less positive as age increased. This was particularly so for the *energy, school* and *personal relationships* facets. Also, responses to six out of eight of the facets in the *environment* domain demonstrated a significant age effect, with younger participants producing higher scores.

Importantly, though, Table 10 includes a large number of comparisons and the hazard of type I errors associated with multiple testing ought to be taken into account.

3.6 Analysis of the effect of deprivation

One aim of the study was to investigate the effect of deprivation on scores across facets and domains. However, 66.2% (n = 194) of those for whom this information

was available were in category 2. The sample was therefore divided into two main groups; group one included respondents in categories 1 and 2 (n = 217), whilst those in categories 3, 4 and 5 were in group two (n = 35). Table 11 summarises the mean scores for each group. On most scales there were no differences between the groups. However, participants in the more deprived group had significantly lower scores on facets relating to *energy, safety, money* and the *environment*. The hazard of type I errors associated with multiple testing is also pertinent here.

Table 11. Mean scores according to deprivation group

	Group 1 (n=217)	Group 2 (n=35)	t	*p*
Pain	3.6±0.7	3.4±0.7	1.6	ns
Energy	3.7±0.8	3.3±0.8	2.2	<0.05
Sleep	3.6±0.8	3.5±0.9	0.6	ns
Positive feelings	4.1±0.7	4.1±0.7	0.3	ns
Thinking	3.8±0.7	3.7±0.6	0.7	ns
Self esteem	3.8±0.7	3.8±0.7	0.5	ns
Body image	3.4±0.8	3.4±0.9	0.05	ns
Negative feelings	3.5±0.9	3.2±1.1	1.6	ns
Mobility	4.3±0.5	4.1±0.6	1.6	ns
Self care	4.8±0.5	4.7±0.4	0.9	ns
Medication*	4.4±0.7	4.3±0.7	0.5	ns
School	4.2±0.5	4.1±0.6	1.0	ns
Pers. rels.	4.1±0.6	4.1±0.6	0.5	ns
Social support*	4.1±0.7	3.9±0.9	1.3	ns
Physical warmth	3.8±0.7	3.8±0.8	0.1	ns
Behaviour of others	3.8±0.6	3.7±0.7	0.8	ns
Safety	3.8±0.6	3.5±0.9	2.4	<0.05
Home	4.4±0.6	4.3±0.4	0.5	ns
Money*	3.8±0.7	3.5±0.8	2.4	<0.05
Services	4.0±0.6	4.0±0.6	0.1	ns
Information	4.3±0.5	4.3±0.4	0.1	ns
Leisure	4.1±0.5	4.0±0.5	0.9	ns
Environment	3.8±0.7	3.6±0.7	2.3	<0.05
Transport	4.1±0.7	4.0±0.7	1.2	ns
Spirituality*	3.1±0.8	3.2±0.6	1.2	ns
Domain 1	3.6±0.6	3.4±0.7	1.8	ns
Domain 2	3.7±0.6	3.7±0.7	0.5	ns
Domain 3	4.4±0.4	4.3±0.4	1.3	ns
Domain 4	3.9±0.5	3.9±0.6	0.9	ns
Domain 5	4.0±0.4	3.9±0.4	1.9	ns
Domain 6*	3.1±0.8	3.2±0.6	1.2	ns

Group 1 – categories 1 and 2; Group 2 – categories 3, 4 and 5.
*Levene's Test indicated equal variances could not be assumed for scores on this facet or domain

3.7 Demographic characteristics of clinical group

There were 3 male and 12 female participants in the clinical group, aged between 11 years and 15 years (mean 12.9 years; s.d.±1.4). A chi-square test confirmed that the sex ratios of this sample and the healthy sample were significantly different, in that there were proportionally fewer males in this sample ($\chi^2 = 6.95$; df = 1; $p<0.05$). Further, the mean age of this group was significantly lower than that of the healthy group ($t = 2.97$; $df = 306$; $p<0.05$).

In terms of deprivation, most of the clinical group were in category 4. A Mann-Whitney test indicated that this distribution was significantly different to the distribution of the healthy group, with the clinical sample being more deprived ($z = 6.00$; $p<0.01$).

Finally, the participants' body mass index (BMI – weight in kg/height in m^2) ranged from to 23.9 to 47.1 (mean 31.3; s.d.±5.8). Information about weight and height was not available for one participant.

3.8 Comparisons of scores between healthy group and clinical group

There were differences in responses between groups on a number of the facets of the quality of life measure. Those in the clinical sample had lower scores on scales relating to *self-esteem, body image, safety, pain* and *mobility*. Similarly, domain scores for the clinical group were lower in terms of the *physical capacity, psychological* and *level of independence* domains (see Table 12).

As the clinical group included just 3 male participants, a comparison was made of only female participants' responses. With males excluded from the analysis, there were no significant differences between the groups on the domain scores, nor were there differences on the *mobility* and *pain* facets. However, there were significantly

Table 12. Comparisons of mean scores between healthy and clinical groups

	Healthy sample (n=293)	Clinical sample (n=15)	t	*p*
Pain	3.6±0.8	2.9±0.9	3.6	<0.01
Energy	3.6±0.8	3.5±0.7	0.5	ns
Sleep	3.6±0.8	3.3±0.9	1.5	ns
Positive feelings	4.1±0.7	3.9±0.7	0.6	ns
Thinking	3.8±0.7	4.0±0.8	0.9	ns
Self esteem	3.9±0.7	3.2±0.9	3.6	<0.01
Body image	3.4±0.8	2.5±0.8	4.2	<0.01
Negative feelings	3.5±0.9	3.3±0.7	0.8	ns
Mobility	4.3±0.6	3.9±0.7	2.3	<0.05
Self care	4.8±0.5	4.7±0.4	0.1	ns
Medication*	4.3±0.7	3.8±1.3	1.6	ns
School	4.2±0.5	4.1±0.7	0.8	ns
Pers. rels.	4.1±0.6	4.3±0.6	1.4	ns
Social support	4.1±0.7	4.1±0.5	0.4	ns
Physical warmth	3.7±0.7	3.9±0.6	1.2	ns
Behaviour of others	3.8±0.7	3.6±0.7	1.3	ns
Safety	3.8±0.7	2.9±0.6	4.5	<0.01
Home	4.3±0.6	4.3±0.6	0.3	ns
Money	3.7±0.7	3.6±0.8	0.9	ns
Services	4.0±0.6	4.2±0.4	1.0	ns
Information	4.3±0.5	4.5±0.3	1.0	ns
Leisure	4.1±0.6	4.3±0.6	1.2	ns
Environment	3.8±0.7	3.6±0.7	1.3	ns
Transport	4.1±0.7	4.3±0.5	0.9	ns
Spirituality	3.1±0.9	3.3±1.0	0.8	ns
Domain 1	3.6±0.6	3.3±0.7	2.2	<0.05
Domain 2	3.7±0.6	3.4±0.6	2.1	<0.05
Domain 3	4.4±0.4	4.1±0.5	2.2	<0.05
Domain 4	3.9±0.5	4.0±0.5	0.5	ns
Domain 5	4.0±0.4	3.9±0.4	0.7	ns
Domain 6	3.1±0.9	3.3±1.0	0.8	ns

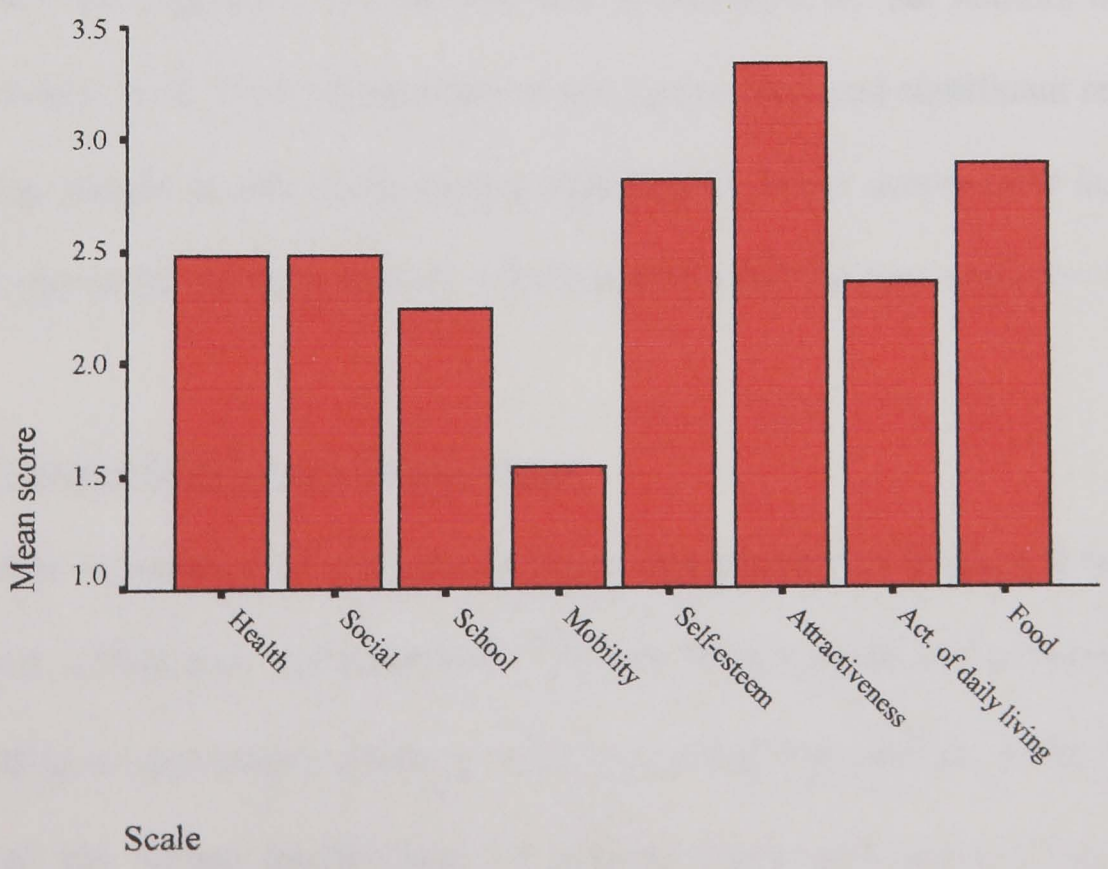
*Levene's Test indicated equal variances could not be assumed for scores on this facet

lower scores for those in the clinical group on scales relating to *self-esteem* ($t = 3.19$; $df = 141$; $p<0.01$), *body image* ($t = 2.67$; $df = 141$; $p<0.01$) and *safety* ($t = 3.60$; $df = 141$; $p<0.01$). In addition, scores on the *personal relationships* facet were different between females in the two groups, with those in the clinical sample having significantly higher scores on this facet ($t = 2.57$; $df = 141$; $p<0.05$). As a number of comparisons between the 2 groups were made, it is again important to consider the hazard of type I errors associated with multiple testing.

3.9 Areas of concern highlighted by the IWQOL (Impact of Weight on Quality of Life Questionnaire)

The most important problem areas for this clinical group seemed to be related to items in the *attractiveness, food* and *self-esteem* scales, as suggested by the higher mean scores on these scales (Note that for this questionnaire the higher the score, the more negative the rating). Figure 3 illustrates this.

Figure 3 - Mean scores on IWQOL



The items summarised in table 13 were rated as 'true' or 'very true' by at least 8 of the 15 participants. These would seem to reflect areas of particular concern for this group.

Table 13. Negatively endorsed items on IWQOL

Physical	I worry about my health. I get short of breath easily. I am sometimes sleepy during the day. Sometimes I have to go to the toilet during the night.
Social	I am teased by other people. I worry that others will not like me.
Self esteem	I don't like myself as much as I should. I am often moody. I worry about my weight.
Attractiveness	I am not attractive to other boys or girls.
Act. of daily living	I have trouble finding clothes to fit me. I worry about fitting through narrow spaces.
Food	I enjoy thinking about food. It bothers me when I eat too much.

A one-sample t-test allowed the scores from this group to be compared with mean scores for a group of overweight adults published by the authors of the IWQOL (Kolotkin et al, 1995). Responses to two scales produced significant results, with the young people in this study having significantly lower scores (that is, less negative ratings) on the *mobility* scale ($t = 9.10$; $p<0.01$) and the *food* scale ($t = 5.41$; $p<0.01$).

3.10 Harter Self-Esteem Questionnaire

Further exploration of self-esteem issues was possible by looking at responses to the Harter self-esteem questionnaire. The two lowest mean scores were on subscales relating to *appearance* (mean = 1.90; s.d.±0.69) and *athletic ability* (mean = 2.02; s.d.±0.50). Scores smaller than 2.5 indicate poorer self-esteem (Hoare et al, 1993).

This was the case for 11 respondents on the *appearance* subscale, and 12 on the *athletic* subscale. Eight respondents had a score of less than 2.5 on the *global* self-esteem subscale (mean = 2.32; s.d.±0.78). The other subscales (*school, social* and *behaviour*) had mean scores greater than 2.5, indicating better self-esteem in those areas.

3.11 Relationship between scores and BMI

There were no significant associations between respondents' BMIs and ratings on quality of life facets or domains, scale scores on the IWQOL, answers to the coping questionnaire, the social support questionnaire or the self-esteem measure. However, responses to two individual items on the IWQOL were associated with BMI. Responses to the item "I don't like looking in the mirror" correlated with BMI (r = 0.70; $p<0.01$; n = 14), as did answers to "I sometimes feel that I don't have much control over things" (r = 0.55; $p<0.05$; n = 14).

3.12 Coping and support

Reported use of non-productive coping and avoidance strategies, as indicated by responses to the Adolescent Coping Scale (1993), was associated with poorer quality of life scores on IWQOL scales related to *health* (r = 0.58; $p<0.05$; n = 15), *school* (r = 0.57; $p<0.05$; n = 15) and *activities of daily living* (r = 0.58; $p<0.05$; n = 15).

Further, higher scores on the non-productive problem solving scale were associated with lower scores (poorer quality of life) on the *physical capacity* domain (r = -0.75; $p<0.01$; n = 15), the *psychological* domain (r =-0.56; $p<0.05$; n = 15), the *level of*

independence domain (r =-0.61; $p<0.05$; n = 15), the *social relationships* domain (r =-0.60; $p<0.05$; n = 15), and the *environment* domain (r = -0.65; $p<0.01$; n = 15).

Looking at individual items on the coping scale, those that were most frequently rated as 'used often' or a 'used great deal' included; "make time for leisure activities" (13 respondents) and "try to improve relationships with others" (11 respondents). The item about spending time with a boyfriend or girlfriend was most frequently rated 'don't do it' or 'used very little' (8 respondents).

Ratings on the social support measure did not tend to be strongly associated with other variables although scores on the *spirituality* domain were significantly correlated with ratings of *actual emotional support* (r = 0.54; $p<0.05$; n = 15) and *actual practical support* (r = 0.61; $p<0.05$; n = 15).

4. Discussion

The present study aimed to test a modified version of the WHOQOL for young people, and to explore the impact of overweight on quality of life. This section will examine the main findings of the study. Initially, analyses of the healthy group's responses to the modified WHOQOL and this measure's psychometric properties will be discussed, followed by an examination of findings from the overweight group. Finally, methodological problems and implications for future research are explored.

4.1 Frequency analysis

A frequency analysis of responses from the healthy group indicated that 69 of the 121 items had possible frequency problems, according to guidelines for the development of the original WHOQOL. Items that were highlighted had two or more adjacent scale points accounting for less than 10% of the responses. In line with this criterion, it would seem that over half of the items in the questionnaire did not produce adequate response distributions, as responses tended to be skewed towards the more positive end of the scale. Consequently, these items should be considered for removal from the questionnaire, as they do not appear to reflect aspects of life that affects its quality during adolescence. It seems the items do not distinguish between different levels of QOL, with the result that their inclusion does not significantly enhance a QOL assessment. As indicated in the results section, however, it is important to bear in mind that previous WHOQOL studies have included substantial numbers of respondents who were unwell at the time of

response. The sample in the present study consisted primarily of healthy young people, with the result that the frequency of responses for lower QOL categories was decreased. Those who participated in the focus groups agreed that, being healthy, they took many aspects of life for granted such as being able to feed and dress themselves. Indeed, items from the *self care* facet produced the most extreme frequency distributions, with the large majority of responses in higher QOL categories. The discussants in the focus groups maintained that although self care was undoubtedly an important aspect of life that affected its quality, it was the area which they envisaged was fairly unlikely to be problematic for the majority of young people. It may be that the *self care* facet should be dropped from the core questionnaire and included in relevant add-on modules for specific populations who are more likely to have problems in this area. It should be stressed though, that before exclusion is considered the performance of this facet should be evaluated with individuals who are unwell.

A number of the new items, which were generated by the young people in the focus groups, tended to produce positive ratings. The items relating to keeping fit, liking what there is to eat and making choices about alcohol and drugs had particularly extreme response distributions. It seems these aspects of life are generally not problematic for young people, and so do not tend to impact on QOL, therefore their inclusion does not significantly enhance the QOL assessment.

However, it appears that the majority of items were highlighted by the frequency analysis as a result of the sample being primarily healthy with few problems, rather

than the items being irrelevant to young people's QOL. In order to investigate this further, response distributions of groups with various health problems should be examined.

4.2 Facet reliability analyses

Examination of corrected item-facet correlations indicated that some items related particularly poorly to their own scale. For instance, the correlation between responses to the item "I wake up too early in the morning" and scores on the *sleep* facet was only 0.19. This item was rated more positively than other items in the scale. It seems those who had problems with other aspects of sleep, such as getting off to sleep or waking during the night, did not tend to report being bothered by early morning wakening. This response pattern is perhaps indicative of the healthy sample and it may be that early morning wakening is more likely to be reported by those who are unwell. The results from the present study though, suggest that the item significantly weakens the scale and should be considered for re-wording or perhaps exclusion from the questionnaire.

Another low item-facet correlation was produced for the item "I am able to go to school", from the *school* facet (r = 0.25). As the questionnaire was completed in school, there was obviously not much variation in the way this item was rated. There was more variation in responses to the other items in the *school* scale, with the result that the above item related poorly to its predicted facet. However, the item clearly reflects a vital aspect of school life and should remain in the questionnaire. This

finding underlines the need to test the questionnaire with those who are unable to go to school.

From the facet reliability analyses, there are a number of items relating to school or teachers that relate quite poorly to their predicted subscales. For example, the items "I get on well with my teachers at school", "Other people stop me working at school", "I go to a good school" and "I think most of the teachers at school do a good job" correlated with their own facets at values of less than $r = 0.4$. Whilst completion of the questionnaire in schools was hugely advantageous in that it was possible to recruit a large number of participants, it seems that the items about school tended to be rated more positively than other scale items. Importantly, teachers administered the questionnaires to their students. Although questionnaires were anonymous, administration by teachers may have led to a response bias for items relating to school.

Cronbach alphas for each of the facets ranged from 0.41 (*physical warmth*) to 0.84 (*negative feelings*). The *physical warmth* facet was an addition to the modified WHOQOL, intended to replace the *sexual activity* facet from the original WHOQOL. Items about sexual activity in the WHOQOL were considered inappropriate for the younger children who were expected to be involved in this study. However, those involved in the initial modification of the questionnaire thought it important that aspects of physical affection and warmth were addressed; therefore items for a *physical warmth* scale were generated. Nevertheless, analysis of responses indicated that three of these items had higher corrected item-facet correlations with the *social*

support scale. It may be that physical warmth and social support are not distinguishable constructs during adolescence. On the other hand, perhaps the items in the *physical warmth* scale did not adequately tap aspects of physical warmth. In any case, the reliability of this scale in its current form is insufficient and it should be reformulated with more relevant items, or it should be excluded from the questionnaire.

Interestingly, a number of participants in the focus groups did not like some of the items from the *physical warmth* facet. Discussion from the focus groups, and a few comments made by respondents at the pre-test stage, indicated that the items were considered more suitable for a younger age group. Comments regarding this scale underlined that there are important differences between adolescents and younger children which QOL assessments should be sensitive to. Further, the boys objected particularly strongly to the references to hugs. It seems the item was generally understood to mean hugs from their friends rather than from a girlfriend or boyfriend, although it was expected that the item might reflect both. As indicated in the method section, this perhaps reflects a cultural view amongst young males that it is not appropriate to demonstrate physical affection publicly towards one another. Discussion from the focus groups indicated that it was important, though, to enquire about intimate relationships, as this is often a significant aspect of life for young people. However, an item about intimate relationships specifically was quite difficult to formulate, in that it had to be suitable for those from 12 to 18 years of age. The area of intimate relationships in particular highlighted the broad range of experience

and maturity across the adolescent population, and the difficulty producing a questionnaire that is applicable to the whole group.

Further, there was some concern that an item relating to intimate relationships specifically could be quite exclusionary, as many young people do not have a girlfriend or boyfriend. Therefore, it was decided to add the item "I can have a girlfriend or boyfriend if I want to". Responses to this item did not load on the *physical warmth* facet nor was there a significant relationship with any of the other existing facets, so it is difficult to say which aspect of life this item reflects. In relation to individual items, however, scores on this item were most strongly associated with responses to "I can keep up with fashion if I want to".

Another new facet, *behaviour of others,* performed reasonably well producing a Cronbach alpha of 0.62. However, the item "Other people stop me working at school" did not relate well to the rest of the scale resulting in a corrected item-total correlation of only 0.24. As suggested above, there may be a response bias relating to items about school due to the questionnaire being administered by teachers.

Cronbach alphas for the 5 domains analysed ranged from 0.72 (domain 3) to 0.86 (domains 2 and 5), demonstrating good internal consistency. The Cronbach alpha value for domain 1 should be read with caution as it was based on three scores rather than the minimum four generally recommended for assessing internal reliability.

4.3 Factor analysis

The conceptual structure of the WHOQOL assumes that 6 domains contribute to the overall assessment of QOL. However, exploratory factor analysis of the data in the present study suggested that a 4 factor solution might be more appropriate. Similarly, there is some evidence that a 4 domain solution may be more appropriate for the WHOQOL-BREF, rather than a 6 domain structure (The WHOQOL Group, 1998).

The loadings of various facets on each of the 4 factors in this study are somewhat different to the loadings of facets on each of the 4 factors of the WHOQOL-BREF. In this study, the first factor appears to relate to *physical capacity* and *psychological functioning* domains, as well as the *safety* facet. Facets from the *level of independence* and *environment* domains seem to load on the second factor, as does the facet about *thinking*. The third factor includes facets from the *social relationships* domain, whilst the fourth factor seems to be related to the *spirituality* domain.

Analysis of responses to the WHOQOL-BREF produced quite a different picture. The first factor relates to *physical capacity* and *level of independence* domains, the second factor to *psychological* and *spirituality* domains, the third factor to the *social relationships* domain whilst the fourth factor relates to facets about the *environment*. It is interesting to consider the nature of the differences between the 4 factor structure of the WHOQOL-BREF and the 4 factor solution produced by responses in this study. Perhaps the dissimilarity is indicative of differences between adult and adolescent populations in terms of how QOL is experienced. This would highlight the importance of addressing the special issues faced by adolescents and underline the inappropriateness of using adult measures to assess adolescents' QOL.

Significantly though, it should be stressed that the factor analysis in this study was exploratory. Confirmatory factor analysis is necessary to test whether the data fit the hypothetical model of 6 domains; indeed, the 6 domain structure of the original WHOQOL-100 was confirmed using this method (WHOQOL Group, 1998). However, confirmatory factor analysis was beyond the scope of the present study.

4.4 Comparisons across sex and age group

Mean scores on the questionnaire were compared across sex and age. Schor (1998) argues that it is important to compare assessments of young people at different ages so that the interaction between conditions and development can be explored. In the present study, older respondents generally rated items more negatively, as predicted. This finding is in line with results of other studies involving an adolescent age group (Landgraf and Abetz, 1997). It highlights that there are important differences in QOL ratings between adolescents and younger children, which this QOL assessment was sensitive to. There were significant differences across the age range for facets relating to *energy, school, personal relationships,* and six out of eight of the facets in the *environment* domain.

There were also some significant differences between male and female participants. As predicted, females had poorer scores than males on the *body image* facet. It seems that for female adolescents dissatisfaction with body image is often an aspect of life that affects its quality. This finding is consistent with other studies investigating body image during adolescence (Brownell, 1991) and lends support for the construct

validity of this facet. Male respondents also had higher scores on the facets relating to *sleep, self-esteem, negative feelings* and *leisure.* As a result, scores on the *psychological* domain were better for males, as were scores on the *physical capacity* domain. Females had higher scores on the domain relating to *social relationships.*

There is a lack of available QOL data on people who consider themselves to be healthy. Ideally, there ought to be a sound understanding of the range of experiences that might be expected to occur in the healthy population (Landgraf and Abetz, 1998). The significant differences in scores between males and females, and the differences amongst age groups, illustrate that an adolescent population report a considerable range of experiences. As a result, published normative data about QOL during adolescence should include separate information for males and females, and for different age groups. This will assist the meaningful interpretation of findings from young people who are unwell.

4.5 Effect of deprivation

The effect of socio-economic status on QOL is often 'controlled' for rather than explored (e.g. Mathias et al, 1997). Unfortunately, the effect of deprivation on QOL ratings in the present study could not be closely examined, as there was a preponderance of subjects in higher socio-economic groups. The sample did not include anyone from the two lowest deprivation categories, 6 and 7, and only a small number were in categories lower than 1 or 2. Nevertheless, those in deprivation categories 1 and 2 were grouped together and their scores compared with those in categories 3, 4 and 5. This analysis allowed a preliminary exploration of differences

amongst those in various socio-economic groups, albeit generally higher socio-economic groups. Respondents in the more deprived group had significantly lower scores on the *energy* facet, and three facets from the *environment* domain specifically *safety, money* and the *environment*. Interestingly, though, responses to five of the eight facets in the *environment* domain were not significantly affected by socio-economic status. This finding provides support for the inclusion of an *environment* scale in a subjective QOL assessment. Aspects of the environment that relate to QOL are not sufficiently addressed in many existing QOL measures and objective indicators are often used instead. For example, Raphael et al (1996) used socio-economic status as an indicator of environmental quality. However, subjective ratings of QOL in the present study suggest that those who have a lower socio-economic status do not necessarily report a poorer quality of life relating to the environment. As described in the introduction section, it is crucial to bear in mind that the individual's *perception* of quality is key to QOL assessment and the appraisal of the quality of one's life often does not correspond that closely to external conditions (Drotar, 1998). Therefore, the present study underlines the importance of including subjective ratings of aspects of the environment in a QOL assessment, rather than relying on objective indices such as socio-economic status or standard of living, which may be misleading.

4.6 Quality of life assessment of overweight group

Unfortunately, it was only possible to recruit 3 males who were overweight. Thus, comparisons between the overweight group and the healthy group were limited to the female participants. As expected, females in the overweight group had lower scores

than females in the healthy group on the *body image* facet. This finding provides some evidence of discriminatory validity for this facet. The overweight girls also scored more negatively on facets relating to *self-esteem* and *safety*, whilst *personal relationships* scores were higher for the girls who were overweight.

Importantly, the overweight group were significantly more deprived than the healthy group. This difference perhaps accounts for the overweight girls' poorer scores on the *safety* facet. As described above, scores on the *safety* facet were affected by level of deprivation in the healthy sample.

The overweight girls had lower self-esteem than girls in the healthy group. This finding is inconsistent with a number of studies, which indicate that overweight does not significantly affect self-esteem. However, these studies tend to have involved younger children. The literature suggests that overweight may have more negative implications for self-esteem during adolescence (Strauss, 2000; Friedman and Brownell, 1995), which is supported by findings from the present study. Importantly though, this may be a reflection of having a chronic condition rather than being overweight specifically. Starfield et al (1996) note that certain, but not all, categories of chronically ill teenagers suffer from lower self-esteem than their presumably well peers in school populations. To explore this possibility, scores on the *self-esteem* facet would need to be compared between those who are overweight and those who have other health problems.

Further, low scores on the WHOQOL may reflect issues other than overweight per se, such as depression. This study did not include specific measures of depression or anxiety. However, depression would be expected to produce low scores on other facets such as the *negative feelings* facet. The overweight group did not differ from the healthy group on this scale.

As described in the introduction section, the extent to which the stigma of overweight impacts on social functioning is unclear. In this study, overweight girls rated items in the *personal relationships* facet more positively than girls in the healthy group. Similarly, scores on the social subscale of the Harter Self-Esteem Questionnaire indicated good adjustment in that area. Hill and Silver (1995) suggest that a higher BMI is associated with being more liked by parents. This apparent trend may contribute to the higher scores reported here. Further, a greater investment in personal relationships by the individual who is overweight, or by their friends or family, may be a response to the teasing which many overweight individuals are reported to experience. It is possible that perceived quality of personal relationships is a mediating factor influencing the effect of teasing about weight on psychosocial functioning.

No differences were found on domain scores, although it was predicted that the overweight group would score more poorly on domains relating to *physical capacity, psychological functioning, level of independence* and *social relationships*. Of note is that most of the participants were mildly obese. It may be that domain scores are affected for those who are heavier than the sample in the present study.

Although most of the participants were only mildly obese, there were a number of negatively endorsed items on the IWQOL (Impact of Life on Quality of Life Questionnaire). This measure identified specific weight-related problems including being teased, feeling unattractive, and being bothered by eating too much. Although the *food* scale was generally rated poorly, a specific item about binge eating was not highlighted as a particular problem. As the participants were each in contact with a dietitian, binge eating may have been a focus of treatment thus affecting scores on this item. Comments by participants indicated that it would have been useful to include an item about dieting and restricting food intake as this seemed to be a significant aspect of life that affected its quality.

4.7 Correlations with BMI

Although there were some differences between overweight and healthy groups, there did not tend to be a significant association between BMI and questionnaire scores. However, responses to two items from the IWQOL were associated with weight. Those with a higher BMI rated "I don't like looking in the mirror" and "I sometimes feel that I don't have much control over things" more negatively. Greeno et al (1998) found that reported lack of control over eating is a more important predictor of poorer life satisfaction than BMI. The authors conclude that low life satisfaction, lack of control over eating, and increased BMI have reciprocal effects, and they may contribute to each other in a downward spiral. Interestingly, Hill and Silver (1995) suggest that issues of self-control may be particularly important for adolescents who are overweight.

4.8 Coping and Support

Reported use of non-productive coping strategies such as avoidance was associated with poorer quality of life relating to five of the six domains from the WHOQOL. Higher scores on the non-productive coping scale were most strongly associated with lower scores on the *physical capacity* domain. Similarly, IWQOL scores relating to *health* were significantly associated with non-productive coping, as were the scores on the *school* and *activities of daily living* scales. It appears that those who tend to use coping strategies such as avoidance rate their quality of life less positively. Thus, coping style seems to be a significant factor associated with QOL for young people who are overweight. Further, it may be that coping style has an important role regarding the impact of weight on QOL.

It is notable that 11 of the 15 respondents reported that they "try to improve relationships with others" when they have a problem or a worry. This finding is consistent with the higher *personal relationships* scores on the WHOQOL described earlier. As suggested, better personal relationships may be one protective factor buffering the effect of overweight and its associated stigma on QOL.

However, responses to an item about boyfriends or girlfriends in the coping scale indicated that young people who are overweight do not tend to engage in intimate relationships when they have a problem. Sobal et al (1995) found that males emphasised thinness in partners more than females, and there was discomfort with dating overweight partners. The present study involved mostly girls and suggests that they do not tend to rely on intimate relationships for help with a problem. Intimate

relationships perhaps feature less in their lives generally as there is an increased risk of being exposed to the 'discomfort' of others as a result of their weight. Indeed, a long term follow up study by Gortmaker et al (1993) found that overweight females were less likely to marry than their average-weight counterparts.

Responses to the Significant Others Scale (SOS) were not significantly associated with any other variables except the *spirituality* domain from the WHOQOL. Those who had higher scores on the *spirituality* domain rated the actual emotional and practical support they received more positively. Interestingly, scores on the SOS did not significantly correlate with the *social support* facet from the WHOQOL. This probably reflects problems with the use of the SOS in its current form with adolescents, rather than poor construct validity of the *social support* facet. Participants appeared to have most difficulty completing this measure, as indicated by the questions that were asked about it during administration. In particular, it seemed the younger participants had some problems making the distinction between ideal and actual levels of support provision. Further, some clearly had difficulty distinguishing between different kinds of support. The items in such a measure should possibly be more concrete for this age group. In any case, it is necessary to test this version of the SOS with this age group more extensively.

4.9 Methodological considerations

Ideally, generic measures of QOL should be applicable to the whole population irrespective of demographic variables such as ethnicity or socio-economic status. However, Landgraf et al (1996) argue that there is insufficient evidence regarding the

validity of measures across different socio-economic or ethnic groups. In the present study, it was expected that a school population would provide a sample with a good distribution across socio-economic groups, particularly since the majority of respondents attended a state school with an apparently wide catchment area. However, the majority of respondents in the healthy sample were in higher socio-economic groups. Therefore, this study has not properly evaluated the performance of the modified WHOQOL with those who are more deprived.

Further, as indicated earlier, the administration of the WHOQOL questionnaire in school may have introduced a response bias. The significance of this could be explored by testing different administration procedures. Also, it is important that the questionnaire is tested with young people who have left school and started work. Clearly, the *school* facet would have to be replaced by an appropriately worded *work* facet. There may be other changes to the questionnaire that this subset of the population consider relevant.

An important point, which has been raised throughout this section, is that the present study primarily involved young people who were healthy. The measure should be tested with groups with health problems. Although the measure was used here with a group of overweight adolescents, this group was quite small so it is with caution that the findings are generalised.

Foreyt et al (1996) highlight small sample size as a shortcoming in many studies investigating eating disorders. The present study had a clinical sample of just 15,

only 3 of whom were male. As a result, very little can be said here about the experience of boys who are overweight.

Also, the sample were recruited from a dietetic clinic, which limits the extent to which findings can be generalised to those who are overweight but not attending a dietetic clinic. Importantly though, Friedman and Brownell (1995) suggest that by studying the characteristics of groups presenting for treatment, who represent a group of individuals probably suffering from their obesity, it may be possible to identify risk factors for suffering among obese people in general.

However, Friedman and Brownell were writing with an adult population in mind. A young person who is in contact with a dietetic service is probably less likely than an adult to have personally sought treatment. If the young person's parent is involved then the parent's concern rather than the young person's suffering can often be the motivation for seeking treatment, with the result that the young person has less choice and control over their appointments and contact with health services. In the present study, a number of parents expressed far more concern than the young person about their son or daughter's weight. A few parents reported that, whilst weight did not seem to cause their son or daughter significant problems at the moment, they continued to worry about how the young person would cope in the future with possible negative physical and psychosocial consequences of being overweight. It seems a few participants in this sample were encouraged by their concerned parents to see a dietitian prophylactically, in order to minimise future problems. Therefore, it is important to note that the experiences of this clinic sample of young people do not

necessarily reflect the experiences of those who are most bothered by their weight problem.

As with the first part of the study involving school children, an important consideration is the poor representation of different socio-economic groups in the clinical sample. Most of the participants in the clinical sample were in a lower deprivation category, significantly more deprived than the healthy group. The preponderance of more deprived individuals in the clinical group is in line with the well established association between lower levels of socio-economic status and higher incidences of obesity. Studies have reported that those in lower socio-economic groups suffer fewer negative psychosocial consequences than those in higher socio-economic groups. However, the effects of deprivation on obesity, and other variables such as race and culture, have not been properly investigated (Friedman and Brownell, 1995). Unfortunately, the effect of deprivation on QOL of those who are overweight could not be explored in the present study due to the lack of variation in socio-economic status.

Another limitation was the use of modified versions of the IWQOL and the Significant Others Scale, which were not pre-tested with younger age groups prior to the present study. Ideally, focus groups involving overweight young people should have been organised in order to discuss the relevance of items in the IWQOL and to generate more appropriate items based on their own experiences and points of view. However, this was beyond the scope of the present study. Similarly, the relevance of

items in the Significant Others Scale, and the ease with which they could be understood, was not explored prior to this study.

4.10 Future directions

As described, research should examine the performance of the WHOQOL with groups of young people who are unwell. Also, longitudinal studies could usefully assess the test-reliability of the measure, and its sensitivity to changes in QOL associated with treatment. However, the WHOQOL questionnaire in its current form with 121 items is too long for routine use. A brief version of the questionnaire could be produced which would be more practicable. Furthermore, it is necessary to validate the measure by comparing it with established instruments such as the KINDL, and with existing domain specific instruments such as the Children's Depression Inventory.

As with the KINDL quality of life assessment (Ravens-Sieberer and Bullinger, 1998), the basis of the development of the WHOQOL version for young people involved a mixture of top-down and bottom-up approaches. In terms of the top-down approach, quality of life dimensions relevant for adults were tested in relation to adolescent's experiences. At the same time, the bottom-up approach involved discussion and feedback from young people themselves regarding their own feelings and viewpoints about relevant QOL dimensions. Future studies with the modified WHOQOL might usefully involve more extensive or in-depth bottom-up approaches in order to clarify some of the problems highlighted here, such as the poor performance of the *physical warmth* facet. Similarly, qualitative techniques, such as

focus groups, might benefit the further development of the obesity-specific questionnaire, the IWQOL.

4.11 Conclusions

This study has shown that the WHOQOL can be modified for use with a healthy adolescent population. This modified measure was also used with a group of adolescents who were overweight, the results of which provided some evidence of the questionnaire's discriminatory power. Further testing of the measure with those who have health problems is indicated. Importantly, QOL assessment provides a measure of aspects of health that might need particular attention, as well as aspects of health that are points of strength that can sustain health as the young person matures. For instance, responses from overweight girls in this study suggest that aspects of life associated with personal relationships are more positive for girls who are overweight than those who are not. There are wide ranging possibilities for the application of a comprehensive assessment such as this, particularly given the demand for adequate, generic QOL assessment tools for young people and their current lack of availability.

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APPENDICES

APPENDIX 1a - Modified WHOQOL-100

Quality of Life Assessment – Young People's Version

Instructions

We would like to know how you feel about you and your life, how you feel about your health, school and other things.

Below are some statements about your life. Below each statement are faces like these:

very true true not true **not true at all**

Thinking about the last two weeks, make a ✔ under the one which is true for you.

Try to answer all the questions, but if you can't answer one just leave it blank. If it's hard to choose the answer, pick the one that seems nearest.

There are no right or wrong answers.

Example

Thinking about the last two weeks the statement might say:

I get on well with other children at school

very true true not true **not true at all**

You should ✔ under the face which best fits how much you feel you have got on with other children at school in the last two weeks.

*You will notice that sometimes the statements are put the other way round to catch you out!

Thank you for your help.

Quality of Life Assessment – Young People's Version

Firstly, could you please answer these few questions.

You do not need to give your name.

What age are you? _____

Are you male or female? _____

Do you have any illnesses? _____
If yes, please tell us what illness. _____

What is your full postcode? _____

It is important for us to hear what you think of the questionnaire. Please indicate the questions you don't like, or the ones that you think are not relevant to you, or those which are difficult to understand. You can make a cross beside the question and write a few words in the margin that tell us why you don't like the question. If you think of extra questions that should be included, please make a note at the end. This will help us to improve the questionnaire.

THANK YOU VERY MUCH.

Quality of Life Assessment – Young People's Version

1. I am able to go to school.

very true true not true **not true at all**

2. I have to take medicine every day.

very true true not true **not true at all**

3. I am happy with myself as a person.

very true true not true **not true at all**

4. I get help from my family when I have a problem.

not true at all not true true **very true**

5. My religious or spiritual beliefs are important to me.

very true true not true **not true at all**

6. I like the place where I live.

very true true not true **not true at all**

7. I get tired easily.

very true true not true **not true at all**

8. I worry about things a lot of the time.

very true true not true **not true at all**

9. I live in a healthy area.

not true at all not true true **very true**

10. I like the way I look.

very true true not true **not true at all**

11. I enjoy life.

not true at all not true true **very true**

12. I feel safe when I'm out on my own.

very true true not true **not true at all**

13. I can wash and dress myself.

very true true not true **not true at all**

14. I find it easy to decide what to do.

very true true not true **not true at all**

15. Other people stop me working at school.

very true true not true **not true at all**

16. I go to a good school.

very true true not true **not true at all**

17. I have lots of friends.

very true true not true **not true at all**

18. I have enough money for the things I want.

not true at all not true true **very true**

19. Sometimes I worry when I get aches and pains.

very true true not true **not true at all**

20. I can run about as much as I like.

very true true not true **not true at all**

21. My family give me all the hugs I need.

not true at all not true true **very true**

22.I have found most doctors and nurses helpful.

very true true not true **not true at all**

23.I find it hard to get off to sleep at night.

very true true not true **not true at all**

24.I enjoy playing with games.

very true true not true **not true at all**

25.I am happy with the way I have of getting around (bus, bike, car).

very true true not true **not true at all**

26.I have problems getting on with my work at school.

very true true not true **not true at all**

27.I have medical treatment often.

very true true not true **not true at all**

28.I am clever.

very true true not true **not true at all**

29.I can count on my friends when I need them.

very true true not true **not true at all**

30.The things I believe in give meaning to my life.

very true true not true **not true at all**

31. I have most of the things I need at home.

very true true not true **not true at all**

32.I don't feel tired during the day.

very true true not true **not true at all**

33.I often feel very unhappy.

very true true not true **not true at all**

34.It is noisy where I live.

not true at all not true true **very true**

35.There are some things about the way I look that I don't like.

very true true not true **not true at all**

36.I feel happy most of the time.

very true true not true **not true at all**

37.I worry about safety.

very true true not true **not true at all**

38.I can go to the toilet by myself.

very true true not true **not true at all**

39.I am able to stick to things until they are finished.

very true true not true **not true at all**

40.I get bullied at school.

very true true not true **not true at all**

41. There are lots of books for me to read if I want to.

not true at all not true true **very true**

42.I get on well with my mum (or the person I call mum).

very true true not true **not true at all**

43.People in my family worry about money.

not true at all not true true **very true**

44.Pain stops me doing what I want to do.

very true true not true **not true at all**

45.I can get around very well.

very true true not true **not true at all**

46.I am loved and looked after.

very true true not true **not true at all**

47.I think most of the teachers at school do a good job.

not true at all not true true **very true**

48.I wake up during the night.

very true true not true **not true at all**

49.I don't have much to do during my spare time.

very true true not true **not true at all**

50.I can get out and about easily where I live.

very true true not true **not true at all**

51. I am happy with the way I work at school.

very true true not true **not true at all**

52.I often have to have help from other people like doctors and nurses.

very true true not true **not true at all**

53.I like the way I lead my life.

not true at all not true true **very true**

54.When I have a problem there aren't many people who will help me.

very true true not true **not true at all**

55.I believe in God.

very true true not true **not true at all**

56.My home is nice.

very true true not true **not true at all**

57.I have to rest a lot during the day.

very true true not true **not true at all**

58.Sometimes I can't get on with things because I feel sad or depressed.

not true at all not true true **very true**

59.I am happy with the area I live in.

very true true not true **not true at all**

60.I wish my body was different.

very true true not true **not true at all**

61. I think things will turn out fine for me in the future.

very true true not true **not true at all**

62.I feel safe and secure where I live.

not true at all not true true **very true**

63.I have difficulty with feeding myself.

very true true not true **not true at all**

64.I find it easy to remember things.

very true true not true **not true at all**

65.Some people in my family boss me around too much.

very true true not true **not true at all**

66.I have a good choice of subjects at school.

very true true not true **not true at all**

67.I get on well with my dad (or the person I call dad).

very true true not true **not true at all**

68.People give me enough money when I need it.

not true at all not true true **very true**

69.I never have any aches or pains.

very true true not true **not true at all**

70.Physical problems stop me getting around as much as I would like.

very true true not true **not true at all**

71. My friends give me hugs and encouragement when I want them to.

very true true not true **not true at all**

72. There are good hospitals when I need them.

very true true not true **not true at all**

73. I get nightmares.

very true true not true **not true at all**

74. I am able to go to clubs (such as youth club, guides, boys' brigade) as much or as little as I want.

very true true not true **not true at all**

75. I can get a lift or bus to wherever I want to go.

very true true not true **not true at all**

76. I can play games or sports at school.

very true true not true **not true at all**

77. I often have to go to hospital.

very true true not true **not true at all**

78.I wish I was different.

not true at all not true true **very true**

79.My friends help me when I have a problem.

not true at all not true true **very true**

80.The things I believe in are important to me.

very true true not true **not true at all**

81. I have enough to eat.

very true true not true **not true at all**

82.I have lots of energy.

very true true not true **not true at all**

83.I feel sad or depressed quite often.

very true true not true **not true at all**

84.I like the weather where I live.

very true true not true **not true at all**

85.Sometimes I don't join in with others because of the way I look.

not true at all not true true **very true**

86.I feel good about life.

not true at all not true true **very true**

87.I worry about getting into danger.

very true true not true **not true at all**

88.I can look after myself.

very true true not true **not true at all**

89.I am able to concentrate.

not true at all not true true **very true**

90.Some people at school boss me around too much.

not true at all not true true **very true**

91. I can use a computer or television if I need to.

very true true not true **not true at all**

92.I get on well with teachers at school.

very true true not true **not true at all**

93.We have enough money to live on.

very true true not true **not true at all**

94.I am in pain a lot of the time.

very true true not true **not true at all**

95.I am bothered by problems of getting around.

very true true not true **not true at all**

96.I can have 'play fights' (rough and tumble) with someone in my family if I want to.

very true true not true **not true at all**

97.Doctors and nurses are not nice to me.

very true true not true **not true at all**

98.I sleep well at night.

very true true not true **not true at all**

99.I can play outside with my friends when the weather is good.

not true at all not true true **very true**

100. Lack of transport stops me from seeing my friends.

very true true not true **not true at all**

101. I feel I am here on earth for a purpose.

not true at all not true true **very true**

102. Mostly I can do what I want to when I'm at home.

very true true not true **not true at all**

103. I am able to keep my friends.

not true at all not true true **very true**

104. Dentists are nice to me.

very true true not true **not true at all**

105. I wake up too early in the morning.

very true true not true **not true at all**

106. There are some people in my family I don't get on with.

very true true not true **not true at all**

107. I can play computer games if I want to.

very true true not true **not true at all**

108. I have things I believe in which guide my life.

very true true not true **not true at all**

Adolescent Module

109. When I am at home I feel listened to.

very true true not true **not true at all**

110. Teachers listen to me.

not true at all not true true **very true**

111. There is someone I can talk to at school if I have a problem.

very true true not true **not true at all**

112. I have enough privacy at home.

very true true not true **not true at all**

113. I am able to talk to someone about sex if I want to.

not true at all not true true **very true**

114. I can have a girlfriend or boyfriend if I want to.

not true at all not true true **very true**

115. Sometimes I do things because my friends put me under pressure.

very true true not true **not true at all**

116. I can keep up with fashion if I want to.

very true true not true **not true at all**

117. I can keep fit if I want to.

not true at all not true true **very true**

118. There are lots of things that I like to eat.

very true true not true **not true at all**

119. I usually don't like the kind of food that I have to eat.

not true at all not true true **very true**

120. What I eat can cause arguments at home.

very true true not true **not true at all**

121. I can make the choices that I want to about things like smoking, alcohol and drugs.

very true true not true **not true at all**

Thank you very much.

APPENDIX 1b – Modified IWQOL

IWQOL

1. I worry about my health

very true true not true **not true at all**

2. I feel physically uncomfortable

very true true not true **not true at all**

3. My eyesight is often blurred

not true at all not true true **very true**

4. I get short of breath easily

very true true not true **not true at all**

5. I often have heartburn

not true at all not true true **very true**

6. I am sometimes sleepy during the day

very true true not true **not true at all**

7. I am bothered by rashes on my skin

not true at all not true true **very true**

8. My ankles swell up

not true at all not true true **very true**

9. I am sometimes bothered by a pain in my chest

not true at all | not true | | true | **very true**

10. I have sore joints

very true | true | | not true | **not true at all**

11. Sometimes when I cough, I can't get to the toilet in time

very true | true | | not true | **not true at all**

12. I get an uncomfortable feeling in my chest

very true | true | | not true | **not true at all**

13. Sometimes I have to go to the toilet during the night

not true at all | not true | | true | **very true**

14. I sweat more than other young people I know

very true | true | | not true | **not true at all**

15. I try to avoid meeting other people

not true at all | not true | | true | **very true**

16. I feel embarrassed when I am in public

not true at all | not true | | true | **very true**

17. I am treated unfairly by other people

not true at all | not true | | true | **very true**

18. I don't like being close to people

very true | true | | not true | **not true at all**

19. I am teased by other people

not true at all | not true | | true | **very true**

20. I often feel that I don't fit in

not true at all | not true | | true | **very true**

21. I find it difficult to make friends

very true | true | | not true | **not true at all**

22. I don't enjoy being around other people

very true | true | | not true | **not true at all**

23. I am sometimes treated badly by other people

very true | true | | not true | **not true at all**

24. I prefer to be on my own

very true | true | | not true | **not true at all**

25. I worry that others will not like me

very true | true | | not true | not true at all

26. I have trouble getting things finished at school

not true at all | not true | | true | very true

27. I don't enjoy school

not true at all | not true | | true | very true

28. I don't get as much work done at school as I could do

very true | true | | not true | not true at all

29. My teachers don't give me credit for the work I do

not true at all | not true | | true | very true

30. I have trouble getting on with my work at school

very true | true | | not true | not true at all

31. I have trouble getting about.

very true | true | | not true | not true at all

32. I sometimes find it difficult to put on or take off my clothes.

not true at all | not true | | true | very true

33. I feel clumsy and awkward

not true at all | not true | | true | very true

34. I have trouble getting up from chairs

very true true not true **not true at all**

35. I have trouble crossing my legs

very true true not true **not true at all**

36. I have trouble tying my shoelaces

not true at all not true true **very true**

37. It is difficult for me to get up stairs

very true true not true **not true at all**

38. I have trouble picking things up

not true at all not true true **very true**

39. I avoid joining in with things that need me to move around much

very true true not true **not true at all**

40. I don't have much confidence

not true at all not true true **very true**

41. I don't like myself as much as I should

not true at all not true true **very true**

42. I find it difficult to have fun

not true at all | not true | | true | **very true**

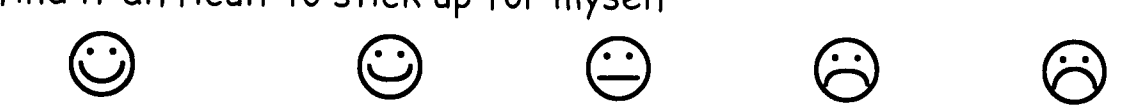
43. I feel unsure of myself

very true | true | | not true | **not true at all**

44. I am often moody

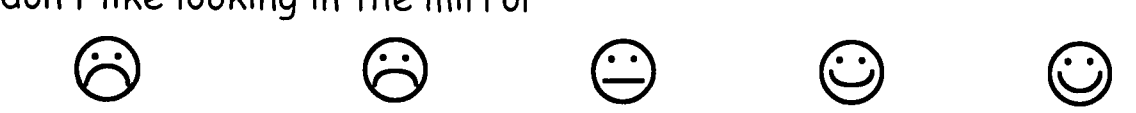
very true | true | | not true | **not true at all**

45. I find it difficult to stick up for myself



not true at all | not true | | true | **very true**

46. I don't like looking in the mirror



very true | true | | not true | **not true at all**

47. I don't like myself

very true | true | | not true | **not true at all**

48. I sometimes feel that I don't have much control over things

not true at all | not true | | true | **very true**

49. I worry about my weight

very true | true | | not true | **not true at all**

50. I am not attractive to other boys or girls.

not true at all | not true | | true | **very true**

51. I have trouble finding clothes to fit me

very true | true | | not true | **not true at all**

52. I worry about chairs holding my weight

very true | true | | not true | **not true at all**

53. I worry about fitting through narrow spaces

not true at all | not true | | true | **very true**

54. I have trouble eating without getting food on my front

not true at all | not true | | true | **very true**

55. I avoid wearing trunks or a swimsuit

not true at all | not true | | true | **very true**

56. I have trouble keeping my body clean

very true | true | | not true | **not true at all**

57. I worry about fitting into a seat when I am out

very true | true | | not true | **not true at all**

58. I enjoy eating

not true at all | not true | | true | **very true**

59. I feel satisfied after eating

very true true not true **not true at all**

60. I often eat to try to feel a little better

very true true not true **not true at all**

61. I am not afraid to eat

very true true not true **not true at all**

62. I don't pay much attention to the amount I eat

not true at all not true true **very true**

63. I don't pay much attention to what I eat

very true true not true **not true at all**

64. I look forward to eating

very true true not true **not true at all**

65. I feel OK when there is food around

not true at all not true true **very true**

66. I enjoy thinking about food

very true true not true **not true at all**

67. I just can't help myself from eating snacks between meals

very true true not true **not true at all**

68. It is difficult to keep myself from eating when I am anxious or unhappy

very true true not true **not true at all**

69. Sometimes I just eat and eat and eat

not true at all not true true **very true**

70. It bothers me when I eat too much

very true true not true **not true at all**

Thank you very much

APPENDIX 1c – Adolescent Coping Scale

SHORT FORM

CONFIDENTIAL

Adolescent Coping Scale

1. Name: .....

2. Male: ☐ Female: ☐

3. Age: .....

4. Year Level: .....

5. School: .....

6. Today's Date: ...../...../.....
Day Month Year

Office use only	
Sex	☐
Age	☐ ☐
Year	☐ ☐
School	☐ ☐

WAIT FOR INSTRUCTIONS

Students have a number of concerns or worries about things such as work, family, friends, the world and the like. Below is a list of ways in which people of your age cope with a wide variety of concerns or problems. Please indicate by circling the appropriate number, the things you do to deal with your concerns or worries. Work down the page and circle 1, 2, 3, 4 or 5 as you come to each statement. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which best describes how you feel.

For example if you **sometimes** cope with your concern by 'Talk to others to see what they would do if they had the problem' you would circle 3 as shown below:

	Doesn't apply or don't do it	**Used very little**	**Used some-times**	**Used often**	**Used a great deal**
1. Talk to others to see what they would do if they had the problem	1	2	(3)	4	5

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	Doesn't apply or don't do it	Used very little	Used some-times	Used often	Used a great deal
1. Talk to other people about my concern to help me sort it out	1	2	3	4	5
2. Work at solving the problem to the best of my ability	1	2	3	4	5
3. Work hard	1	2	3	4	5
4. Worry about what will happen to me	1	2	3	4	5
5. Spend more time with boy/girl friend	1	2	3	4	5
6. Improve my relationship with others	1	2	3	4	5
7. Wish a miracle would happen	1	2	3	4	5
8. I have no way of dealing with the situation	1	2	3	4	5
9. Find a way to let off steam; for example cry, scream, drink, take drugs etc.	1	2	3	4	5
10. Join with people who have the same concern	1	2	3	4	5
11. Shut myself off from the problem so that I can avoid it	1	2	3	4	5
12. See myself as being at fault	1	2	3	4	5
13. Don't let others know how I am feeling	1	2	3	4	5
14. Pray for help and guidance so that everything will be all right	1	2	3	4	5
15. Look on the bright side of things and think of all that is good	1	2	3	4	5
16. Ask a professional person for help	1	2	3	4	5
17. Make time for leisure activities	1	2	3	4	5
18. Keep fit and healthy	1	2	3	4	5
19. List any *other* things you do to cope with your concern/s	1	2	3	4	5

_____

_____

_____

_____

APPENDIX 1d – Harter Self-Esteem Questionnaire

WHAT I AM LIKE

Really True for me	Sort of True for me			Sort of True for me	Really True for me
☐	☐	Some kids would rather play outside in their spare time	**BUT**	☐	☐ Other kids would rather watch T.V.
☐	☐	Some kids feel that they are very good at their school work	**BUT**	☐	☐ Other kids worry about whether they can do their school work
☐	☐	Some kids find it hard to make friends	**BUT**	☐	☐ Other kids find it's pretty easy to make friends
☐	☐	Some kids find it hard to make friends	**BUT**	☐	☐ Other kids don't feel that they are good when it comes to play sports
☐	☐	Some kids do very well at all kinds of sport	**BUT**	☐	☐ Other kids are not happy with the way they look
☐	☐	Some kids are happy with the way they look	**BUT**	☐	☐ Other kids usually like the way they behave
☐	☐	Some kids often do not like the way they behave	**BUT**	☐	☐ Other kids are pretty pleased with themselves
☐	☐	Some kids feel like they are just as clever as other kids	**BUT**	☐	☐ Other kids aren't so sure and wonder if they are as clever
☐	☐	Some kids have a lot of friends	**BUT**	☐	☐ Other kids don't have many friends
☐	☐	Some kids wish they could be a lot better at sports	**BUT**	☐	☐ Other kids feel they are good enough at sports
☐	☐	Some kids are happy with their height and weight	**BUT**	☐	☐ Other kids wish their height and weight were different
☐	☐	Some kids usually do the right thing	**BUT**	☐	☐ Other kids often don't do the right thing
☐	☐	Some kids don't like the way they are leading their life	**BUT**	☐	☐ Other kids do like the way they are leading their life

Really True for me	Sort of True for me			Sort of True for me	Really True for me
☐	☐	Some kids are pretty slow in finishing their school work	**BUT**	Other kids can do their school work quickly	☐	☐
☐	☐	Some kids would like to have a lot more friends	**BUT**	Other kids have as many friends as they want	☐	☐
☐	☐	Some kids think they do well at any new sport	**BUT**	Other kids are afraid they might not do well at new sports	☐	☐
☐	☐	Some kids wish their body was different	**BUT**	Other kids like their body the way it is	☐	☐
☐	☐	Some kids usually behave the way they know they're supposed to	**BUT**	Other kids often don't behave the way they 're supposed to	☐	☐
☐	☐	Some kids are happy with themselves as a person	**BUT**	Other kids are often not happy with themselves	☐	☐
☐	☐	Some kids often forget what they learn	**BUT**	Other kids can remember things easily	☐	☐
☐	☐	Some kids are always doing things with a lot of kids	**BUT**	Other kids usually do things by themselves	☐	☐
☐	☐	Some kids feel that they are better at sports than their friends	**BUT**	Other kids don't feel they can play as well	☐	☐
☐	☐	Some kids wished they looked different	**BUT**	Other kids like the way they look	☐	☐
☐	☐	Some kids usually get into trouble because of things they do	**BUT**	Other kids usually don't do things that get them into trouble	☐	☐
☐	☐	Some kids like the kind of person they are	**BUT**	Other kids often wish they were someone else	☐	☐
☐	☐	Some kids do very well at their class work	**BUT**	Other kids don't do very well at their class work	☐	☐
☐	☐	Some kids wish that more people their age liked them	**BUT**	Other kids feel that most people their age do like them	☐	☐

Really True for me	Sort of True for me			Sort of True for me	Really True for me
☐	☐	In games and sports some kids usually watch instead of play	**BUT**	Other kids usually play rather than just watch	☐	☐
☐	☐	Some kids wish something about their face or hair looked different	**BUT**	Other kids like their face and hair the way they are	☐	☐
☐	☐	Some kids do things they know they shouldn't do	**BUT**	Other kids hardly ever do things they know they shouldn't do	☐	☐
☐	☐	Some kids are very happy being the way they are	**BUT**	Other kids wish they were different	☐	☐
☐	☐	Some kids have trouble working out the answers in school	**BUT**	Other kids almost always can work out the answers	☐	☐
☐	☐	Some kids are popular with others their age	**BUT**	Other kids are not very popular	☐	☐
☐	☐	Some kids don't do well at new outdoor games	**BUT**	Other kids are good at new games right away	☐	☐
☐	☐	Some kids don't think they are good looking	**BUT**	Other kids think that they are not very good looking	☐	☐
☐	☐	Some kids behave themselves very well	**BUT**	Other kids often find it hard to behave themselves	☐	☐
☐	☐	Some kids are not very happy with the way they do lots of things	**BUT**	Other kids think the way they do things is fine	☐	☐

APPENDIX 1e – Social Support Questionnaire

SOS Scale

Please think about 3 people who are important in your life. Below are some questions about each of the people you have chosen. For the first part of each question, circle a number from 1 to 7 to show how well he or she gives you the type of help that is listed. The second part of each question asks you to rate how you would like things to be if they were exactly as you would hope for. Put a circle round a number from 1 to 7 to show how you feel about this.

Person 1.....	**Never**			**Sometimes**			**Always**
1a)Can you talk to openly and share your feelings with this person?	1	2	3	4	5	6	7
1b)What rating would your ideal be?	1	2	3	4	5	6	7
2a)Can you depend on and turn to this person when things are difficult?	1	2	3	4	5	6	7
2b)What rating would your ideal be?	1	2	3	4	5	6	7
3a)Does he or she give you practical help?	1	2	3	4	5	6	7
3b)What rating would your ideal be?	1	2	3	4	5	6	7
4a)Can you spend time with him or her socially?	1	2	3	4	5	6	7
4b)What rating would your ideal be?	1	2	3	4	5	6	7

Person 2.....	**Never**				**Sometimes**		**Always**
1a)Can you talk to openly and share your feelings with this person?	1	2	3	4	5	6	7
1b)What rating would your ideal be?	1	2	3	4	5	6	7
2a)Can you depend on and turn to this person when things are difficult?	1	2	3	4	5	6	7
2b)What rating would your ideal be?	1	2	3	4	5	6	7
3a)Does he or she give you practical help?	1	2	3	4	5	6	7
3b)What rating would your ideal be?	1	2	3	4	5	6	7
4a)Can you spend time with him or her socially?	1	2	3	4	5	6	7
4b)What rating would your ideal be?	1	2	3	4	5	6	7

Person 3.....	**Never**				**Sometimes**		**Always**
1a)Can you talk to openly and share your feelings with this person?	1	2	3	4	5	6	7
1b)What rating would your ideal be?	1	2	3	4	5	6	7
2a)Can you depend on and turn to this person when things are difficult?	1	2	3	4	5	6	7
2b)What rating would your ideal be?	1	2	3	4	5	6	7
3a)Does he or she give you practical help?	1	2	3	4	5	6	7
3b)What rating would your ideal be?	1	2	3	4	5	6	7
4a)Can you spend time with him or her socially?	1	2	3	4	5	6	7
4b)What rating would your ideal be?	1	2	3	4	5	6	7

APPENDIX 2a – Information sheet

Young People's Quality of Life Study

Information Sheet

At the department of Clinical Psychology, Fife Primary Care Trust, we are trying to find out what young people think about their quality of life. In particular, we want to find out more about the kinds of things that are important in the lives of young people who attend a dietetic clinic, for advice about their weight.

If you would like to help us learn more about this, you will be asked to fill out 4 questionnaires. The questions ask how you feel about different things like your sleep, your school and your friends. It should take up to 45 minutes to fill them in. Only the researcher will know what you write.

Your taking part is completely up to you. Your choice to take part, or not to take part, will in no way affect the treatment you have.

If you have any questions, I would be happy to speak with you. You can get in touch with me, Catherine Nicolson, by telephoning 01334 652611. Ask for extension 243.

Thank you very much for your help.

APPENDIX 2b – Young person's consent form

Young People's Quality of Life Study

Young person's consent form

1. I have read the information sheet about the above study and I have had the chance to ask questions.

2. I understand that only the researcher (Catherine Nicolson) will know what I write.

3. I understand that taking part in the study is completely up to me. I am free to withdraw at any time, without giving a reason, and without my medical or legal rights being affected.

4. I agree to take part in the above study.

----------	---------	----------
name of participant	date	signature
----------	---------	----------
name of researcher	date	signature

APPENDIX 2c – Carer's consent form

Young People's Quality of Life Study

Carer's consent form

I have read and understood the information sheet about the above study. I understand that the information my child provides will be kept in the strictest confidence. Also, I understand that my child's participation is entirely voluntary and that he or she can withdraw at any time, without affecting present or future treatment.

Name of carer _____

Signature of carer _____

Name of young person _____

Date _____

APPENDIX 3 – Missing values table

Table A. Missing values for each item

	N	Mean	Standard Deviation	Missing	
				Count	Percent
Q1	320	1.8	1.4	2	0.6
Q2	321	4.4	1.2	1	0.3
Q3	317	2.3	1.1	5	1.6
Q4	322	4.0	1.0	0	0.0
Q5	316	3.6	1.3	6	1.9
Q6	322	2.4	1.3	0	0.0
Q7	321	3.2	1.3	1	0.3
Q8	320	3.0	1.2	2	0.6
Q9	317	4.1	0.9	5	1.6
Q10	315	2.7	1.1	7	2.2
Q11	320	4.1	0.8	2	0.6
Q12	319	2.5	1.1	3	0.9
Q13	319	1.8	1.5	3	0.9
Q14	320	2.5	1.1	2	0.6
Q15	320	3.4	1.1	2	0.6
Q16	320	2.1	1.3	2	0.6
Q17	322	2.1	1.2	0	0.0
Q18	321	3.5	1.1	1	0.3
Q19	320	3.4	1.1	2	0.6
Q20	320	2.3	1.2	2	0.6
Q21	319	3.7	1.1	3	0.9
Q22	316	2.5	1.2	6	1.9
Q23	322	3.5	1.3	0	0.0
Q24	318	2.6	1.2	4	1.2
Q25	320	2.3	1.3	2	0.6
Q26	318	3.8	1.0	4	1.2
Q27	317	4.3	1.0	5	1.6
Q28	318	2.5	1.1	4	1.2
Q29	319	2.3	1.3	3	0.9
Q30	312	2.9	1.1	10	3.1
Q31	319	3.7	1.2	3	0.9
Q32	319	2.5	1.3	3	0.9
Q33	319	3.7	1.6	3	0.9
Q34	319	1.8	1.3	3	0.9
Q35	317	2.4	1.1	5	1.6
Q36	318	2.4	1.2	4	1.2
Q37	318	3.6	1.9	4	1.2
Q38	319	1.8	1.5	3	0.9
Q39	315	2.4	1.2	7	2.2
Q40	317	4.4	1.0	5	1.6
Q41	320	4.2	1.0	2	0.6
Q42	319	2.0	1.4	3	0.9
Q43	316	2.7	1.2	6	1.9
Q44	318	4.0	1.1	4	1.2
Q45	317	2.0	1.4	5	1.6
Q46	318	2.0	1.4	4	1.2
Q47	318	3.7	1.0	4	1.2
Q48	319	3.5	1.3	3	0.9
Q49	318	4.0	1.0	4	1.2
Q50	317	2.3	1.4	5	1.6

	N	Mean	Standard Deviation	Missing	
				Count	Percent
Q51	317	2.4	1.1	5	1.6
Q52	313	4.2	1.0	9	2.8
Q53	315	4.0	0.8	7	2.2
Q54	315	4.3	0.9	7	2.2
Q55	312	3.3	1.4	10	3.1
Q56	316	2.1	1.3	6	1.9
Q57	315	4.1	0.9	7	2.2
Q58	312	2.5	1.2	10	3.1
Q59	314	2.2	1.3	8	2.5
Q60	314	3.3	1.3	8	2.5
Q61	311	2.2	1.1	11	3.4
Q62	312	4.2	0.9	10	3.1
Q63	312	4.8	0.7	10	3.1
Q64	311	2.6	1.2	11	3.4
Q65	310	3.4	1.3	12	3.7
Q66	308	2.2	1.1	14	4.3
Q67	306	2.2	1.4	16	5.0
Q68	309	3.8	1.0	13	4.0
Q69	309	3.1	1.1	13	4.0
Q70	308	4.4	0.8	14	4.3
Q71	307	2.7	2.8	15	4.7
Q72	301	2.2	1.2	21	6.5
Q73	304	3.8	2.6	18	5.6
Q74	300	2.4	1.3	22	6.8
Q75	301	2.4	1.3	21	6.5
Q76	302	2.2	1.4	20	6.2
Q77	302	4.4	0.9	20	6.2
Q78	303	2.8	2.7	19	5.9
Q79	301	3.9	1.1	21	6.5
Q80	301	2.6	1.2	21	6.5
Q81	303	2.0	1.4	19	5.9
Q82	303	2.2	1.2	19	5.9
Q83	301	3.8	1.1	21	6.5
Q84	300	3.0	1.2	22	6.8
Q85	299	2.2	1.3	23	7.1
Q86	300	4.0	0.9	22	6.8
Q87	296	3.6	1.1	26	8.1
Q88	296	2.0	1.4	26	8.1
Q89	296	4.0	1.1	26	8.1
Q90	296	2.6	2.6	26	8.1
Q91	296	2.0	1.4	26	8.1
Q92	296	2.4	1.1	26	8.1
Q93	295	2.2	1.3	27	8.4
Q94	296	4.3	0.9	26	8.1
Q95	294	4.4	0.8	28	8.7
Q96	288	2.5	1.3	34	10.6
Q97	288	4.3	0.9	34	10.6
Q98	291	2.4	1.3	31	9.6
Q99	288	4.6	0.8	34	10.6
Q100	290	4.1	1.0	32	9.9
Q101	288	3.4	1.2	34	10.6

	N	Mean	Standard Deviation	Missing	
				Count	Percent
Q102	290	2.3	1.2	32	9.9
Q103	287	4.3	0.8	35	10.9
Q104	286	2.4	1.3	36	11.2
Q105	286	3.5	1.3	36	11.2
Q106	286	3.6	1.3	36	11.2
Q107	284	2.1	1.3	38	11.8
Q108	280	3.0	1.2	42	13.0
Q109	282	2.4	1.2	40	12.4
Q110	283	3.7	0.9	39	12.1
Q111	282	2.5	1.2	40	12.4
Q112	282	2.3	1.3	40	12.4
Q113	283	3.9	0.9	39	12.1
Q114	279	3.8	1.1	43	13.4
Q115	283	3.6	1.1	39	12.1
Q116	283	2.3	1.2	39	12.1
Q117	289	4.3	0.8	33	10.2
Q118	288	2.1	1.3	34	10.6
Q119	289	2.4	1.3	33	10.2
Q120	289	4.0	1.1	33	10.2

APPENDIX 4 – Frequency distributions tables

Table B. Frequency distributions for each item

Q1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3.00	4	1.4	1.4	1.4
	4.00	47	16.0	16.0	17.4
	5.00	242	82.6	82.6	100.0
	Total	293	100.0	100.0	

Q2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	17	5.8	5.8	5.8
	2.00	15	5.1	5.1	10.9
	3.00	12	4.1	4.1	15.0
	4.00	26	8.9	8.9	23.9
	5.00	223	76.1	76.1	100.0
	Total	293	100.0	100.0	

Q3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	2	.7	.7	.7
	2.00	10	3.4	3.4	4.1
	3.00	40	13.7	13.7	17.7
	4.00	161	54.9	54.9	72.7
	5.00	80	27.3	27.3	100.0
	Total	293	100.0	100.0	

Q4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	7	2.4	2.4	2.4
	2.00	15	5.1	5.1	7.5
	3.00	51	17.4	17.4	24.9
	4.00	119	40.6	40.6	65.5
	5.00	101	34.5	34.5	100.0
	Total	293	100.0	100.0	

Q6

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	6	2.0	2.0	2.0
	2.00	17	5.8	5.8	7.8
	3.00	27	9.2	9.2	17.1
	4.00	124	42.3	42.3	59.4
	5.00	119	40.6	40.6	100.0
	Total	293	100.0	100.0	

Q7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	31	10.6	10.6	10.6
	2.00	59	20.1	20.1	30.7
	3.00	51	17.4	17.4	48.1
	4.00	104	35.5	35.5	83.6
	5.00	48	16.4	16.4	100.0
	Total	293	100.0	100.0	

Q8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	34	11.6	11.6	11.6
	2.00	75	25.6	25.6	37.2
	3.00	74	25.3	25.3	62.5
	4.00	87	29.7	29.7	92.2
	5.00	23	7.8	7.8	100.0
	Total	293	100.0	100.0	

Q9

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	6	2.0	2.0	2.0
	2.00	12	4.1	4.1	6.1
	3.00	28	9.6	9.6	15.7
	4.00	137	46.8	46.8	62.5
	5.00	110	37.5	37.5	100.0
	Total	293	100.0	100.0	

Q10

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	10	3.4	3.4	3.4
	2.00	34	11.6	11.6	15.0
	3.00	84	28.7	28.7	43.7
	4.00	125	42.7	42.7	86.3
	5.00	40	13.7	13.7	100.0
	Total	293	100.0	100.0	

Q11

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	5	1.7	1.7	1.7
	2.00	7	2.4	2.4	4.1
	3.00	34	11.6	11.6	15.7
	4.00	141	48.1	48.1	63.8
	5.00	106	36.2	36.2	100.0
	Total	293	100.0	100.0	

Q12

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	8	2.7	2.7	2.7
	2.00	23	7.8	7.8	10.6
	3.00	55	18.8	18.8	29.4
	4.00	149	50.9	50.9	80.2
	5.00	58	19.8	19.8	100.0
	Total	293	100.0	100.0	

Q13

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	2	.7	.7	.7
	2.00	2	.7	.7	1.4
	3.00	1	.3	.3	1.7
	4.00	18	6.1	6.1	7.8
	5.00	270	92.2	92.2	100.0
	Total	293	100.0	100.0	

Q14

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	6	2.0	2.0	2.0
	2.00	33	11.3	11.3	13.3
	3.00	51	17.4	17.4	30.7
	4.00	144	49.1	49.1	79.9
	5.00	59	20.1	20.1	100.0
	Total	293	100.0	100.0	

Q15

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	16	5.5	5.5	5.5
	2.00	49	16.7	16.7	22.2
	3.00	76	25.9	25.9	48.1
	4.00	109	37.2	37.2	85.3
	5.00	43	14.7	14.7	100.0
	Total	293	100.0	100.0	

Q16

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	5	1.7	1.7	1.7
	2.00	2	.7	.7	2.4
	3.00	19	6.5	6.5	8.9
	4.00	113	38.6	38.6	47.4
	5.00	154	52.6	52.6	100.0
	Total	293	100.0	100.0	

Q17

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	4	1.4	1.4	1.4
	2.00	7	2.4	2.4	3.8
	3.00	16	5.5	5.5	9.2
	4.00	139	47.4	47.4	56.7
	5.00	127	43.3	43.3	100.0
	Total	293	100.0	100.0	

Q18

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	16	5.5	5.5	5.5
	2.00	51	17.4	17.4	22.9
	3.00	56	19.1	19.1	42.0
	4.00	122	41.6	41.6	83.6
	5.00	48	16.4	16.4	100.0
	Total	293	100.0	100.0	

Q19

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	10	3.4	3.4	3.4
	2.00	60	20.5	20.5	23.9
	3.00	67	22.9	22.9	46.8
	4.00	118	40.3	40.3	87.0
	5.00	38	13.0	13.0	100.0
	Total	293	100.0	100.0	

Q20

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	6	2.0	2.0	2.0
	2.00	33	11.3	11.3	13.3
	3.00	38	13.0	13.0	26.3
	4.00	123	42.0	42.0	68.3
	5.00	93	31.7	31.7	100.0
	Total	293	100.0	100.0	

Q21

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	13	4.4	4.4	4.4
	2.00	28	9.6	9.6	14.0
	3.00	71	24.2	24.2	38.2
	4.00	109	37.2	37.2	75.4
	5.00	72	24.6	24.6	100.0
	Total	293	100.0	100.0	

Q22

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	6	2.0	2.0	2.0
	2.00	25	8.5	8.5	10.6
	3.00	41	14.0	14.0	24.6
	4.00	155	52.9	52.9	77.5
	5.00	66	22.5	22.5	100.0
	Total	293	100.0	100.0	

Q23

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	28	9.6	9.6	9.6
	2.00	55	18.8	18.8	28.3
	3.00	42	14.3	14.3	42.7
	4.00	97	33.1	33.1	75.8
	5.00	71	24.2	24.2	100.0
	Total	293	100.0	100.0	

Q24

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	9	3.1	3.1	3.1
	2.00	28	9.6	9.6	12.6
	3.00	60	20.5	20.5	33.1
	4.00	115	39.2	39.2	72.4
	5.00	81	27.6	27.6	100.0
	Total	293	100.0	100.0	

Q25

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	5	1.7	1.7	1.7
	2.00	23	7.8	7.8	9.6
	3.00	32	10.9	10.9	20.5
	4.00	128	43.7	43.7	64.2
	5.00	105	35.8	35.8	100.0
	Total	293	100.0	100.0	

Q26

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	5	1.7	1.7	1.7
	2.00	36	12.3	12.3	14.0
	3.00	27	9.2	9.2	23.2
	4.00	169	57.7	57.7	80.9
	5.00	56	19.1	19.1	100.0
	Total	293	100.0	100.0	

Q27

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	6	2.0	2.0	2.0
	2.00	14	4.8	4.8	6.8
	3.00	22	7.5	7.5	14.3
	4.00	100	34.1	34.1	48.5
	5.00	151	51.5	51.5	100.0
	Total	293	100.0	100.0	

Q28

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	7	2.4	2.4	2.4
	2.00	12	4.1	4.1	6.5
	3.00	79	27.0	27.0	33.4
	4.00	124	42.3	42.3	75.8
	5.00	71	24.2	24.2	100.0
	Total	293	100.0	100.0	

Q29

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	5	1.7	1.7	1.7
	2.00	15	5.1	5.1	6.8
	3.00	39	13.3	13.3	20.1
	4.00	122	41.6	41.6	61.8
	5.00	112	38.2	38.2	100.0
	Total	293	100.0	100.0	

Q30

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	20	6.8	6.8	6.8
	2.00	43	14.7	14.7	21.5
	3.00	106	36.2	36.2	57.7
	4.00	83	28.3	28.3	86.0
	5.00	41	14.0	14.0	100.0
	Total	293	100.0	100.0	

Q31

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	3	1.0	1.0	1.0
	2.00	5	1.7	1.7	2.7
	3.00	15	5.1	5.1	7.8
	4.00	170	58.0	58.0	65.9
	5.00	100	34.1	34.1	100.0
	Total	293	100.0	100.0	

Q32

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	30	10.2	10.2	10.2
	2.00	67	22.9	22.9	33.1
	3.00	71	24.2	24.2	57.3
	4.00	79	27.0	27.0	84.3
	5.00	46	15.7	15.7	100.0
	Total	293	100.0	100.0	

Q33

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	20	6.8	6.8	6.8
	2.00	27	9.2	9.2	16.0
	3.00	53	18.1	18.1	34.1
	4.00	141	48.1	48.1	82.3
	5.00	52	17.7	17.7	100.0
	Total	293	100.0	100.0	

Q34

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	13	4.4	4.4	4.4
	2.00	23	7.8	7.8	12.3
	3.00	44	15.0	15.0	27.3
	4.00	117	39.9	39.9	67.2
	5.00	96	32.8	32.8	100.0
	Total	293	100.0	100.0	

Q35

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	41	14.0	14.0	14.0
	2.00	116	39.6	39.6	53.6
	3.00	71	24.2	24.2	77.8
	4.00	45	15.4	15.4	93.2
	5.00	20	6.8	6.8	100.0
	Total	293	100.0	100.0	

Q36

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	5	1.7	1.7	1.7
	2.00	16	5.5	5.5	7.2
	3.00	29	9.9	9.9	17.1
	4.00	156	53.2	53.2	70.3
	5.00	87	29.7	29.7	100.0
	Total	293	100.0	100.0	

Q37

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	6	2.0	2.0	2.0
	2.00	44	15.0	15.0	17.1
	3.00	76	25.9	25.9	43.0
	4.00	113	38.6	38.6	81.6
	5.00	54	18.4	18.4	100.0
	Total	293	100.0	100.0	

Q38

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	4	1.4	1.4	1.4
	2.00	1	.3	.3	1.7
	3.00	3	1.0	1.0	2.7
	4.00	14	4.8	4.8	7.5
	5.00	271	92.5	92.5	100.0
	Total	293	100.0	100.0	

Q39

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	6	2.0	2.0	2.0
	2.00	21	7.2	7.2	9.2
	3.00	60	20.5	20.5	29.7
	4.00	130	44.4	44.4	74.1
	5.00	76	25.9	25.9	100.0
	Total	293	100.0	100.0	

Q40

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	8	2.7	2.7	2.7
	2.00	12	4.1	4.1	6.8
	3.00	24	8.2	8.2	15.0
	4.00	65	22.2	22.2	37.2
	5.00	184	62.8	62.8	100.0
	Total	293	100.0	100.0	

Q41

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	5	1.7	1.7	1.7
	2.00	15	5.1	5.1	6.8
	3.00	25	8.5	8.5	15.4
	4.00	105	35.8	35.8	51.2
	5.00	143	48.8	48.8	100.0
	Total	293	100.0	100.0	

Q42

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	6	2.0	2.0	2.0
	2.00	4	1.4	1.4	3.4
	3.00	20	6.8	6.8	10.2
	4.00	86	29.4	29.4	39.6
	5.00	177	60.4	60.4	100.0
	Total	293	100.0	100.0	

Q43

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	19	6.5	6.5	6.5
	2.00	51	17.4	17.4	23.9
	3.00	67	22.9	22.9	46.8
	4.00	93	31.7	31.7	78.5
	5.00	63	21.5	21.5	100.0
	Total	293	100.0	100.0	

Q44

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	9	3.1	3.1	3.1
	2.00	25	8.5	8.5	11.6
	3.00	36	12.3	12.3	23.9
	4.00	102	34.8	34.8	58.7
	5.00	121	41.3	41.3	100.0
	Total	293	100.0	100.0	

Q45

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	5	1.7	1.7	1.7
	2.00	1	.3	.3	2.0
	3.00	14	4.8	4.8	6.8
	4.00	83	28.3	28.3	35.2
	5.00	190	64.8	64.8	100.0
	Total	293	100.0	100.0	

Q46

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	3	1.0	1.0	1.0
	2.00	2	.7	.7	1.7
	3.00	10	3.4	3.4	5.1
	4.00	91	31.1	31.1	36.2
	5.00	187	63.8	63.8	100.0
	Total	293	100.0	100.0	

Q47

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	11	3.8	3.8	3.8
	2.00	21	7.2	7.2	10.9
	3.00	61	20.8	20.8	31.7
	4.00	149	50.9	50.9	82.6
	5.00	51	17.4	17.4	100.0
	Total	293	100.0	100.0	

Q48

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	18	6.1	6.1	6.1
	2.00	54	18.4	18.4	24.6
	3.00	45	15.4	15.4	39.9
	4.00	93	31.7	31.7	71.7
	5.00	83	28.3	28.3	100.0
	Total	293	100.0	100.0	

Q49

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	5	1.7	1.7	1.7
	2.00	25	8.5	8.5	10.2
	3.00	36	12.3	12.3	22.5
	4.00	122	41.6	41.6	64.2
	5.00	105	35.8	35.8	100.0
	Total	293	100.0	100.0	

Q50

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	10	3.4	3.4	3.4
	2.00	13	4.4	4.4	7.8
	3.00	18	6.1	6.1	14.0
	4.00	120	41.0	41.0	54.9
	5.00	132	45.1	45.1	100.0
	Total	293	100.0	100.0	

Q51

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	4	1.4	1.4	1.4
	2.00	18	6.1	6.1	7.5
	3.00	57	19.5	19.5	27.0
	4.00	140	47.8	47.8	74.7
	5.00	74	25.3	25.3	100.0
	Total	293	100.0	100.0	

Q52

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	8	2.7	2.7	2.7
	2.00	10	3.4	3.4	6.1
	3.00	26	8.9	8.9	15.0
	4.00	107	36.5	36.5	51.5
	5.00	142	48.5	48.5	100.0
	Total	293	100.0	100.0	

Q53

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	4	1.4	1.4	1.4
	2.00	12	4.1	4.1	5.5
	3.00	42	14.3	14.3	19.8
	4.00	160	54.6	54.6	74.4
	5.00	75	25.6	25.6	100.0
	Total	293	100.0	100.0	

Q54

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	7	2.4	2.4	2.4
	2.00	10	3.4	3.4	5.8
	3.00	20	6.8	6.8	12.6
	4.00	120	41.0	41.0	53.6
	5.00	136	46.4	46.4	100.0
	Total	293	100.0	100.0	

Q55

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	87	29.7	29.7	29.7
	2.00	36	12.3	12.3	42.0
	3.00	84	28.7	28.7	70.6
	4.00	49	16.7	16.7	87.4
	5.00	37	12.6	12.6	100.0
	Total	293	100.0	100.0	

Q56

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	4	1.4	1.4	1.4
	2.00	4	1.4	1.4	2.7
	3.00	15	5.1	5.1	7.8
	4.00	107	36.5	36.5	44.4
	5.00	163	55.6	55.6	100.0
	Total	293	100.0	100.0	

Q57

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	4	1.4	1.4	1.4
	2.00	19	6.5	6.5	7.8
	3.00	35	11.9	11.9	19.8
	4.00	128	43.7	43.7	63.5
	5.00	107	36.5	36.5	100.0
	Total	293	100.0	100.0	

Q58

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	20	6.8	6.8	6.8
	2.00	47	16.0	16.0	22.9
	3.00	43	14.7	14.7	37.5
	4.00	111	37.9	37.9	75.4
	5.00	72	24.6	24.6	100.0
	Total	293	100.0	100.0	

Q59

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	6	2.0	2.0	2.0
	2.00	10	3.4	3.4	5.5
	3.00	29	9.9	9.9	15.4
	4.00	125	42.7	42.7	58.0
	5.00	123	42.0	42.0	100.0
	Total	293	100.0	100.0	

Q60

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	23	7.8	7.8	7.8
	2.00	67	22.9	22.9	30.7
	3.00	60	20.5	20.5	51.2
	4.00	85	29.0	29.0	80.2
	5.00	58	19.8	19.8	100.0
	Total	293	100.0	100.0	

Q61

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	5	1.7	1.7	1.7
	2.00	6	2.0	2.0	3.8
	3.00	49	16.7	16.7	20.5
	4.00	133	45.4	45.4	65.9
	5.00	100	34.1	34.1	100.0
	Total	293	100.0	100.0	

Q62

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	7	2.4	2.4	2.4
	2.00	10	3.4	3.4	5.8
	3.00	19	6.5	6.5	12.3
	4.00	145	49.5	49.5	61.8
	5.00	112	38.2	38.2	100.0
	Total	293	100.0	100.0	

Q63

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	5	1.7	1.7	1.7
	2.00	5	1.7	1.7	3.4
	3.00	2	.7	.7	4.1
	4.00	31	10.6	10.6	14.7
	5.00	250	85.3	85.3	100.0
	Total	293	100.0	100.0	

Q64

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	13	4.4	4.4	4.4
	2.00	34	11.6	11.6	16.0
	3.00	64	21.8	21.8	37.9
	4.00	120	41.0	41.0	78.8
	5.00	62	21.2	21.2	100.0
	Total	293	100.0	100.0	

Q65

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	30	10.2	10.2	10.2
	2.00	54	18.4	18.4	28.7
	3.00	43	14.7	14.7	43.3
	4.00	104	35.5	35.5	78.8
	5.00	62	21.2	21.2	100.0
	Total	293	100.0	100.0	

Q66

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	5	1.7	1.7	1.7
	2.00	12	4.1	4.1	5.8
	3.00	24	8.2	8.2	14.0
	4.00	163	55.6	55.6	69.6
	5.00	89	30.4	30.4	100.0
	Total	293	100.0	100.0	

Q67

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	15	5.1	5.1	5.1
	2.00	9	3.1	3.1	8.2
	3.00	14	4.8	4.8	13.0
	4.00	108	36.9	36.9	49.8
	5.00	147	50.2	50.2	100.0
	Total	293	100.0	100.0	

Q68

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	10	3.4	3.4	3.4
	2.00	30	10.2	10.2	13.7
	3.00	52	17.7	17.7	31.4
	4.00	134	45.7	45.7	77.1
	5.00	67	22.9	22.9	100.0
	Total	293	100.0	100.0	

Q69

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	23	7.8	7.8	7.8
	2.00	110	37.5	37.5	45.4
	3.00	70	23.9	23.9	69.3
	4.00	58	19.8	19.8	89.1
	5.00	32	10.9	10.9	100.0
	Total	293	100.0	100.0	

Q70

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	3	1.0	1.0	1.0
	2.00	12	4.1	4.1	5.1
	3.00	12	4.1	4.1	9.2
	4.00	94	32.1	32.1	41.3
	5.00	172	58.7	58.7	100.0
	Total	293	100.0	100.0	

Q71

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	50	17.1	17.1	17.1
	2.00	48	16.4	16.4	33.4
	3.00	54	18.4	18.4	51.9
	4.00	75	25.6	25.6	77.5
	5.00	66	22.5	22.5	100.0
	Total	293	100.0	100.0	

Q72

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	3	1.0	1.0	1.0
	2.00	12	4.1	4.1	5.1
	3.00	20	6.8	6.8	11.9
	4.00	141	48.1	48.1	60.1
	5.00	117	39.9	39.9	100.0
	Total	293	100.0	100.0	

Q73

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	21	7.2	7.2	7.2
	2.00	40	13.7	13.7	20.8
	3.00	40	13.7	13.7	34.5
	4.00	101	34.5	34.5	68.9
	5.00	91	31.1	31.1	100.0
	Total	293	100.0	100.0	

Q74

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	13	4.4	4.4	4.4
	2.00	24	8.2	8.2	12.6
	3.00	30	10.2	10.2	22.9
	4.00	122	41.6	41.6	64.5
	5.00	104	35.5	35.5	100.0
	Total	293	100.0	100.0	

Q75

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	6	2.0	2.0	2.0
	2.00	23	7.8	7.8	9.9
	3.00	28	9.6	9.6	19.5
	4.00	135	46.1	46.1	65.5
	5.00	101	34.5	34.5	100.0
	Total	293	100.0	100.0	

Q76

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	7	2.4	2.4	2.4
	2.00	7	2.4	2.4	4.8
	3.00	14	4.8	4.8	9.6
	4.00	121	41.3	41.3	50.9
	5.00	144	49.1	49.1	100.0
	Total	293	100.0	100.0	

Q77

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	3	1.0	1.0	1.0
	2.00	11	3.8	3.8	4.8
	3.00	20	6.8	6.8	11.6
	4.00	86	29.4	29.4	41.0
	5.00	173	59.0	59.0	100.0
	Total	293	100.0	100.0	

Q78

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	15	5.1	5.1	5.1
	2.00	43	14.7	14.7	19.8
	3.00	63	21.5	21.5	41.3
	4.00	98	33.4	33.4	74.7
	5.00	74	25.3	25.3	100.0
	Total	293	100.0	100.0	

Q79

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	14	4.8	4.8	4.8
	2.00	18	6.1	6.1	10.9
	3.00	44	15.0	15.0	25.9
	4.00	125	42.7	42.7	68.6
	5.00	92	31.4	31.4	100.0
	Total	293	100.0	100.0	

Q80

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	15	5.1	5.1	5.1
	2.00	25	8.5	8.5	13.7
	3.00	63	21.5	21.5	35.2
	4.00	118	40.3	40.3	75.4
	5.00	72	24.6	24.6	100.0
	Total	293	100.0	100.0	

Q81

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	2	.7	.7	.7
	2.00	6	2.0	2.0	2.7
	3.00	5	1.7	1.7	4.4
	4.00	104	35.5	35.5	39.9
	5.00	176	60.1	60.1	100.0
	Total	293	100.0	100.0	

Q82

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	4	1.4	1.4	1.4
	2.00	19	6.5	6.5	7.8
	3.00	37	12.6	12.6	20.5
	4.00	131	44.7	44.7	65.2
	5.00	102	34.8	34.8	100.0
	Total	293	100.0	100.0	

Q83

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	16	5.5	5.5	5.5
	2.00	29	9.9	9.9	15.4
	3.00	41	14.0	14.0	29.4
	4.00	121	41.3	41.3	70.6
	5.00	86	29.4	29.4	100.0
	Total	293	100.0	100.0	

Q84

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	30	10.2	10.2	10.2
	2.00	77	26.3	26.3	36.5
	3.00	85	29.0	29.0	65.5
	4.00	70	23.9	23.9	89.4
	5.00	31	10.6	10.6	100.0
	Total	293	100.0	100.0	

Q85

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	6	2.0	2.0	2.0
	2.00	21	7.2	7.2	9.2
	3.00	9	3.1	3.1	12.3
	4.00	118	40.3	40.3	52.6
	5.00	139	47.4	47.4	100.0
	Total	293	100.0	100.0	

Q86

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	9	3.1	3.1	3.1
	2.00	15	5.1	5.1	8.2
	3.00	34	11.6	11.6	19.8
	4.00	147	50.2	50.2	70.0
	5.00	88	30.0	30.0	100.0
	Total	293	100.0	100.0	

Q87

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	15	5.1	5.1	5.1
	2.00	41	14.0	14.0	19.1
	3.00	59	20.1	20.1	39.2
	4.00	120	41.0	41.0	80.2
	5.00	58	19.8	19.8	100.0
	Total	293	100.0	100.0	

Q88

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	3	1.0	1.0	1.0
	2.00	4	1.4	1.4	2.4
	3.00	7	2.4	2.4	4.8
	4.00	99	33.8	33.8	38.6
	5.00	180	61.4	61.4	100.0
	Total	293	100.0	100.0	

Q89

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	3	1.0	1.0	1.0
	2.00	18	6.1	6.1	7.2
	3.00	41	14.0	14.0	21.2
	4.00	146	49.8	49.8	71.0
	5.00	85	29.0	29.0	100.0
	Total	293	100.0	100.0	

Q90

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	12	4.1	4.1	4.1
	2.00	32	10.9	10.9	15.0
	3.00	43	14.7	14.7	29.7
	4.00	134	45.7	45.7	75.4
	5.00	72	24.6	24.6	100.0
	Total	293	100.0	100.0	

Q91

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	2	.7	.7	.7
	2.00	3	1.0	1.0	1.7
	3.00	5	1.7	1.7	3.4
	4.00	86	29.4	29.4	32.8
	5.00	197	67.2	67.2	100.0
	Total	293	100.0	100.0	

Q92

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	7	2.4	2.4	2.4
	2.00	13	4.4	4.4	6.8
	3.00	57	19.5	19.5	26.3
	4.00	158	53.9	53.9	80.2
	5.00	58	19.8	19.8	100.0
	Total	293	100.0	100.0	

Q93

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	5	1.7	1.7	1.7
	2.00	3	1.0	1.0	2.7
	3.00	17	5.8	5.8	8.5
	4.00	121	41.3	41.3	49.8
	5.00	147	50.2	50.2	100.0
	Total	293	100.0	100.0	

Q94

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	4	1.4	1.4	1.4
	2.00	13	4.4	4.4	5.8
	3.00	27	9.2	9.2	15.0
	4.00	93	31.7	31.7	46.8
	5.00	156	53.2	53.2	100.0
	Total	293	100.0	100.0	

Q95

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	4	1.4	1.4	1.4
	2.00	5	1.7	1.7	3.1
	3.00	25	8.5	8.5	11.6
	4.00	108	36.9	36.9	48.5
	5.00	151	51.5	51.5	100.0
	Total	293	100.0	100.0	

Q96

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	32	10.9	10.9	10.9
	2.00	42	14.3	14.3	25.3
	3.00	46	15.7	15.7	41.0
	4.00	97	33.1	33.1	74.1
	5.00	76	25.9	25.9	100.0
	Total	293	100.0	100.0	

Q97

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	4	1.4	1.4	1.4
	2.00	10	3.4	3.4	4.8
	3.00	28	9.6	9.6	14.3
	4.00	113	38.6	38.6	52.9
	5.00	138	47.1	47.1	100.0
	Total	293	100.0	100.0	

Q98

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	13	4.4	4.4	4.4
	2.00	24	8.2	8.2	12.6
	3.00	24	8.2	8.2	20.8
	4.00	117	39.9	39.9	60.8
	5.00	115	39.2	39.2	100.0
	Total	293	100.0	100.0	

Q99

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	4	1.4	1.4	1.4
	2.00	8	2.7	2.7	4.1
	3.00	18	6.1	6.1	10.2
	4.00	115	39.2	39.2	49.5
	5.00	148	50.5	50.5	100.0
	Total	293	100.0	100.0	

Q100

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	9	3.1	3.1	3.1
	2.00	18	6.1	6.1	9.2
	3.00	26	8.9	8.9	18.1
	4.00	108	36.9	36.9	54.9
	5.00	132	45.1	45.1	100.0
	Total	293	100.0	100.0	

Q101

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	28	9.6	9.6	9.6
	2.00	33	11.3	11.3	20.8
	3.00	95	32.4	32.4	53.2
	4.00	81	27.6	27.6	80.9
	5.00	56	19.1	19.1	100.0
	Total	293	100.0	100.0	

Q102

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	5	1.7	1.7	1.7
	2.00	12	4.1	4.1	5.8
	3.00	32	10.9	10.9	16.7
	4.00	152	51.9	51.9	68.6
	5.00	92	31.4	31.4	100.0
	Total	293	100.0	100.0	

Q103

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	5	1.7	1.7	1.7
	2.00	8	2.7	2.7	4.4
	3.00	13	4.4	4.4	8.9
	4.00	151	51.5	51.5	60.4
	5.00	116	39.6	39.6	100.0
	Total	293	100.0	100.0	

Q104

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	14	4.8	4.8	4.8
	2.00	15	5.1	5.1	9.9
	3.00	21	7.2	7.2	17.1
	4.00	154	52.6	52.6	69.6
	5.00	89	30.4	30.4	100.0
	Total	293	100.0	100.0	

Q105

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	30	10.2	10.2	10.2
	2.00	51	17.4	17.4	27.6
	3.00	44	15.0	15.0	42.7
	4.00	96	32.8	32.8	75.4
	5.00	72	24.6	24.6	100.0
	Total	293	100.0	100.0	

Q106

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	21	7.2	7.2	7.2
	2.00	63	21.5	21.5	28.7
	3.00	26	8.9	8.9	37.5
	4.00	94	32.1	32.1	69.6
	5.00	89	30.4	30.4	100.0
	Total	293	100.0	100.0	

Q107

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	2	.7	.7	.7
	2.00	7	2.4	2.4	3.1
	3.00	12	4.1	4.1	7.2
	4.00	123	42.0	42.0	49.1
	5.00	149	50.9	50.9	100.0
	Total	293	100.0	100.0	

Q108

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	31	10.6	10.6	10.6
	2.00	67	22.9	22.9	33.4
	3.00	82	28.0	28.0	61.4
	4.00	71	24.2	24.2	85.7
	5.00	42	14.3	14.3	100.0
	Total	293	100.0	100.0	

Q109

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	8	2.7	2.7	2.7
	2.00	12	4.1	4.1	6.8
	3.00	34	11.6	11.6	18.4
	4.00	156	53.2	53.2	71.7
	5.00	83	28.3	28.3	100.0
	Total	293	100.0	100.0	

Q110

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	10	3.4	3.4	3.4
	2.00	23	7.8	7.8	11.3
	3.00	48	16.4	16.4	27.6
	4.00	169	57.7	57.7	85.3
	5.00	43	14.7	14.7	100.0
	Total	293	100.0	100.0	

Q111

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	6	2.0	2.0	2.0
	2.00	19	6.5	6.5	8.5
	3.00	58	19.8	19.8	28.3
	4.00	134	45.7	45.7	74.1
	5.00	76	25.9	25.9	100.0
	Total	293	100.0	100.0	

Q112

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	7	2.4	2.4	2.4
	2.00	16	5.5	5.5	7.8
	3.00	11	3.8	3.8	11.6
	4.00	147	50.2	50.2	61.8
	5.00	112	38.2	38.2	100.0
	Total	293	100.0	100.0	

Q113

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	10	3.4	3.4	3.4
	2.00	7	2.4	2.4	5.8
	3.00	51	17.4	17.4	23.2
	4.00	146	49.8	49.8	73.0
	5.00	79	27.0	27.0	100.0
	Total	293	100.0	100.0	

Q114

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	12	4.1	4.1	4.1
	2.00	19	6.5	6.5	10.6
	3.00	66	22.5	22.5	33.1
	4.00	112	38.2	38.2	71.3
	5.00	84	28.7	28.7	100.0
	Total	293	100.0	100.0	

Q115

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	11	3.8	3.8	3.8
	2.00	45	15.4	15.4	19.1
	3.00	57	19.5	19.5	38.6
	4.00	120	41.0	41.0	79.5
	5.00	60	20.5	20.5	100.0
	Total	293	100.0	100.0	

Q116

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	12	4.1	4.1	4.1
	2.00	11	3.8	3.8	7.8
	3.00	32	10.9	10.9	18.8
	4.00	145	49.5	49.5	68.3
	5.00	93	31.7	31.7	100.0
	Total	293	100.0	100.0	

Q117

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	5	1.7	1.7	1.7
	2.00	9	3.1	3.1	4.8
	3.00	14	4.8	4.8	9.6
	4.00	122	41.6	41.6	51.2
	5.00	143	48.8	48.8	100.0
	Total	293	100.0	100.0	

Q118

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	4	1.4	1.4	1.4
	2.00	9	3.1	3.1	4.4
	3.00	19	6.5	6.5	10.9
	4.00	125	42.7	42.7	53.6
	5.00	136	46.4	46.4	100.0
	Total	293	100.0	100.0	

Q119

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	7	2.4	2.4	2.4
	2.00	15	5.1	5.1	7.5
	3.00	35	11.9	11.9	19.5
	4.00	131	44.7	44.7	64.2
	5.00	105	35.8	35.8	100.0
	Total	293	100.0	100.0	

Q120

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	10	3.4	3.4	3.4
	2.00	31	10.6	10.6	14.0
	3.00	19	6.5	6.5	20.5
	4.00	120	41.0	41.0	61.4
	5.00	113	38.6	38.6	100.0
	Total	293	100.0	100.0	

Q121

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	8	2.7	3.4	3.4
	2.00	11	3.8	4.6	8.0
	3.00	18	6.1	7.6	15.5
	4.00	71	24.2	29.8	45.4
	5.00	130	44.4	54.6	100.0
	Total	238	81.2	100.0	
Missing	System	55	18.8		
Total		293	100.0		

NB. Item 121 was added after the pre-test stage so this item was not presented to 55 subjects.