

Cambridge University Press

978-0-521-87997-2 - Cambridge Handbook of Psychology, Health and Medicine, Second Edition

Edited by Susan Ayers, Andrew Baum, Chris McManus, Stanton Newman, Kenneth Wallston, John Weinman and Robert West

Excerpt

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Part I

Psychology, health and illness

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Section I

Psychological aspects of health and illness

Adolescent lifestyle

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Definitions

Leading organizations in the field of disease prevention and health promotion, such as the World Health Organization (Headquarters in Geneva, Switzerland) and the Centers for Disease Control (Atlanta, USA), have since the early 1980s used healthy lifestyles as a label for a cluster of behaviours known to reduce the risk of injury, morbidity and mortality and increase the chances of good health and well-being. Health-related behaviours (health-enhancing or health-compromising) include eating habits, physical exercise, smoking, alcohol use, use of illegal addictive substances, sexual practices, risk-taking in traffic, work etc., use of safety devices (for instance wearing safety helmets when biking), sleeping habits, oral hygiene and personal hygiene. Examples of health-related behaviours which are relevant only to specific ethnic groups are exposure to the sun in order to obtain a more tanned skin among Caucasians, or use of skin-whitening creams among ethnic groups with dark skin colours.

The concept of lifestyle is also used in other contexts. In the field of marketing, analysis of consumer lifestyles means examining the way people live (their activities, interests, values and opinions) in order to better tailor marketing efforts to specific target groups.

According to Elliott (1993):

... a lifestyle has been defined as a distinctive mode of living that is defined by a set of expressive, patterned behaviors of individuals occurring with some consistency over a period of time.

It should be evident from this definition that the lifestyle construct is not meant to capture the totality of a person's behaviour. There are three aspects that make lifestyles more specific: their consistency or relative stability over time, their interrelatedness (being patterned), and the meaning they convey to others as well as oneself (expressiveness). Health-related lifestyles refer to behaviours that have been shown by epidemiological and other health research to predict disease or health. A related term, 'risk-taking behaviour', refers to behaviour patterns which are volitional and which increase risk of disease or injury (Irvin, 1990).

The lifestyle concept is less accepted as a term in developing countries. In Lalonde's classic report on 'The health of Canadians' (Lalonde, 1974) the definition of lifestyle that was suggested implied that lifestyles are the result of choices made by individuals. The lifestyle of an individual is seen as the result of an aggregate of decisions made by the person him- or herself, decisions over which the person has considerable control. Environmental and social factors have, however, been shown to exert a powerful influence on health behaviours, even in affluent societies, and factors over which

the individual person has limited or no control are obviously of even higher importance in developing countries (Eaton *et al.*, 2004).

When defining 'adolescence', several criteria are relevant, for instance secondary sex characteristics, cognitive abilities, social criteria or simply age. According to Adams *et al.* (1994), adolescence covers the age-groups 11–20, and distinction is made between early adolescence (11–14), middle adolescence (15–17) and late adolescence (18–20). There is no global consensus regarding the definition of adolescence. The World Health Organization defines adolescence as the period from 10 to 19 years of age.

Defining adolescence as a period covering such a wide age-range may seem particularly relevant for affluent societies of the West. During recent decades, however, it has become clear that a transitional stage between childhood and adulthood is evident in most societies of the world. This expanded, more-distinct transitional period includes longer schooling, earlier puberty, later marriage, removal from full-time labour, and greater separation from the world of adults (Larson & Wilson, 2004). During this period of life, through a complex interplay between biological, physiological, psychological, social, societal and cultural factors, lifestyles are shaped.

Health behaviour change during adolescence

During adolescence a number of health-compromising behaviours emerge. When entering adolescence, children are normally spontaneously physically active, and there is hardly any use of tobacco, alcohol or other addictive substances. When leaving adolescence, a substantial proportion of adolescents are physically inactive, have started smoking, and some have started using illegal addictive substances. The sexual debut usually takes place during adolescence, and being sexually active without adequate protection against unwanted pregnancies and sexually transmitted diseases, including HIV/AIDS, represents a serious threat to health and wellbeing.

According to a report from the World Health Organization international study on Health Behaviour in School-Aged Children (HBSC), the proportion of smokers increases during early adolescence (Currie *et al.*, 2004). At age 11 the average proportion of smokers (smoking daily or weekly) across all samples (35 countries) is 2%, at age 13 it is 8%, and at age 15 it is 24%. The differences between boys and girls for all countries combined (mainly European countries plus Canada and the United States) were negligible. Corresponding figures for weekly alcohol consumption are 5, 12 and 29%. More boys than girls used alcohol weekly at age 15 (34 and 24% respectively).

Prochaska *et al.* (2001) have developed a screening instrument which defines 'moderate-to-vigorous physical activity' (MVPA). Their definition was applied to data from the HBSC study. The proportion of young people meeting the MVPA guidelines on physical activity was (across all samples) 38% at age 11 and 29% at age 15; in other words there is a marked decrease with age that most likely continues across the remaining years of adolescence as well as into early adulthood (Stephens *et al.*, 1984). Food habits were also covered by the HBSC survey. The proportion of adolescents who eat fruit daily decreases from 38% among 11 year olds to 29% among the 15 year olds (Currie *et al.*, 2004).

Thuen *et al.* (1992) have shown that use of safety equipment (seat belts, bicycle helmets, reflectors, life jackets) drops dramatically during early adolescence, and the proportion involved in behaviour associated with elevated risks of accidents and injuries increases.

It must be kept in mind, however, that a majority of young people never become regular smokers, heavy drinkers or drug addicts, and a substantial proportion of young adults remain physically active and continue eating healthy food throughout and after the adolescent years. During adolescence the basis for a lifelong health-enhancing lifestyle may be established.

The effects of health-compromising behaviours during adolescence can be short-term as well as long-term. Drink driving increases the risk of dramatic and fatal accidents, and represents a major short-term threat to young people's health and lives. Daily smoking may lead to coronary heart disease and lung cancer, but these effects usually become visible only after many years of exposure. The importance of promoting healthy lifestyles among adolescents therefore to some extent depends on the stability of such behaviours. The higher the stability, the more important it is to promote healthy lifestyles at a young age.

Jessor *et al.* (1991) have studied the stability of problem behaviours from adolescence to adulthood, and conclude that there is considerable stability and continuity. They claim that 'the adolescent is parent of the young adult'.

Although few research projects have focused on the stability and change of physical activity from childhood to adolescence, there is one study which concludes that the level of physical activity in childhood and adolescence to some extent predicts the level of physical activity later in life (Anderssen *et al.*, 1996). Other studies of longitudinal tracking of behaviours (physical activity, food preference and smoking behaviour), have provided convincing evidence that behaviours established during early adolescence do predict behaviours measured during late adolescence and beyond (Klepp, 1993; Kelder *et al.*, 1994; Telama *et al.*, 1997). Substantial tracking has also been found for body mass index over an 18 years' age span (from 15 to 33 years) (Kvaavik *et al.*, 2003).

The promotion of healthy lifestyles among young people is obviously important, not only because of its short-term impact on health and wellbeing, but also because of its consequences for health-related behaviours later in life.

Clusters of health behaviours

A number of studies have examined to what extent health behaviours are intercorrelated, and to what extent these correlations reflect underlying clusters or dimensions. Analyses from the

international study on Health Behaviour in School-Aged Children indicated two such underlying dimensions: (a) addictive and risk-taking behaviours and (b) health-enhancing behaviours (Nutbeam *et al.*, 1991; Aarø *et al.*, 1995). The correlation between the two factors was negative and estimates varied from approximately -0.40 to -0.50 . Within these two 'second order factors', sub-clusters of health-related behaviours could also be identified. Røysamb *et al.* (1997) identified factors at three levels, a multidimensional level with a number of specific factors, a few-dimensional level with three broad factors, and finally a general factor encompassing the three broad factors. The three broad factors were 'High action', 'Addiction' and 'Protection'.

The addictive dimension corresponds well with Richard Jessor's 'problem behaviours' (Jessor & Jessor, 1977; Jessor, 1984). He claims that a number of health-related behaviours reflect a 'syndrome', or an underlying tendency to behave defiantly and unconventionally. He includes such behaviours as use of alcohol, marijuana and tobacco, and he maintains that these are associated with a higher likelihood of involvement in other types of risk behaviour, such as precocious sexual activity, aggression and delinquency. Jessor maintains that for these behaviours the pattern of associations with a number of personality and social environmental correlates is essentially the same.

Health-enhancing behaviours, which in some studies form a second factor, include physical activity, consumption of healthy food, oral hygiene, use of safety devices (seat belts, reflectors, etc.) and use of vitamins. The diffusion of innovation processes, which have been described by Everett Rogers, may serve as a framework for explaining why such behaviours are intercorrelated (Rogers, 2003). If we assume that health-education and health-promotion activities reach and influence health behaviours in certain individuals and certain groups to a larger extent than in other individuals and other groups, correlations among a range of health-enhancing behaviours tend to emerge.

Intercorrelations and clusters of intercorrelations among health-behaviour variables imply that they do not exist as independent and unique domains. Their interrelatedness indicates the usefulness of the notion of 'lifestyles'. It may be argued that such intercorrelations indicate similarities in the processes underlying different health behaviours. Furthermore, intercorrelations between health behaviours imply overlap in target groups across behavioural risk factors, and support the notion of a more integrated and holistic approach to health promotion among adolescents (Nutbeam *et al.*, 1991).

Predictors and correlates of health behaviours

A number of conceptual models and theories are relevant in order to identify factors and processes that influence health-related behaviours. The mainstream of health behaviour research is dominated by social cognition models (Rutter & Quine, 2002; Conner & Norman, 2005). A group of experts at a meeting organized by the National Institute of Health (NIH) came to the conclusion that the most important predictors were intentions, skills, environmental constraints, anticipated outcomes (or attitudes), social norms, self efficacy, self-standards and emotions (Fishbein *et al.*, 2001). They did not reach consensus regarding any specific theoretical or conceptual model by which these factors could be arranged into a single causal

system. Among the most influential theories are Social Cognitive Theory (Bandura, 1986) and the Theory of Planned Behaviour (Ajzen, 1988). Ajzen assumes that a specific behaviour is determined to a large extent by intentions to perform the behaviour, and that such intentions are influenced by personal attitudes to the behaviour, subjective norms and perceived behavioural control. Rather than simply assuming that such factors as attitudes and perceived behavioural control are predictors, while behaviours are outcomes, we must suppose that there is an ongoing and continuous process of reciprocal determinism (Bandura, 1986). Bandura sees behaviours as shaped by an ongoing process of interrelationships with personal and environmental factors. Key concepts in Bandura's analyses of health behaviours are goals (proximal and distal), outcome expectations and self-efficacy (Bandura, 1998; 2005).

Although the major determinants of health-related lifestyles among adolescents are social, some personality characteristics have been shown to be consistently associated with 'problem behaviours'. Jessor claims that in the personality system, the main characteristics of proneness to problem behaviour include placing a lower value on academic achievement and lower expectations of academic achievement (Jessor, 1984). The sensation-seeking personality trait (Zuckermann, 1979) has been shown to correlate with such problem behaviours as smoking, alcohol consumption, number of lifetime sex partners and experience of casual sex (Kraft & Rise, 1994).

The cross-cultural relevance of theories and conceptual models for prediction of health behaviours developed in western countries has repeatedly been questioned (Campbell, 2003). Jessor *et al.* (2003), in a study of predictors of problem behaviours among adolescents in the United States and China, came to the conclusion that although the levels of problem behaviours may be different, the same set of predictors (protective factors and risk factors) seem to be relevant in these two widely different societies and cultures. The relevance of social cognition models in an African context is currently being examined in a large-scale multi-site study of sexual and reproductive behaviours (Aarø *et al.*, 2006).

Structural and demographic factors

Health-compromising lifestyles are to a large extent a product of the modern world. Physical inactivity is fostered by modern means of transport and by passive exposure to TV channels, DVD movies, internet use and PC games. Widespread use of addictive substances may reflect a weakening of social norms and the deterioration of social networks. Broken families and family problems may lead to reduced parental control over food habits, sleeping habits and use of addictive substances.

Changes in health behaviours do not take place at the same speed and simultaneously in all groups. In the industrialized countries the use of tobacco first became widespread among men and among high-status groups. Presently, high-status groups have reduced their use of tobacco substantially. Low-status groups are falling behind, and in many countries the prevalence of regular smokers in low-status segments of the population is 3–4 times higher than among those belonging to high-status segments (Ferrence, 1996). Similar processes can be observed for other health behaviours. Belonging to high-status groups means that you are also more

likely to be physically active, to eat healthy food and to wear seat belts, just to mention some examples.

Since health behaviours of adolescents are closely related to those of their parents, similar socioeconomic inequalities may exist for adolescents as well. Adolescents are in a process of transition from having their socioeconomic status defined by their parents' education, income and jobs towards having their socioeconomic status defined by their own position in the societal structure. Several studies have reported rather moderate or weak associations between parents' level of education and offspring's health behaviours (Friestad & Klepp, 2006). Problems with obtaining valid and reliable measurements of parents' level of education may have contributed to reducing the strength of associations. Adolescents' relationship to school and education has sometimes been used as an indicator of their socioeconomic position. Friestad & Klepp (2006) found consistent associations between educational aspirations and composite measures of health behaviour (low aspirations predicting high scores on health-compromising behaviours and low scores on health-enhancing behaviours). Nutbeam *et al.* (1988; 1993) found strong associations between school alienation and use of addictive substances (tobacco and alcohol). This indicates that a socioeconomic gradient in lifestyles also exists for adolescents. Researchers have concluded that health-related behaviours to some extent carry over from one generation to the next, and that a process of social reproduction of socioeconomic inequalities in lifestyles can be demonstrated (Wold, 1989; Ketterlinus *et al.*, 1994). Other researchers have found empirical support for adolescent lifestyles being predictive of future socioeconomic status (Koivusilta *et al.*, 1999).

Health behaviours are also influenced by such factors as advertising, legislation (including bans on advertising), price and availability of products. Increasing the price of tobacco products leads to a decrease in consumption, and this decrease is higher among adolescents than among adults. Among adults the price elasticity is probably close to -0.5 . A price elasticity of -0.5 means that increasing the price by 10% leads to a 5% reduction in consumption. The price elasticity is particularly high among young people. In one study it was shown to be -1.40 among 12–17 year olds (Warner, 1986).

The effects of tobacco advertising and the effects of banning such advertising on smoking habits of adolescents have been debated. The tobacco industry has aggressively defended their right to market legal products, while health authorities, health professionals and non-governmental organizations have argued that bans on all kinds of tobacco advertising are necessary in order to reduce smoking among adolescents. An increasing body of research gives both theoretical and empirical evidence for a causal relationship between advertising and use of tobacco, and it is likely that 'the dynamic tobacco market represented by children and adolescents' is the main target of tobacco sales promotion (Rimpelä *et al.*, 1993). Braverman & Aarø (2004), in a study among adolescents, found that even low levels of exposure to tobacco marketing was associated with stronger expectations of future smoking, after controlling for present smoking habits and important social predictors of smoking. Longitudinal studies have consistently shown that exposure to tobacco advertising is associated with increased risk that adolescents will start to smoke (Lovato *et al.*, 2003). It is reasonable to assume that effectively enforced bans on advertising contribute to reducing smoking among adolescents. In order to make the healthy

choices the easiest ones, the prices of healthy products should be kept low, the prices of unhealthy products should be high, and for young people in particular, the availability of unhealthy products like alcohol and cigarettes should be limited as much as possible.

Health-behaviour interventions

Health-behaviour interventions targeting adolescents take place in the mass media, schools and communities. Examples of programmes that have not proven effective are numerous. There are also, however, examples of well-designed and research-based interventions that have had substantial effects. Kirby & Coyle (1997) reviewed 35 evaluations of school-based sexual education programmes, and found that a few programmes had contributed to delaying the onset of intercourse, reduced the frequency of intercourse, reduced number of sexual partners, or increased the use of condoms or other contraceptives. For the majority of the programmes, however, no statistical effects on risk-taking behaviours were observed. Thomas (2002) reviewed 76 randomized controlled trials of school-based interventions to prevent smoking. Among interventions based on the social influence approach, which has been regarded as the most effective approach to smoking prevention among adolescents, half of the studies showed statistically significant effects of the interventions. Jøsendal *et al.* (2005) found that a three-year programme based on the social-influence model reduced the prevalence of smoking by about 30%. Positive results have also been found for school-based interventions to reduce drug use (Faggiano *et al.*, 2005).

There is less strong evidence for positive effects of mass-media and community-based interventions (Sowden & Arblaster, 1998; Sowden *et al.*, 2003). This does not necessarily mean that such interventions are ineffective. Planning and conducting studies with strong research designs and demonstrating significant effects of interventions is much easier in schools than in most other settings. In addition, programmes which have no visible immediate effects on behaviour, may contribute to raising awareness, and changing

beliefs, attitudes and social norms, and they may lead to increased support for restrictive and societal measures. Such indicators of change may, in the long term, trigger processes that are just as important for behaviour change in populations as programmes that succeed in bringing about immediate effects on behaviour.

Adolescents in developing countries

Among 1.2 billion adolescents worldwide, about 85% live in developing countries, and this proportion is increasing. Also, in the developing world, health-compromising lifestyles are gradually becoming a threat to health, and in developing countries such behaviours become more prevalent during adolescence. Research has shown that increasing production and consumption of alcohol is taking place in both rural and urban areas in Africa (Maula *et al.*, 1988). Parallel with the reduction in tobacco smoking in Western Europe and North America, effective marketing contributes to increasing the prevalence of smoking in developing countries and in Eastern Europe (World Bank, 1999).

Eide & Acuda (1996) in a study from Zimbabwe showed that cultural influences from industrialized countries are accompanied by introduction of forms of alcohol use which are less well regulated by rituals and social norms than the use of traditional beverages. Young people with a 'western' cultural orientation have alcohol preferences which are different from those with a more traditional cultural orientation, and their consumption is higher. Similar cultural influences may operate on a variety of health behaviours, and the introduction of a 'modern' lifestyle may lead to a gradual increase in diseases which used to be typical of western countries. This adds health burdens and economic burdens to nations which are already confronted with infectious diseases (including the AIDS pandemic) and overwhelming health problems caused by poverty, poor housing, malnutrition, inadequate sanitation and lack of clean water.

REFERENCES

- Aarø, L. E., Laberg, J. C. & Wold, B. (1995). Health behaviours among adolescents: towards a hypothesis of two dimensions. *Health Education Research*, **10**(1), 83–93.
- Aarø, L. E., Flisher, A. J., Kaaya, S. *et al.* (2006). Promoting sexual and reproductive health in early adolescence in South Africa and Tanzania: development of a theory- and evidence-based intervention programme. *Scandinavian Journal of Public Health*, **34**(2), 150–8.
- Adams, G. R., Gullotta, T. P. & Markstrom-Adams, C. (1994). *Adolescent Life Experiences*, (3rd edn). Pacific Grove, California: Brooks/Cole.
- Ajzen, I. (1988). *Attitudes, personality, and behaviour*. Buckingham: Open University Press, UK.
- Anderssen, N., Jacobs, D. R., Sidney, S. *et al.* (1996). Change and secular trends in physical activity patterns in young adults: a seven-year longitudinal follow-up in the Coronary Artery Risk Development in Young Adults Study (CARDIA). *American Journal of Epidemiology*, **143**(4), 351–62.
- Bandura, A. (1986). *Social foundations of thought & action. A social cognitive theory*. Englewood Cliffs, New Jersey: Prentice-Hall.
- Bandura, A. (1998). Health promotion from the perspective of social cognitive theory. *Psychology and Health*, **13**, 623–49.
- Bandura, A. (2005). Health promotion by social cognitive means. *Health Education and Behavior*, **13**, 623–49.
- Braverman, M. T. & Aarø, L. E. (2004). Adolescent smoking and exposure to tobacco marketing under a tobacco advertising ban: findings from 2 Norwegian national samples. *American Journal of Public Health*, **94**(7), 1230–8.
- Campbell, C. (2003). *'Letting them die' – Why HIV/AIDS prevention programmes fail*. Oxford: The International African Institute.
- Conner, M. & Norman, P. (2005). *Predicting Health Behaviour*, (2nd edn). Maidenhead, UK: Open University Press.
- Currie, C., Roberts, C., Morgan, A. *et al.* (2004). *Young people's health in context*. Copenhagen: World Health Organization for Europe. (Health Policy for Children and Adolescents, No. 4.)
- Eaton, L., Flisher, A. J. & Aarø, L. E. (2004). Unsafe sexual behavior in South African youth. In Djamba, Y. K. (Ed.). *Sexual behavior of adolescents in contemporary sub-Saharan Africa*. Lewiston, New York: Edwin Mellen Press, pp. 65–109.
- Eide, A. H. & Acuda, S. W. (1996). Cultural orientation and adolescents' alcohol use in Zimbabwe. *Addiction*, **91**(6), 807–14.
- Elliott, D. S. (1993). Health enhancing and health-compromising lifestyles. In Millstein, S., Petersen, A. C. & Nightingale, E. O. (Eds.). *Promoting the health of adolescents. New directions for the*

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- twenty-first century. New York: Oxford University Press, pp. 119–45.
- Faggiano, F., Vigna-Taglianti, F. D., Versino, E., Zambon, A., Borracino, A. & Lemma, P.** (2005). School-based prevention for illicit drugs' use. *Cochrane Database of Systematic Reviews*, **2005**(2), CD003020.
- Ferrencia, R.** (1996). Using diffusion theory in health promotion. *Canadian Journal of Public Health*, **87**(Suppl. 2), S24–7.
- Fishbein, M., Triandis, H. C., Kanfer, F. H., Becker, M., Middlestadt, S. E. & Eichler, A.** (2001). Factors influencing behavior and behavior change. In Baum, A., Revenson, T. A. & Singer, J. E. (Eds.). *Handbook of health psychology*. Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Friestad, C. & Klepp, K.-I.** (2006). Socioeconomic status and health behaviour patterns through adolescence: results from a prospective cohort study in Norway. *European Journal of Public Health*, **16**(1), 41–7.
- Irvin, C. E. Jr.** (1990). The theoretical concept of at-risk adolescents. *Adolescent Medicine: State of the Art Reviews*, **1**, 1–14.
- Jessor, R. & Jessor, S. L.** (1977). *Problem behavior and psychosocial development: a longitudinal study of youth*. New York: Academic Press.
- Jessor, R.** (1984). Adolescent development and behavioral health. In Matarazzo, J. D., Weiss, S. M., Herd, J. A., Miller, N. E. & Weiss, S. M. (Eds.). *Behavioral health: a handbook of health enhancement and disease prevention*. New York: Wiley, pp. 69–90.
- Jessor, R., Donovan, J. E. & Costa, F. M.** (1991). *Beyond adolescence. Problem behavior and young adult development*. New York: Cambridge University Press.
- Jessor, R., Turbin, M. S., Costa, F. M., Dong, Q., Zhang, H. & Wang, C.** (2003). Adolescent problem behavior in China and the United States: a cross-national study of psychosocial protective factors. *Journal of Research on Adolescence*, **13**(3), 329–60.
- Jøsendal, O., Aarø, L. E., Torsheim, T. & Rasbash, J.** (2005). Evaluation of the school-based smoking prevention program “BE smokeFREE”. *Scandinavian Journal of Psychology*, **46**, 189–99.
- Kelder, S. H., Perry, C. L., Klepp, K.-I. & Lytle, L. L.** (1994). Longitudinal tracking of adolescent smoking, physical activity, and food choice behaviors. *American Journal of Public Health*, **84**(7), 1121–6.
- Ketterlinus, R. D., Lamb, M. E. & Nitz, K. A.** (1994). Adolescent nonsexual and sex-related problem behaviors: their prevalence, consequences, and co-occurrence. In Ketterlinus, R. D. & Lamb, M. E. (Eds.). *Adolescent problem behaviors. Issues and research*. Hillsdale: New Jersey: Lawrence Erlbaum Associates.
- Kirby, D. & Coyle, K.** (1997). School-based programs to reduce sexual risk-taking behavior. *Children and Youth Services Review*, **19**(5/6), 415–36.
- Klepp, K.-I.** (1993). The Oslo Youth Study: a 12 year follow-up study of a school-based health education program. *HEMIL report*, **1993**(2), 94–106.
- Koivusilta, L. K., Rimpelä, A. H. & Rimpelä, M. K.** (1999). Health-related lifestyle in adolescence – origin of social class differences in health? *Health Education Research*, **14**, 339–55.
- Kraft, P. & Rise, J.** (1994). The relationship between sensation seeking and smoking, alcohol consumption and sexual behavior among Norwegian adolescents. *Health Education Research*, **9**(2), 193–200.
- Kvaavik, E., Tell, G. S. & Klepp, K.-I.** (2003). Predictors and tracking of body mass index from adolescence into adulthood: follow-up of 18 to 20 years in the Oslo Youth Study. *Archives of Pediatrics and Adolescent Medicine*, **157**(12), 1212–18.
- Lalonde, M.** (1974). *A new perspective on the health of Canadians*. Ottawa, Canada: Ministry of Health and Welfare.
- Larson, R. & Wilson, S.** (2004). Adolescence across place and time. Globalization and the changing pathways to adulthood. In Lerner, R. M. & Steinberg, L. (Eds.). *Handbook of Adolescent Psychology*, (2nd edn). Hoboken, New Jersey: Wiley, pp. 299–330.
- Lovato, C., Linn, G., Stead, L. F. & Best, A.** (2003). Impact of tobacco advertising and promotion on increasing adolescent smoking behaviours. *Cochrane Database of Systematic Reviews*, **2003**(4), CD003439.
- Maula, J., Lindblad, M. & Tigerstedt, C.** (1988). *Alcohol in developing countries. Proceedings from a meeting in Oslo, Norway, August 7–9, 1988*. Helsinki: Nordic Council for Alcohol and Drug Research. (NAD Publication No 18).
- Nutbeam, D., Aarø, L. E. & Catford, J.** (1988). Understanding children's health behaviour: the implications for health promotion for young people. *Social Science and Medicine*, **29**(3), 317–25.
- Nutbeam, D., Aarø, L. E. & Wold, B.** (1991). The lifestyle concept and health education with young people. Results from a WHO international survey. *World Health Statistics Quarterly*, **44**(2), 55–61.
- Nutbeam, D., Smith, C., Moore, L. & Bauman, A.** (1993). Warning! Schools can damage your health: alienation from school and its impact on health behaviour. *Journal of Paediatrics and Child Health*, **29**(1), 25–30.
- Prochaska, J. J., Sallis, J. F. & Long, B.** (2001). A physical activity screening measure for use with adolescents in primary care. *Archives of Paediatrics and Adolescent Medicine*, **155**, 554–9.
- Rimpelä, M. K., Aarø, L. E. & Rimpelä, A. H.** (1993). The effects of tobacco sales promotion on initiation of smoking. *Scandinavian Journal of Social Medicine, Supplementum*, **49**, 1–23.
- Rogers, E. M.** (2003). *Diffusion of innovations* (5th edn). New York: The Free Press.
- Rutter, D. & Quine, L.** (2002). *Changing health behaviour: intervention and research with social cognition models*. Buckingham, UK: Open University Press.
- Røysamb, E., Rise, J. & Kraft, P.** (1997). On the structure and dimensionality of health-related behaviour in adolescents. *Psychology and Health*, **12**, 437–52.
- Sowden, A. J. & Arblaster, L.** (1998). Mass media interventions for preventing smoking in young people. *Cochrane Database of Systematic Reviews*, **1998**(4), CD001006.
- Sowden, A., Arblaster, L. & Stead, L.** (2003). Community interventions for preventing smoking in young people. *Cochrane Database of Systematic Reviews*, **2003**(1), CD001291.
- Stephens, T., Jacobs, D. R. & White, C. C.** (1984). A descriptive epidemiology of leisure-time physical activity. *Public Health Reports*, **100**(2), 147–58.
- Telama, R. et al.** (1997). Physical activity in childhood and adolescence as predictor of physical activity in young adulthood. *American Journal of Preventive Medicine*, **13**(4), 317–23.
- Thomas, R.** (2002). School-based programmes for preventing smoking. *Cochrane Database of Systematic Reviews*, **2002**(2), CD001293.
- Thuen, F., Klepp, K.-I. & Wold, B.** (1992). Risk-seeking and safety-seeking behaviours: a study of health-related behaviours among Norwegian school children. *Health Education Research*, **7**(2), 269–76.
- Warner, K. E.** (1986). Smoking and health implications of a change in the federal cigarette excise tax. *Journal of the American Medical Association*, **255**(8), 1028–32.
- Wold, B.** (1989). *Lifestyles and physical activity. A theoretical and empirical analysis of socialization among children and adolescents*. Doctoral thesis. Bergen: University of Bergen, Research Centre for Health Promotion.
- World Bank** (1999). *Curbing the epidemic – governments and the economics of tobacco control*. Washington, DC: The World Bank.
- Zuckerman, M.** (1979). *Sensation seeking. Beyond the optimal level of arousal*. London: Lawrence Erlbaum Associates.

Age and physical functioning

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Over the life span, the human body increasingly functions less efficiently. Skin wrinkles and sags; hair thins and turns grey; muscle mass and strength are more difficult to maintain; joints deteriorate; aerobic capacity and cardiac output decrease; the immune system becomes less responsive; visual and auditory acuity decline – and this is just a partial list. Faced with these changes, it is not surprising that many people dread growing old because they believe ageing portends losses in functional capacities and the enjoyable aspects of life. This chapter highlights the demographic realities of an ageing population, debunks some of the myths about age and physical functioning and summarizes research on the factors that promote successful ageing.

There is no doubt that the population of many western countries is ‘greying’¹. Average life expectancy in the US in 1900 was 47 years; today, it is closer to 76 years. Over two-thirds of people now live to at least age 65 (a three-fold increase from 1900). Furthermore, the fastest growing segment of the population is in the category over age 85 – 4% in 1900 to more than 10% today (e.g. US Department of Health and Human Services [DHHS], 1992; Volz, 2000). The first wave of the 76 million baby boomers born in the USA between 1946 and 1964 will approach traditional retirement age in 2010 (Binstock, 1999); in less than 30 years, there will be twice as many people 65 years of age and older, comprising 20% or more of the total population (e.g. Hobbs, 1996). By 2050, the number of centenarians (those over age 100) in the USA may be as high as 4.2 million (Volz, 2000).

The common view of old people is that they are physically disabled (e.g. Center for the Advancement of Health [CAH], 1998; Palmore, 1990; Rowe & Kahn, 1998), but an important truth is that most adults over age 65 are remarkably healthy and active. Rates of disability, even among the very old (i.e. those over age 95), are steadily declining. Only 5.2% of older adults in the USA live in nursing homes and similar facilities, a decrease of 1.1% since 1982 (CAH, 1998). In 1994, 73% of adults 78–84 years of age reported no disabling conditions and among the ‘oldest old’ (i.e. those over age 85), fully 40% had no functional disabilities (Manton *et al.*, 1995). Changing health status and attitudes have led to age 65 no longer being considered ‘old’ (Kiyak & Hooyman, 1999).

Along with increasingly widespread public knowledge and acceptance of the behavioural aspects of chronic illness, advances in medical technology forecast less age-related functional decline for current and future generations (DHHS, 1992). Through medical

and psychological research, we know that the human body is remarkably forgiving (CAH, 1998) and that it is never too late to begin a healthful lifestyle. For example, regardless of duration of smoking and magnitude of tobacco consumption, after five years of abstinence, ex-smokers have about the same risk for heart disease as those who never smoked. The same is true for a variety of other risk factors, including obesity and a sedentary lifestyle. Thus, people, both young and old, bear some responsibility for their health status; the ‘use it or lose it’ adage about sexual functioning applies to other aspects of physical functioning as well. However, in addition to the inevitable physical decrements that accompany ageing, numerous psychosocial factors influence wellbeing in old age.

Physical, mental and social wellbeing are intertwined, and ageing successfully depends, to a large extent, on effective coping in all of these domains. In terms of the association between physical and mental health, physical illness and depression are closely, perhaps inextricably, linked, and the direction of causality remains a subject of considerable debate (see Williamson *et al.*, 2000a). With their age-related decrements in physical functioning, one might assume, as Rowe & Kahn (1998, p. 106) alleged, that ‘depression is ... terribly prevalent in older people’, but evidence is overwhelmingly to the contrary. In fact, clinically diagnosable depression is less prevalent in older than younger adults (e.g. Rybash *et al.*, 1995; Schulz & Ewen, 1993). Rather, elders often cope more effectively with stressful life events than do younger adults (McCrae, 1989). The prevailing explanation is that, over the life course, experiences and successes in coping with a variety of stressors build adaptive attitudes and beliefs that generalize to coping with new stressors (see Williamson & Dooley, 2001). Being able to find satisfying replacements for activities that have been given up may be as beneficial as not having to give up activities at all (Benyamini & Lomranz, 2004). Individuals who are able to continue engaging in valued activities cope well with life changes, avoid becoming depressed, and are physically healthier. They are also those who have high levels of social and personal resources.

One of the strongest and most consistent findings in health psychology research is that social support has powerful effects on both psychological and physical wellbeing (e.g. Cohen & McKay, 1983; Cohen & Wills, 1985) (see ‘Social Support and Health’). It is true that social network losses occur over the life span through death, relocation and retirement, but even among very old people, new relationships are formed to replace lost ones (Rowe & Kahn, 1998).

¹ Most of the data reported in this chapter are based on trends in the population of the United States. All industrialized countries are facing similar situations, however, and emerging nations may soon be dealing with even more extreme increases in the proportions of older adults in their populations (e.g. Hendricks, Hatch & Cutler, 1999). We have chosen to focus on US-based data, but the conditions in other countries are either highly analogous to, or even more critical than, indicated in this chapter.

Using data from the MacArthur Foundation Study of Ageing in America indicating that social networks remain remarkably stable in size throughout the life span, with the number of close relationships among non-institutionalized older adults equaling those of younger people, Rowe & Kahn (1998, pp. 159–60) concluded that ‘... the common view of old age as a prolonged period of demanding support from an ever-diminishing number of overworked providers is *wrong*’ [emphasis added].

Today’s ageing adults also have other social advantages. Many are utilizing technology and cyberspace to stay in touch with family members and friends via email. Baby boomers are more likely than their younger counterparts to access internet information and support from a wide spectrum of people who share their needs and concerns (Kiyak & Hooyman, 1999). Another important way to maintain social contact after retirement is through activities outside the home. When given the opportunity, large numbers of seniors are eager to do voluntary work or take on low-paid part-time jobs (e.g. working in fast-food restaurants and bagging groceries). Moreover, relative to previous cohorts, current and future generations will be more advantaged in the employment domain as they age. Not only are attitudes about older employees becoming more favorable, but also, because of post-baby boom declines in birth rates, the number of employable adults will decrease relative to the number of new jobs (DHHS, 1992; Kiyak & Hooyman, 1999). Consequently, older workers will become more valued and sought after, and those who do not feel ready to retire will be less likely to be compelled to do so. The standard retirement age is rising, based on observations that, in terms of health and life expectancy, age 70 today is roughly the equivalent of age 65 in the 1930s when Social Security was established in the USA (e.g. Chen, 1994). Although most individuals who have adequate (or better) financial resources will retire at the usual time or follow the trend toward early retirement (e.g. Quinn & Burkhauser, 1990), physically healthy elders will be able to choose whether or not they will continue to work.

The point here is that the sense of personal control is critical. People who feel in control, who can make choices about the important aspects of their lives, are both physically and psychologically healthier than are those who perceive that they lack personal control (e.g. Peterson *et al.*, 1988; Taylor, 1983; Taylor & Brown, 1988). Older adults are not unique in this respect. Regardless of age, people are motivated to exercise personal control (e.g. Schulz & Heckhausen, 1996). Although fully resolving the problems that go along with getting older (e.g. declines in health status) may not be possible, those who adapt well will shift their focus from actively trying to change the situation to managing stress-related emotional reactions by, for example, accepting the situation and continuing to function as normally as possible, thus maintaining a sense of personal control. Today’s trend toward less stigmatization of older adults offers seniors more choices, as do other societal changes. For example, economic prosperity has created financial security for many current and future older Americans, enabling them to exercise control over how they spend their retirement years.

Closely tied to the benefits of maintaining a sense of control is a substantial literature on the importance of being able to continue valued activities. Continuity in social roles and personal identities appears to be a critical factor in ageing successfully (e.g. Atchley, 1989; Benyamini & Lomranz, 2004; Calderon, 2001; Ogilvie, 1987;

Zimmer *et al.*, 1995). In response to earlier research (e.g. Parmelee *et al.*, 1991; Williamson & Schulz, 1992), Williamson and colleagues devised the Activity Restriction Model of Depressed Affect (ARMDA), defining activity restriction as the inability to continue normal activities (self-care, care of others, doing household chores, going shopping, visiting friends, working on hobbies, sports and recreation, going to work and maintaining friendships). The ARMDA proposes that activity restriction mediates the association between stress and mental health. In other words, major life stressors (e.g. age-related health problems) lead to poorer mental health outcomes because they disrupt normal activities. An extensive programme of research supports this model (Walters & Williamson, 1999; Williamson, 2000; Williamson & Dooley, 2001; Williamson & Schulz, 1992, 1995; Williamson *et al.*, 1994; Williamson & Shaffer, 2000; Williamson *et al.*, 1998; Williamson *et al.*, 2000b; also see Benyamini & Lomranz, 2004; Zeiss *et al.*, 1996).

As a comprehensive conceptualization of the physical illness–mental health association, the ARMDA posits that losses in physical functioning are not the only contributors to activity restriction. Rather, individual differences are important factors as well. For example, older adults tolerate similar levels of pain better than younger adults do (Cassileth *et al.*, 1984; Foley, 1985; Williamson & Schulz, 1992), a phenomenon most commonly attributed to the increased exposure to pain and disabling conditions that older people encounter. Indeed, less experience with pain and comprising health conditions is a better predictor of more activity restriction than is chronological age (Walters & Williamson, 1999; Williamson & Schulz, 1995; Williamson *et al.*, 1998). Thus, old age does not necessarily foster activity restriction and depression.

As noted previously, another important individual difference is social support. People with stronger social support networks cope better with all types of stressful life events (e.g. Mutran *et al.*, 1995; Oxman & Hull, 1997), and routine activities are facilitated by supportive others (e.g. Williamson *et al.*, 1994). For example, disabled elders will attend church and visit friends more often if other people help with walking, transportation and words of encouragement. However, social support, to a large extent, depends on personality variables (e.g. Williamson & Dooley, 2001). Those with more supportive social ties, less activity restriction and lower levels of depressed affect also have more socially desirable, proactive personality characteristics (e.g. Abend & Williamson, 2002; Williamson, 1998, 2000).

Dispositionally, some people cope in maladaptive ways across all situations throughout their lives. In contrast, there are those who consistently face the situation, rationally evaluate possible solutions, seek help and information as appropriate and, if all else fails, accept that the problem has occurred, deal with their emotional reactions (often with help from others) and make every effort to resume life as usual (e.g. Williamson, 2002). Indeed, research indicates that numerous personality traits influence adjustment to major life stressors, including the declines in physical functioning associated with advancing age. To give just a few examples, people low in dispositional optimism do not cope effectively or adjust well to stress (e.g. Abend & Williamson, 2002; Carver *et al.*, 1993) and are more vulnerable to activity restriction (Williamson, 2002). High levels of neuroticism are related to a maladaptive coping style (e.g. McCrae & Costa, 1986) that may include foregoing

pleasurable activities. When faced with disrupting life events, individuals who are less agentically oriented and do not have a strong sense of mastery will have more difficulty finding ways to avoid restricting their rewarding activities (e.g. Femia *et al.*, 1997; Herzog *et al.*, 1998). In addition, those who are low in the dispositional predilection to hope for positive outcomes are less likely to conceptualize ways to continue (or replace) valued activities or to persist in their efforts to do so, particularly when pathways to achieving these goals are blocked (e.g. Snyder, 1998). Although research in this area is in its infancy, personality factors should not be ignored, particularly when the goal is to identify those who are at risk for restricting their activities, adapting poorly to declines in physical functioning and in need of early intervention.

Clinical implications

In the ARMDA, coping with stress is posited to be a complex, multifaceted process that is influenced by numerous factors (see also 'Coping'). With increasing age, decline in physical functioning may mean that coping successfully requires replacing previously adaptive strategies with ones better suited to the individual's own physical limitations. Therefore, worthwhile interventions could focus on helping elders shift from problem-focused to emotion-focused coping mechanisms (e.g. Costa & McCrae, 1993; Schulz & Heckhausen, 1996), but there may be better options.

Specifically, by acknowledging that depressed affect is a function of restricted activities, interventions can be designed to reduce both activity restriction and depression. Efforts to increase activity might take three (and, probably, several more) forms. First, by taking into account both personality and social factors, practitioners should be able to target the individuals most at risk for activity restriction and depression. Second, they should carefully consider the multiple reasons that activities have become restricted and design their interventions accordingly. Third, because finding satisfactory replacements for lost activities promotes wellbeing (Benyamini & Lomranz, 2004; Searle *et al.*, 1995), programmes should be targeted toward identifying manageable activities and available resources that engage ageing adults in pastimes which meet their specific interests and needs.

Social support, like personality traits and experience with illness, interacts with physical functioning to influence normal activities. With more supportive social support networks, activity restriction can be reduced (Williamson *et al.*, 1994). Maintaining usual activities, in turn, reduces the possibility of negative emotional responses and further decrements in health and functioning. Thus, identifying community-residing older adults with deficits in social support is a good starting point for intervention (see 'Social Support Intervention'). Before intervening, however, we need to specify which aspects of social support are absent or most distressing and target treatment accordingly (Oxman & Hull, 1997). Some older people may be depressed simply because they do not have enough social interaction. Others may have concrete needs for assistance that are not being met (e.g. getting out of bed or grocery shopping). Still others may be exposed to exploitative or abusive behaviour (Cohen & McKay, 1983; Suls, 1982; Williamson *et al.*, 2000b; Wortman, 1984).

Conclusion and directions for future research

No solution is in sight for the fact that, with age, physiological systems slow down (e.g. Birren & Birren, 1990; Whitbourne, 2005), but the best option appears to be remaining active for as long as possible. Traditional attitudes and the projected increase in elderly people have led scholars, commentators and policy-makers to conclude that society is about to be overwhelmed by people who are disabled and require constant care. With fewer children per capita than previous generations, a major concern is that as the baby boomers age, there will be fewer adult children available to provide care, creating a demand for formal care that may severely (if not, impossibly) tax societal resources. As with any major demographic shift, there are problems to be addressed. Substantial numbers of older adults will be disabled, socially isolated and depressed, but the same is true for other age groups as well.

On the other hand, research indicates that, more than ever before, ageing adults are and will be physically, psychologically and socially healthy. Older adults are remarkably skilled in making gradual lifestyle changes to accommodate diminishing physical abilities (e.g. Williamson & Dooley, 2001). Simply directing them towards the numerous resources available to elders (e.g. senior centre activities) can help some, but others may need psychological intervention to help them make adjustments that maximize their ability to remain engaged with life. From accumulating evidence, it is now clear that people consistently become depressed in the wake of physical illness and disability largely because these circumstances disrupt their ability to go about life as usual (see Williamson, 1998, 2002, for reviews). Lack of experience, less social support and personality variables all contribute to the ability to cope with major life changes (e.g. Walters & Williamson, 1999; Williamson, 1998, 2002; Williamson & Schulz, 1992, 1995; Williamson *et al.*, 1998).

In their acclaimed book, *Successful ageing*, Rowe and Kahn (1998) proposed that there are three components of successful ageing: (1) avoiding disease; (2) engagement with life; and (3) maintaining high cognitive and physical function. These factors are closely aligned with and, perhaps, subsumed in the ARMDA. First, avoiding disease is largely a function of routine activities. Physical exercise and temperance in detrimental behaviours (e.g. smoking, drinking alcohol, eating a high fat diet) are, under ideal circumstances, routine activities that promote better physical health, less disability and greater longevity (e.g. Cohen *et al.*, 1993; McGinnis & Foege, 1993). Second, 'engagement with life' (Rowe & Kahn, 1998) is virtually synonymous with continuing valued activities. People who feel engaged with life are those who are involved in personally meaningful activities, but what qualifies as 'meaningful' will vary according to each person's history. In the ARMDA, it is postulated that continuing to be involved in personally relevant activities (whether intellectual, physical, or social) is what matters most.

Finally, Rowe and Kahn (1998) advocated maintaining high levels of physical (and cognitive, see 'Age and Cognitive Functioning') functioning as the third key to ageing successfully. When confronted with age-related declines in physical functioning, the telling factor may well be the extent to which a semblance of normal activities can continue or be replaced in a satisfactory fashion (e.g. Benyamini & Lomranz, 2004). What does this mean when, for example, disability precludes playing several sets of tennis every day? If this activity was driven by love of the sport, then the ageing tennis addict can still