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**A Population Approach to Positive Psychology:
The Potential for Population Interventions to Promote Well-being and Prevent Disorder**

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This chapter argues for the value of assessing and understanding psychological processes in representative samples of the population. Population-based studies allow us not only to establish how traits, capabilities and conditions are distributed throughout the population, but also to establish the demographic, psychosocial, health and biological variables that are associated with them. To date, the focus of population-based health research has been overwhelmingly negative and disease oriented. It is proposed that by adopting theoretical concepts developed in the field of epidemiology, combined with theoretical and empirical developments in positive psychology, psychologists can both promote positive well-being in the general population, and as a direct consequence, reduce the prevalence of many common physical and mental disorders. This chapter examines the empirical foundations on which population approaches rest and compares the potential efficacy of interventions targeted at individuals who have a disorder (or are at high risk of a disorder) with universal interventions aimed at shifting the whole population in a desirable direction. Several universal intervention programmes are described, followed by a review of population studies that specifically measure subjective well-being rather than the absence of disorder, to establish which health and socio-demographic variables are associated with positive psychological states. Some limitations of the research approaches to date, and recommendations for future research and practice conclude the chapter.

INDIVIDUAL VERSUS POPULATION APPROACHES

There are two main approaches to understanding the causes of a disease or disorder. One is an individual-based approach and the other is a population-based approach. The individual-based approach involves the careful definition of a disorder, followed by an investigation of individual characteristics and experiences that may have led to the disorder. The disorders that form the focus of psychological enquiry may be either mental (including both affective and cognitive disorders) or physical, such as cardiovascular disease, obesity or cancers. The individual factors which psychologists investigate may include aspects of the early environment (e.g., attachment), IQ, temperament, education, social relationships, stress, life events, and genotype. Individual-based research seeks to establish what causes the disorder in the individual, by examining such individual differences.

In contrast, population-based research seeks to understand why some populations have more disorder than others. For example, cardiovascular disease is far more common in the US and the UK than in Japan and Italy (e.g., Khaw, 1997). Within a nation, cardiovascular disease is strongly related to social inequality, with more disadvantaged groups showing higher prevalence levels of disease. The common mental disorders such as depression and anxiety are also strongly related to social inequality (e.g., Melzer, Tom, Brugha, Fryers, & Meltzer, 2002). Epidemiologists (from the Greek 'epi' and 'demos' meaning 'about the people') seek the causes of disorder by examining differences between populations or groups, rather than differences between individuals, an approach shared by some areas of health psychology. The factors under investigation include income distribution, employment rate, environmental toxins, divorce rate and general lifestyle variables such as dietary patterns and average levels of alcohol consumption and cigarette smoking.

These two contrasting approaches to understanding the causes of disorder bring with them contrasting approaches to treatment. The aim of the individual-based approach is to alleviate symptoms in the individual; the aim of the population-based approach is to reduce the number of individuals who have the disorder. Pharmacological, behavioral, and surgical techniques may be extremely effective in controlling disorders such as heart disease at an individual level. However, for most common disorders, there are community-level as well as individual-level risk factors. By establishing the social and environmental risk factors for heart disease, epidemiologists and health psychologists can play a

vital role in reducing the number of people who have the disorder. The treatment method preferred here is population prevention. Reducing the risk factors for disorders in the whole population may sound like a heroic and costly exercise compared to targeting treatment on just those individuals who have the disorder. However, the effectiveness of the population approach has already been demonstrated. For example, the substantial drop in cardiovascular disease in the US, the UK, and other developed countries, has not arisen primarily from better individual treatments. Rather, it has arisen largely from reducing blood pressure and cholesterol levels in the whole population, as a consequence of successful health promotion measures advocating the importance of exercise, healthy diet, and smoking cessation (Puska, Vartiainen, Tuomilehto, Salomaa, & Nissinen, 1998).

DISTRIBUTION OF RISK FACTORS AND PREVALENCE OF DISORDER

The success of the epidemiological approach in reducing the prevalence of disorder in a population relies on one important property of the risk factors; that they form a continuous distribution in the population. This can be clearly demonstrated using the example of cardiovascular disease. One of the principal risk factors for cardiovascular disease is hypertension, and hypertension is just one extreme of the normal distribution of blood pressure in the population. This general point is illustrated in Figure 1. In this case, “threshold for disorder” refers to hypertension which has been defined by the World Health Organisation (WHO) as being in excess of specified values of systolic and diastolic blood pressure (more than 160/95 mm Hg; WHO, 1978). Individuals with these very high levels of blood pressure are at much higher risk of developing heart disease. However, even individuals who fall just below the threshold are at increased risk of heart disease compared to individuals whose blood pressure is well below the threshold. So across the full spectrum of blood pressure, the higher the blood pressure the higher the risk of developing heart disease. Individual-based approaches treat only those individuals who are above the cutpoint, that is, who have diagnosed hypertension.

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The population-based approach is radically different. It tries to shift the whole population, so that the population mean of the underlying risk factors (e.g., blood pressure) is decreased and hence there are many fewer people in the tail of the distribution. Even a tiny shift in the mean of the risk factor can lead to a major decrease in the prevalence of the disorder. This too can be seen in Figure 1. As the mean risk factor score of population A is shifted downwards to the mean of population B, the number of cases of disorder (the tail of the distribution) is sharply reduced. But there is an even greater benefit of the population approach. Paradoxically, the majority of people who develop a disorder come not from the group at highest risk (e.g., those with diagnosed hypertension) but from the group with a lower risk, since they are far more numerous (see Figure 1). By lowering the mean risk of the whole population, the total number of cases may be drastically reduced.

This approach does not work for disorders where the underlying risk factors are not continuously distributed in the population. Huntington’s disease is an example of where this approach would not work, since it is strongly under genetic control, with half the offspring of an affected parent developing the disorder. However, for most common diseases, the underlying risk factors form a continuous distribution in the population, probably because there are multiple underlying causes of vulnerability. So the epidemiological technique of shifting the population towards a healthier state should be given serious consideration in the realm of mental health.

THE EMPIRICAL CASE FOR A POPULATION APPROACH TO IMPROVING MENTAL HEALTH

The population-based approach to reducing the numbers of people who have a disorder arose from the work of the eminent UK epidemiologist Geoffrey Rose. In his landmark book, Rose (1992) demonstrated that the prevalence of many common diseases in a population or sub-group of a population is directly related to the population mean of the underlying risk factors. Therefore, by changing the mean, we should be able to change the prevalence. Rose believed that his approach had relevance for psychiatric disorder as well as for physical disorder, and his hypothesis was first tested by Anderson, Huppert, and Rose (1993). This study examined the distribution of scores on a mental health questionnaire in sub-populations of a nationally representative UK sample who took part in the Health and Lifestyle Survey (Cox et al., 1987). Anderson et al. found that the prevalence of clinically significant, above threshold scores on a well-known measure of psychological distress, the General Health Questionnaire (GHQ-30; Goldberg, 1978) was directly related to the mean number of symptoms in the sub-population. That is, the higher the mean number of symptoms, the higher the prevalence of people in the abnormal category. Moreover, this relationship was evident even when the group with above threshold scores was excluded when calculating the mean. Anderson et al. also found that the data for any sub-population lay along a single continuous distribution of symptoms with no excess of cases or evidence of bimodality.

This was a very important discovery since *a priori* it was entirely possible that we would find a distinct pathological group, with an excess of cases in the high end of the symptom scale, similar to the excess of cases at the low end of the IQ distribution representing the distinct pathologies of severe learning disability. The fact that the mental health data were best described by a dimensional model shows there is no clear boundary between the presence and absence of pathology in relation to common mental disorders (predominantly depression and anxiety). The unidimensionality of symptoms of common mental disorders, and the direct relationship between the population mean and the number of cases, has recently been confirmed by Melzer et al. (2002) who analyzed data from almost 10,000 respondents to the OPCS National Household Psychiatric Morbidity Survey (Meltzer, Gill, Petticrew, & Hinds, 1995). The dimensional model does not imply the absence of biological or other individual factors in the development of the condition, but does imply that there is a uniform distribution of susceptibility in the population and that there are population-level factors which influence the development of the condition. Based on their seminal study, Anderson et al. (1993) drew the following conclusions: “Populations thus carry a collective responsibility for their own mental health and well-being. This implies that explanations for the differing prevalence rates of psychiatric morbidity must be sought in the characteristics of their parent populations; and control measures are unlikely to succeed if they do not involve population-wide changes.” (Anderson et al., 1993, p. 475).

A similar analysis has been undertaken of the relationship between mean alcohol consumption and the prevalence of heavy or problem drinking. Using cross-sectional data on over 32,000 adults who took part in the Health Survey for England, Colhoun, Ben-Shlomo, Dong, Bost, and Marmot (1997) showed that regional mean alcohol consumption of those who do not drink heavily is strongly correlated with the regional prevalence of heavy drinking and also of problem drinking. They conclude that factors which increase mean consumption in light or moderate drinkers are likely to result in an increase in heavy drinking and related problems. Conversely, a small reduction in the mean consumption of light or moderate drinkers (for example by increasing the cost of alcohol or discouraging binge drinking) is likely to result in a substantial decrease in serious alcohol-related problems.

A major policy implication of establishing a population dimensional model of pathology is that reducing prevalence requires population intervention (Rose, 1992). Longitudinal studies can give an indication of the relationship between change in the population mean and change in prevalence. Using a regression analysis on their cross-sectional data, Anderson et al. (1993) predicted that the prevalence of disorder in the overall population would fall by approximately 7% for every unit fall in the

population mean GHQ. If the mean population GHQ score fell by one standard deviation, this would correspond to a fall of approximately 40% in the prevalence of disorder.

The basic prediction was tested directly some years later by Whittington and Huppert (1996), who re-interviewed the original population seven years after the initial survey. They showed, for the first time, that changes in the prevalence of psychiatric disorder in a sub-population were related to changes in the mean number of psychiatric symptoms in that population. They further demonstrated that the relationship is linear, and confirmed the earlier prediction: i.e., a one point decrease in mean scores on the GHQ was associated with a 6% decrease in prevalence of disorder. The Whittington and Huppert study was observational, but it implies that if population interventions were developed they could potentially have a substantial effect on reducing prevalence of common mental disorder.

A further analysis of the longitudinal data investigated the relationship between baseline scores on the GHQ and subsequent mortality. Numerous studies in the literature had shown that individuals with diagnosed psychiatric disorder had a shorter life expectancy than those without disorder. Huppert and Whittington (1995) established that this relationship between life expectancy and mental health applied right across the distribution of GHQ scores, not only in those with disorder. They found a linear relationship between baseline GHQ score and 7-year survival. The effect was greater for men than for women; for every one point increase in the GHQ score at baseline, there was a 12% increase in the risk of the men dying over the subsequent 7 years, when physical health, lifestyle and demographic variables were controlled for. Therefore, interventions which reduce the mean number of psychological symptoms in the population should not only reduce the number of people with common mental disorders, but also reduce premature deaths.

POPULATION PREVENTION STRATEGIES FOR IMPROVING MENTAL HEALTH

Prevention strategies are usually targeted at groups with a disorder or those believed to be at high risk for a disorder. In the former case, the aim is to reduce the severity, duration or relapse rate of the disorder; in the latter case the aim is to reduce the likelihood that the disorder will occur. However in this chapter, the focus is on “population prevention”, i.e., measures that are regarded as desirable for everyone in the population. In the physical health domain, such measures include compulsory wearing of seatbelts, fluoridation of drinking water and advocating healthy diet, exercise, sensible drinking and smoking cessation. In the mental health domain, such measures would include encouragement of positive self perceptions, social skills, stress reduction and coping behaviors.

Population prevention measures may be either universal, being applied to every member of the community, or selective, being applied to every member of a sub-group of the community (Jenkins, 1994). These sub-groups are usually defined by socio-demographic factors such as age, sex and occupation. Examples include good antenatal care for pregnant women, and health and social interventions for socially isolated elderly people. We can regard such groups as being at increased risk of certain physical and mental disorders, but the population measures apply to everyone in the sub-group and not just targeted individuals. While the aim of population prevention approaches is usually to reduce pathology, they can have a double payoff, in promoting and enhancing adaptability and healthy functioning for the majority, as well as preventing pathology.

The method of delivering population interventions is obviously a key factor in their success. Educational or health promotion approaches can be offered through organizations such as schools, workplaces, health clinics, or community centres. The media also have a major role to play, both in providing reliable information and in modelling desirable patterns of behavior. In a recent review, Gould (2001) showed a very strong link between media presentations of actual or fictional suicides and the subsequent suicide rate. In Germany, Schmidtke and Hafner (1988) found that each of two showings of a television drama depicting a young man’s fictional suicide on a railway track was

followed by a significant increase in railway suicides by young men. The media's power for good should also not be underestimated. For example, soap operas which currently portray "life as it is" and thereby appear to condone aggressive behavior, eating disorders, drug taking or teenage suicide, could as readily promote values such as compassion, self-efficacy, tolerance and activities which encourage sustainable happiness and fulfilment. Whether population interventions are conducted through community-based organisations or via the media, it is essential to learn from both the successes and failures of health promotion methods in the past to ensure their maximal effectiveness (see Taylor, this volume).

Depression and conduct disorders such as violence or aggression are among the behavioral and mental health problems, which may be amenable to being tackled successfully through a population prevention approach. New forms of medication and some of the newer talking therapies (e.g., cognitive therapy), can be extremely effective in alleviating the suffering experienced by an individual when they are in a depressed state, and some forms of cognitive and psychodynamic therapy have been shown to reduce the relapse rate (Paykel et al., 1999). Recent years have seen a huge increase in rates of depression in many countries, as well as rates of suicide, particularly among young people (Cutler, Glaeser, & Norberg, 2000). We can either go on administering effective treatments to ever larger numbers of individuals or we can try to reduce the prevalence of depression in the population.

Depressive disorder meets the criteria for population prevention, since both the symptoms of depression and many of the major risk factors (e.g., stress, self-esteem) are continuously distributed in the population. The clinical diagnosis of depression can be regarded as an arbitrary cutpoint along a distribution of symptoms; that is, a point at which the symptoms have become so numerous and so disabling that the individual can no longer manage their normal activities. Individuals who do not quite meet diagnostic criteria for depressive disorders may nevertheless be struggling in their daily life. While many valuable interventions are targeted at those "at risk" individuals (e.g. Jaycox, Reivich, Gillham, & Seligman, 1994), individuals without a diagnosed disorder often receive little or no help, and their struggle may have serious effects on their family life, work, and health. By reducing the mean number of depressive symptoms in the population, the whole population could be shifted in a healthy direction, and there would be fewer people in the tail of the distribution who meet the criteria for depressive disorder.

Likewise, Rose (1992) has suggested that deviant behaviors such as violence are "simply the tail of the population's own distribution" (p. 64). Therefore, reducing the mean level of violence or the mean of its risk factors in a population will reduce the prevalence of serious violence and related crime. Thus, the population approach has the huge advantage that the mental health and behavior of the entire population can be improved, and not just that of individuals at high risk or those with diagnosable disorder.

SAMPLE POPULATION PREVENTION PROGRAMS

There is a wealth of programs for the prevention of mental health disorders in "at risk" groups (e.g., Gillham, Shatte, & Freres, 2000; Greenberg, Domitrovich, & Bumbarger, 1999; Seligman, Schulman, DeRubeis, & Hollon, 1999; Stathakos & Roehrle, 2003), and some are administered through universal organisations such as schools (e.g., Jaycox et al., 1994). However, such approaches not only miss the opportunity of improving mental health and functioning for everyone, but they may stigmatize the targeted individuals. Fortunately, there are a growing number of universal interventions for young people, that are usually school-based, and some are described in section. At the present time, however, it is hard to find mental health interventions that specifically target the adult population. One valuable initiative is reviewed here.

Positive Parenting Program

In view of the fundamental importance of child development in the early years, and the evidence for a sensitive period with respect to the effects of stress on the developing nervous system and behavioral outcomes (Dawson, Ashman, & Carver, 2000) a series of linked programs in Australia has focused on parental education (Sanders, 1999; Sanders, Montgomery, & Brechman-Toussaint, 2000; Sanders, Turner, & Markie-Dadds, 2002). This program, known as Triple P (Positive Parenting Program), is administered in a variety of ways, including both community-based and media interventions. Sanders and his colleagues report on the effects of a 12-episode television series “Families”, on disruptive child behavior and family relationships. The initial report was based on only 56 parents of children aged between 2 and 8 years, who were randomly assigned to either watching the television series or to a waiting list control group. Compared to the control group, parents in the television viewing condition reported significantly lower levels of disruptive child behavior and higher levels of perceived parenting competence, and as measured by a 36-item child behavior inventory, the prevalence of disruptive behavior dropped from around 43% to 14%. The authors also report that all post-intervention effects were maintained at 6-month follow-up.

The Triple P intervention has now been extended so that all parents of pre-school children in the region are eligible to participate. A shortened version of the program is delivered through community health services. It involves an 8-week parenting skills training program consisting of group sessions followed by telephone consultations. In Western Australia, over 4,000 families have participated in the program. Program evaluation has documented an increase in the use of positive parenting strategies as opposed to harsh, punitive strategies, a decrease in parental reports of the number and intensity of child behavior problems, a decrease in parental depression, anxiety and stress, and an increase in marital or relationship satisfaction. It has been estimated that if carried out at a universal level and if all eligible families enrolled, Triple P would reduce the total proportion of pre-school children with significant behavior problems by around 40% (Lewis, 1996).

Such initiatives should be applauded; they produce valuable outcomes in the short term and probably in the long term, and are unlikely to do harm. However, an unavoidable limitation is that, although the program was offered to all members of the specific population (parents of pre-school children), it was only taken up by some parents, who are likely to be unrepresentative of the population as a whole. Hence, it may miss those who have the most to gain. Intervention via the mass media probably provides the best vehicle for the general adult population.

School-based Interventions

The universality of schooling (at least in developed countries) makes schools the ideal place for the delivery of mental health interventions for children. This has been recognized in a number of programs, some of which teach cognitive and emotional skills, while others emphasize interpersonal relationships. In one large program from Virginia, adolescents are taught life skills by high school students in interactive classroom sessions. The program is called “Going for the Goal” and involves adolescents learning how to identify positive life goals, focus on the process of goal attainment rather than the outcome, identify behaviors which facilitate or compromise goal attainment, and find or create social support (Danish, 1996). The program has been administered to tens of thousands of adolescents in numerous cities in the US.

While potentially very effective, such programs have not always been evaluated against matched control groups. The Penn Resiliency Program is an exciting school-based initiative that aims to prevent depression in adolescents. It involves 12 two-hour sessions of cognitive behavior therapy and its effectiveness compared with controls has recently been demonstrated (Freres, Gillham, Reivich, & Shatte, 2002). An excellent review of universal interventions for the prevention of mental health disorders in school-age children has been carried out by Greenberg et al. (1999). They identified 14 universal preventive interventions that had undergone a quasi-experimental or randomized evaluation and had been found to produce positive outcomes in either symptom reduction or reduction of risk

factors. One of the largest such programs was the Norwegian nationwide intervention campaign to prevent school bullying. Both bullying and being a victim of bullying are major risk factors for mental health problems, as well as being undesirable in their own right. The program involved extensive information for teachers describing current knowledge on the nature, causes and effects of school bullying and detailed suggestions for its reduction and prevention. Videos and questionnaires were provided for the children, and written information was provided for all Norwegian families with school-age children. Olweus (1991) conducted a quasi-experimental study of this campaign with approximately 2,500 pupils, and reports a reduction of around 50% in bullying and related problems, with more marked effects after two years than after one year. There was also a reduction in general anti-social behavior such as vandalism, theft, truancy and drunkenness.

A recent Special issue of the *American Psychologist* (Weissberg & Kumpfer, 2003) presents the most up-to-date information on prevention of mental health and behavioural problems in children, and includes examples of universal interventions. While authors of universal intervention studies acknowledge the value of promoting competence and positive mental health among all children, the measured outcomes commonly focus on reductions in psychopathology rather than positive benefits for the whole population. Testing the applicability of the Rose (1992) model described earlier, following these programs would be a valuable exercise.

EXPLORING THE POSITIVE IN POPULATION STUDIES

The content of an effective population intervention program needs to be solidly based on epidemiological evidence concerning the demographic, social and environmental factors that confer risk or protection. There is a wealth of data related to risk factors for mental disorders and impaired functioning, particularly those affecting early childhood development and adolescence, the working population and the elderly. However, there have been surprisingly few population-based studies of what characterizes individuals who are mentally healthy and well-functioning, nor of the factors that protect individuals from developing disorders despite adverse circumstances. This point has been eloquently made by Ryff & Singer (1998a, 2000).

However, there are some notable exceptions which have investigated positive well-being in representative population samples and we will focus on just a few. These include Canada's National Population Health Survey, the British Health & Lifestyle Survey and the National Study of Midlife Development in the United States (MIDUS). These studies have used a variety of measures of positive psychological well-being, and have examined the relationship between these measures and a range of demographic, social and environmental factors. The principal findings are summarized next.

Illustrative Population Studies

The National Population Health Survey in Canada administered measures of both positive and negative mental health to almost 18,000 participants aged 12 and above (Stephens, Dulberg, & Joubert, 1999). The measures included sense of coherence (Antonovsky, 1993), self-esteem (Rosenberg, 1965), sense of mastery (Pearlin, Lieberman, Menaghan, & Mullan, 1981), and a single item assessing happiness and interest in life.

The Health & Lifestyle Survey in Britain examined positive and negative well-being in a nationally representative sample of over 6,000 community residents aged 18 and above (Cox et al., 1987). Both positive and negative measures were derived from the General Health Questionnaire (GHQ-30; Goldberg, 1978), a widely used and well-validated mental health measure. Positive well-being was based on positive responses to the 15 positively worded items, and negative well-being was based on a standard GHQ measure of symptoms of psychological distress (Huppert & Whittington, 2003).

The National Survey of Midlife Development in the United States (MIDUS) administered a measure of psychological well-being developed by Ryff and her colleagues (Ryff & Singer, 1996) to a nationally representative sample of around 3,000 adults aged 25-74. They assessed six dimensions of psychological well-being: self acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth.

There have also been many large economic and social surveys that include measures of well-being. They tend to use single items measuring happiness or life satisfaction, but their findings are relevant here and some are reported next.

Demographic and Social Influences on Well-being

Gender. It has long been known that compared with men, women have a higher prevalence of psychological disorder as well as reporting a higher number of symptoms of psychological distress. But what is the relationship between gender and positive measures of well-being? Large social surveys that have included a single item on happiness or life satisfaction tend to find little evidence of gender differences (e.g., Donovan & Halpern, 2002; Helliwell, 2003). In the Canadian study, men obtained higher scores than women on all the positive measures with the exception of happiness/interest in life where there was no difference (Stephens et al., 1999). Similar findings were obtained in the British Health & Lifestyle Survey, where men obtained higher total scores on the positive items than did women (Huppert & Whittington, 2003). However, GHQ items load on five robust and replicable factors, and on one of these, social functioning (which contains only positive items), women had higher scores than men (Huppert, Walters, Day, & Elliott, 1989). This is consistent with data from the MIDUS study which showed that scores for men and women were largely similar on all dimensions with the major exception that women scored higher on positive social relations with others (Ryff & Singer, 1998b).

Age. The association between age and well-being has also been examined in all the large surveys. The findings depend on what aspect of well-being is being assessed. In the Health and Lifestyle Survey, the total score on the positive items decreased with advancing age, as did the scores on the positive sub-factors social functioning and self-efficacy (Huppert & Whittington, 2003). In contrast, the Canadian and US studies found that on some measures, the scores improved with advancing age. Stephens et al. (1999) reported that sense of coherence increased progressively with advancing age, while self-esteem, sense of mastery and happiness/interest in life were highest in midlife. In the Canadian study, younger people had the lowest prevalence of positive mental health overall and the highest prevalence of mental health problems. In the MIDUS study, scores improved with age on two of the dimensions (autonomy, environmental mastery), declined with age on two dimensions (personal growth, purpose in life) and showed no change on the two remaining dimensions (positive relations, self-acceptance).

Education. The MIDUS study shows an interesting relationship between psychological well-being and education. Individuals with college education rated themselves higher on all dimensions than those with less than a college education, and this was particularly marked for the dimensions of environmental mastery, positive relations with others, and self acceptance. The educational differences were particularly prominent for women. Autonomy was the single dimension of well-being which showed no educational differences. Similarly, the Canadian study showed that self-esteem, mastery and happiness/interest in life all increased with increasing formal education. However, caution is needed in the interpretation of these findings. In a review of the literature on subjective well-being, Diener, Suh, Lucas, and Smith (1999) concluded that most of the relationship between education and subjective well-being can be explained by the fact that the more highly educated tend to have higher incomes, better health and more social contacts. Once these factors are controlled for, the relationship tends to diminish or disappear. On this basis, we might expect that

occupational social class, which is highly correlated with education and income, would be related to subjective well-being measures, but data from the Health & Lifestyle Survey failed to find such a relationship (Huppert & Whittington, 2003).

Income. There is a relationship between income and well-being such that those with higher income tend to report being happier or more satisfied with their life. However, over recent decades, average income has increased substantially, while happiness levels have remained fairly static (Helliwell, 2003). Cross-national studies show a steep rise in reported happiness/satisfaction as GDP increases, but only up to the point at which income is sufficient for basic needs to be met; beyond that point, the curve flattens out and higher national income does not increase national happiness (Layard, 2003).

Social Relationships. All the evidence suggests that social factors have a much greater effect on mental health than do demographic factors or income. The Canadian study showed social support was strongly associated with all positive and negative measures (in opposite directions). The Health & Lifestyle Survey found that perceived social support and number of social roles were related to measures of both positive and negative well-being, although their effect was greater on negative scores. Research using a wide range of sampling techniques and assessment methods confirms that social relationships (having friends, workmates, supportive relatives, and being engaged in the community) are a very important determinant of happiness and subjective well-being (Argyle, 2002; Diener et al., 1999; Helliwell, 2003). Social relationships appear to have a dual effect on well-being; they have both a direct effect which is probably related to our evolutionary origin as social animals, and an indirect effect which involves buffering the adverse behavioural and physiological responses to stress (House, Landis, & Umberson, 1988). In this context, it is interesting that a school-based intervention program that focused on developing supportive social interactions with peers and teachers proved to be more effective in adjustment to school change and academic performance than a program that focussed on coping and problem-solving skills (Felner et al., 1993)

Stress, Physical Health and Well-being

Stress. Stress appears to have a very powerful effect on well-being, whether defined in terms of adverse life events, chronic stressors or daily hassles. However, studies have not always separated the effects of stress on positive and negative measures. In the Canadian National Population Health Survey, a measure of current stress was one of the strongest correlates of mental health status, being strongly related to all the positive and negative measures. This study also obtained information about the number of childhood traumas, and this measure was strongly associated with a sense of coherence and to a lesser extent with mastery and happiness, but interestingly it was unrelated to self-esteem. Childhood trauma was also strongly related to negative measures of depression and distress. The Health and Lifestyle Survey included a measure of recent life events and how stressful they were perceived to be. Stress was one of the strongest determinants of symptoms of psychological distress but was less strongly related to measures of positive well-being. An interesting finding from the Health & Lifestyle Survey is that unemployment, a typical stressor, is more strongly related to the absence of good feelings than to the presence of psychological symptoms (Huppert & Whittington, 2003). This is an important observation because in many studies these two different phenomena are not distinguished and hence erroneous conclusions may be reached.

Physical Health. With regard to the relationship between physical health and well-being, it seems obvious that psychological well-being is reduced when our physical health is acutely or chronically compromised. Indeed, many studies report an association between measures of subjective well-being and physical health in the expected direction (e.g. Ryff & Singer, 1998a). However, it is often impossible to disentangle to what extent the relationship arises primarily from an association between low scores on the well-being scale and physical health problems, rather than between high

scores on the well-being scale and good physical health. This is because most well-being scales have a response range from very positive to very negative. To establish the true relationship between positive well-being and physical health, we need to look at positive responses to positive well-being items. For example, in the Canadian study, positive well-being was defined categorically, in terms of scores above a cut-point on the positive mental health scales. A strong association was found between reports of physical health problems and scores on the negative mental health scales, but physical health was unrelated to any of the indices of positive mental health. The extensive social survey literature using happiness and life satisfaction measures shows only a weak relationship between these measures and self-reports of physical health problems. However, there is a very strong relationship between these measures and global self-reported health; that is, replies to the questions “In general, would you say your health is excellent, very good, good, fair or poor?” (Donovan & Halpern, 2002). Yet, the strength of the association with global self-reported health may reflect a response bias, rather than a true association between objective physical health and subjective well-being. Consistent with the weak relationship between reported health problems and positive measures of well-being, Huppert and Whittington (2003) have found that current illness symptoms and chronic conditions or disability while being related to both positive and negative measures of well-being, were more strongly related to the negative measures. Their positive measure comprised positive responses to positive items. There are reports that even individuals with a very serious physical disability such as paraplegia show an initial reduction in happiness and life satisfaction, but return to their normal levels within a relatively short period (Kahneman, 1999). Such findings point to the central importance of including genuinely positive measures of subjective well-being in research studies.

This point is further reinforced in a recent re-analysis of the relationship between scores on a psychological symptom scale and mortality in the following seven years (Huppert & Whittington, 1995, 2003). In the original study, mortality was found to be linearly related to the number of psychological symptoms reported on the GHQ-30. However, this study used a standard GHQ symptom score that did not differentiate between positive and negative scores. In the re-analysis reported in Huppert and Whittington (2003), it was found that seven year mortality was associated with the absence of positive well-being rather than the presence of psychological symptoms. This finding highlights the need to improve well-being for normal people in the population, rather than always focusing on those with problems.

FUTURE DIRECTIONS

As stated earlier, effective population interventions require evidence-based strategies for enhancing mental health. This brief review of data from representative population samples demonstrates however, that we seem to know a great deal more about what impairs mental health than what enhances it. Factors such as social support, stress and physical health problems all appear to exert a larger effect on negative measures of well-being than on positive ones. In other words, the absence of chronic or acute stressors, the absence of physical health problems or the presence of social support does not appear to do much to enhance our well-being and enjoyment of life. This may be because we have been looking at the wrong kinds of variables. As others have noted (e.g., Ryff & Singer, 1998a) the absence of physical health problems is not the same as physical thriving, but constructs such as physical energy or vitality are rarely measured. Likewise, social support, while invaluable for helping us through times of stress or illness, may play little role in positive experiences such as joy or creativity. We need to find better ways of measuring social relationships that are more relevant to positive affect and positive behaviors. The richer concept of “positive social relations with others” (Ryff & Singer, 1996) offers a valuable alternative.

CONCLUSION

Clinical and health psychologists have developed and refined a range of techniques for improving the psychological well-being of patients with mental and physical disorders. Psychological well-being has been linked to a variety of beneficial physiological processes including reductions in levels of the stress hormone cortisol and improvements in immune function (Seeman, Singer, Rowe, Horwitz, & McEwen, 1997). Thus, improving the psychological well-being of individuals with a disorder not only reduces symptoms of the disorder but initiates a positive spiral of processes that decrease morbidity and increase survival (Ryff & Singer, 2000).

Many interventions also target individuals who are at high risk of a disorder such as those with a family history of disorder or individuals who are socially disadvantaged or have experienced a major trauma. These early interventions to prevent mental health problems or reduce their impact (e.g. by providing support and developing coping skills) can have long-lasting beneficial effects on the individual and their family.

This chapter has taken the further step of advocating that many of the techniques developed by clinical and health psychologists can be used to improve the psychological well-being of the whole population. Moreover, it is argued that by focusing on interventions at the population level, we will reduce the number of people in the population who have mental disorders, as well as reducing the numbers of those at high risk of disorder. These claims are based on the Rose (1992) model of disease that underpins much of modern epidemiology. The relevance of the model to mental health has been demonstrated in population studies showing that symptoms or risk factors for common mental disorders form a continuous distribution throughout the population, and that the prevalence of disorder is related to the mean level of symptoms in the population (Anderson et al., 1993; Colhoun et al., 1997; Melzer et al., 2002; Whittington & Huppert, 1996). Therefore, reducing symptoms or risk factors in the population should reduce the prevalence of disorder.

To date, the mental health studies demonstrating this relationship have been observational, both cross-sectional and longitudinal. But there is every reason to suppose that population interventions that succeed in reducing mean symptoms or risk factors will also reduce prevalence of disorder. Durlak (1995) has pointed out that if only 8% of normal children go on to have serious adjustment problems as adults (as against 30% of clinically dysfunctional children), the normal children would account for the great majority of maladjusted adults, simply because there are so many more of them. There is clearly a strong case for prevention programs that promote well-being and enhance resilience in the whole population. However, studies that examine the long-term effects of population intervention programs are much needed. Targeted interventions will still be required for individuals with disorder or those at high risk, but there should be many fewer individuals in these categories.

When combined with insights from positive psychology, it can be argued that the aim of the population approach is to improve the lives of normal people in terms of their psychological well-being, their vitality, their capabilities and their social relationships. This may sound utopian, but some population interventions that are already in place, suggest that many of these goals are feasible and practical. Policy makers both within the health field and beyond (e.g. the economist, Layard, 2003) are beginning to take a real interest in population interventions to improve psychological well-being because of the benefits to society, both in the short-term and the long-term. Population-based positive psychology may well be in the forefront of health and social reforms in the coming decades.

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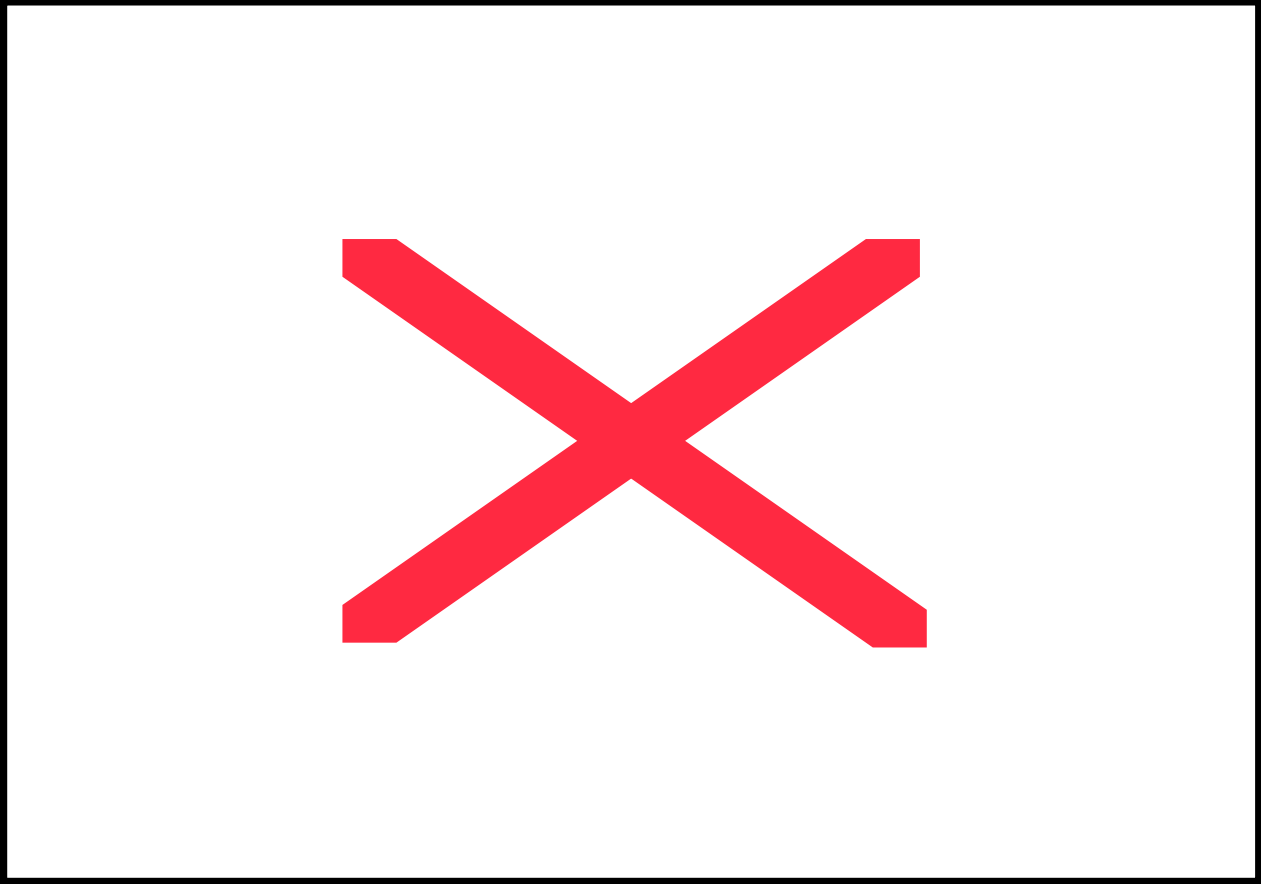
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Figure



Model to illustrate (a) that the prevalence of those with disorder is related to the population distribution of risk factor scores and (b) that a small downwards shift in the mean score from A to B results in a large decrease in the prevalence of disorder.