



ORIGINAL ARTICLE

Health Psychology Intervention in Key Social Environments to Promote Adolescent Health

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Although important challenges remain, advances in psychological theory and practice have made significant contributions to preventing and reducing adolescent health problems in Australia and in other nations. This article reviews current approaches and advances within the field of health psychology, and their contribution to the prevention of high priority adolescent health problems and to adolescent health promotion. Advances in adolescent health in Australia are indicated by reductions in mortality, tobacco use, road trauma, early-age alcohol use, illicit drug use, suicide, homicide, and HIV transmission. Within a strategic interdisciplinary public health model, psychologists have contributed to these advances through research identifying the psychological and behavioural processes that influence adolescent health risks, trialling and evaluating behavioural intervention strategies to reduce risk processes, and communicating evidence to advocate the dissemination of effective approaches. Current challenges in adolescent health include high rates of obesity and overweight related to increasing physical inactivity and overconsumption of high-calorie and processed foods, high rates of substance use problems, and rising rates of youth violence and socioeconomic inequalities. Among potential solutions, this article describes the prevention science and positive youth development approaches to enhancing population rates of health and well-being in the adolescent population.

Key words: adolescent; health promotion; health psychology; public health; review.

What is already known on this topic

- 1 Psychologists contribute within interdisciplinary teams to promote adolescent health.
- 2 Advances in adolescent health in Australia include reductions in mortality, tobacco use, road trauma, early-age alcohol use, and illicit drug use.
- 3 Progress has been achieved by emphasising evidence within a strategically planned public health approach.

What this paper adds

- 1 This article provides an update of key challenges in areas that include high rates of obesity and overweight, high rates of mental health and substance use problems, and rising rates of youth violence and socioeconomic inequalities.
- 2 Developmental prevention science and positive youth development approaches are outlined.
- 3 The possibility is outlined of encouraging positive youth development to reduce international health disparities.

Introduction

Adolescence, a period of life that the World Health Organization identifies as extending from puberty (at around age 10) to the end of secondary school (around age 19) (Sawyer et al., 2012), is a healthier time for the present generation compared with past generations in Australia and many other nations (Sawyer et al., 2012). The article that follows outlines the contribution to improving adolescent health made by the psychological and behavioural sciences, and describes developmental theories and frameworks that can guide intervention.

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Adolescent Health Trends

Death rates for young people (aged 12–24) have halved since 1987, to reach 37 per 100,000 Australian youth by 2007 (Australian Institute of Health and Welfare, 2011). These declines have continued a steady trend that is evident since the end of the Second World War. Success in protecting life has been associated with effective prevention and treatment of infectious diseases and injury. The successful reduction in medically managed causes of death has introduced a shift in public health priorities that now increasingly focus on behavioural and life-style causes of death and disability. Reductions in mortality in Australia have followed from a range of effective public health strategies relevant to road safety policies (Moodie & Hulme, 2004).

Significant reductions in tobacco use have been achieved within the Australian school-age population (White & Bariola, 2012) as a result of deliberate large-scale public health strategies

aimed at reducing this behaviour and influencing factors. Strategies have included social marketing to promote unfavourable attitudes to tobacco, economic and taxation interventions to ensure financial disincentives for purchasers, state laws that both limit the environments where it is legal to smoke and restrict access to tobacco by minors, and reductions in the prevalence of smoking adult role models (Loxley et al., 2004).

Over the past decades, fewer early secondary school-age adolescents reported using alcohol, while rates of illicit drug use have also reduced (White & Bariola, 2012). These improvements can be related to the dissemination of information on: the harms of early-age alcohol and drug use, and effective family and school prevention programmes (Loxley et al., 2004).

The implementation of stricter gun control in the 1980s has been implicated as an important factor associated with Australia maintaining lower rates of youth homicide compared with equivalent nations (Bricknell, 2008). Successful HIV prevention programmes have also been implemented in Australia protecting youth from a major international cause of death and disability (Plummer & Irwin, 2006). Australian suicide prevention campaigns implemented from the 1990s were evaluated to have been effective in contributing to reductions in deaths (Morrell, Page, & Taylor, 2007).

Despite many successes, there remain major challenges to adolescent health in Australia in a number of areas:

- High rates of mental illness are evident. For example, a study in Victoria found mental disorders in young people aged 15–24 years contributed to 50–60% of the total disability burden in this age group (Public Health Group, 2005, Figure 9).
- Increasing rates of alcohol-related harm in the late adolescent age group have been observed in recent decades (Livingston, Matthews, Barratt, Lloyd, & Room, 2010).
- Rates of adolescent violent offending have increased in all Australian states in recent decades (Bricknell, 2008).
- There is evidence of increased levels of child abuse and neglect (Australian Institute of Health and Welfare, 2008) and adolescent sexual assault (Bricknell, 2008).
- High rates of obesity and inactivity have been documented (Australian Institute of Health and Welfare, 2011).
- Rates of the sexually transmissible infection *Chlamydia* have increased, such that 1.5% of 15- to 24-year-olds were infected in 2010. In the 15–19 age group, infection rates increased 114% for females and 75% for males between 2005 and 2010 (National Notifiable Diseases Surveillance System, 2012, Figure 16).
- Increasing levels of socioeconomic inequality in Australia (Office of Economic Cooperation and Development, 2012) has adverse impacts for child and adolescent health.

Health Priorities and Adolescents

Although adolescents are commonly regarded as healthy, lifestyles and behaviours that lead to chronic diseases in later life emerge during this life stage, including tobacco, alcohol and illicit drug use, unsafe sex, lack of physical activity, and unhealthy eating (Catalano et al., 2012). Because of population growth in the developing nations, adolescents (10–24) now represent 24% of the world population and will continue to represent a disproportionate component over future decades

(Sawyer et al., 2012). In the international context, adolescent health intervention is recognised as critical due to the potential to prevent the current trend for large international adolescent populations to take up lifestyle risk behaviours, such as tobacco use and physical inactivity, that have been challenges in the developed nations (Patton et al., 2012), but also for the potential for sexual behaviour intervention and early family assistance to reduce the transfer of health and social problems into future generations (Catalano et al., 2012).

Based on systematic literature reviews, the Australian National Preventative Health Agency (2011) has established three priority targets for prevention: alcohol, tobacco, and obesity. In later sections of the present article, the potential contribution that can be made to preventing these problems through interventions in the adolescent life stage is described.

Health Psychology Frameworks in Advancing Adolescent Health

Health psychologists specialise in understanding the influence of psychological and environmental factors on health and illness. They are also interested in how social, political, and structural systems affect health. The Australian Psychological Society College of Health Psychologists defines two main areas of application: clinical health and health promotion psychology. Clinical health psychologists focus on the application of psychology to illness assessment, treatment, and rehabilitation, and typically work with patients or health organisations in treatment and rehabilitation contexts. Health promotion psychologists focus on the prevention of illness and the promotion of healthy lifestyles. They tend to work with government, health organisations, and public health institutions to change the behaviour of large populations.

Just as health psychologists work in both treatment and population health settings, health-care strategies can be conceptualised as falling across a continuum from prevention through to late-stage treatment and rehabilitation. The focus of the present article is on describing population-level approaches to prevention and early intervention in adolescent health. *Prevention* refers to strategies or programmes that avert or delay the onset of health, mental health, or social problems. Prevention responses can be classified as universal where they apply to an entire population, selective where they target groups with elevated risk, and indicated where they target individuals already showing signs or symptoms of illness. This conceptualisation of prevention addresses the progression from risk factor to illness within populations (Muñoz, Mrazek, & Haggerty, 1996). Prevention encompasses goals not just for reducing illness, but also for reducing illness determinants. For example, Australian tobacco, alcohol, and drug policies include a broad set of goals not just to reduce the demand for hazardous alcohol and drug use, but also to reduce the supply of alcohol and drugs, and contexts where use results in harm (Toumbourou, Olsson, Williams, & Hallam, 2013). Increasing capacity to reduce both demand and supply is relevant in efforts to decrease sedentary behaviour and unhealthy food consumption (Millar et al., 2013).

The public health system in Australia and other nations can be conceptualised as a major universal approach to advancing

health. This approach follows a staged model, such that data are first systematically collected on problems and determining influences. This data then enable the informed selection of suitable interventions that address problems and determinants. Approaches are said to be evidence-based where they make use of data from previous programme evaluations to inform their design and to increase their potential to reduce targeted problems. Health psychologists have played an important role in contributing to the design and evaluation of interventions to prevent priority health problems (Toumbourou, 2010).

Prevention approaches are attractive from an economic perspective, offering the potential to reduce problems that can otherwise overburden health systems. Within a rational public health approach, prevention priorities and targets are typically based on epidemiological estimations of the burden (or disability) associated with a specific disease. Psychologists have assisted in developing measures of disease burden in different populations (e.g., Browne, Scibilia, & Speight, 2012). All other factors being equal, it is important to ensure that the health problems that contribute the greatest share of individual, societal, and economic distress receive the highest priority. Subpopulations, such as the Indigenous and the socioeconomically disadvantaged youth, that shoulder a disproportionate share of the health burden should also receive priority attention.

Integrating Across Multiple Domains to Advance Adolescent Health

An important focus in health promotion and preventative approaches involves efforts to integrate activities across multiple domains of influence. Modern health promotion approaches emphasise the importance of cultural, policy, and system influences as determinants of population health outcomes (World Health Organization, 1986, 1997). A systems approach to prevention acknowledges the range of political and economic mechanisms operating at the global, national, and state levels that can impact on adolescent health issues. For example, these include international treaties, and national and state policies and investments. Many factors at the community level mediate the impact of state and national policies. For example, numerous services and policies are coordinated and delivered by regionalised health services, local government and community health services, and through schools (Toumbourou *et al.*, 2013).

Recognition of the importance of an integrated strategy for improving adolescent health has led to an increasing awareness of the need for developmentally focused intervention policies and programmes. Many Australian state governments have established offices to better coordinate child health responses to ensure a consistent and developmentally appropriate approach across programmes and life course transitions (e.g., Victorian Department of Education and Early Childhood Development). Prevention can be used to deliver services and programmes to reduce the incidence of health and social problems later in life, but to enable this possibility systems for monitoring healthy child and adolescent development are required.

Longitudinal Studies of Adolescent Development

Australian researchers have made important contributions to the study of adolescent development through unique longitudi-

nal studies of the early life course. Details of a range of relevant Australian and New Zealand studies can be accessed through the Australian Research Alliance for Children and Young People Longitudinal Studies Network (<http://www.aracy.org.au/networks/longitudinal-studies-network>). Prevention advocates are increasingly emphasising a prevention science approach (Catalano *et al.*, 2012) synthesising life course development research, community epidemiology, the evaluation of preventive intervention trials, and systems approaches to service planning. Prevention science approaches aim to direct evidence-based investment to modify the early developmental pathways and influences that lead to later problems. Together with other disciplines, many areas of psychology have contributed to this integrated prevention science approach, including health, clinical, applied social, community, and organisational psychology.

Risk and Protective Factors That Influence Adolescent Development

Borrowing similar techniques to those used in the study of risk and protective factors for heart disease, researchers over the past four decades have been investigating risk and protective factors that influence the development of child and adolescent health and social problems. In the analysis of longitudinal studies, developmental risk factors are defined as independent predictors of particular health and/or social problems. Although protective factors are often defined as the reverse of risk factors, they are more clearly differentiated as characteristics that buffer, mediate, or moderate the influence of risk factors, thereby reducing the likelihood of later problems. Resilience researchers have identified several protective factors by studying children who have avoided adversity after being exposed to difficult childhood experiences, such as parental mental illness or extreme poverty (Catalano & Hawkins, 1996).

Risk and protective factors tend to show variation across communities and are often contrasted with structural and societal determinants that affect large population aggregations, but show differences across states and nations. The review paper by Hawkins, Catalano, and Miller (1992) was influential in organising what was known to that point of developmental risk and protective factors for youth alcohol and drug abuse. At the societal and community level, socioeconomic disadvantage is a characteristic that is consistently associated with developmental problems for children and adolescents.

In addition to socioeconomic disadvantage, several sets of community risk factors influence adolescent substance use (e.g., Catalano & Hawkins, 1996; Hawkins *et al.*, 1992) and obesity (Mathews, Moodie, Simmons, & Swinburn, 2010), including normative expectations for behaviour and the availability (of substances and unhealthy food). Within the community, risk factors at the family and school, and peer levels influence adolescent health behaviours.

While greater attention is often given to identifying risk factors, it is equally important to consider those factors that promote resilience and are therefore protective. Hawkins *et al.* (1992) organised protective factors into three areas: individual characteristics (e.g., a positive social orientation, high intelligence, and a resilient temperament), social bonding (e.g., warm,

affective relationships social skills, emotional control, rewards for prosocial behaviour, and commitment to conventional lines of action), healthy beliefs, and clear standards for behaviour.

Theories of Risk and Protective Factor Influence

A consistent observation in prevention science is that risk factors have a cumulative impact. The more risk factors that are present and the longer they persist over time, the greater the subsequent developmental impact (e.g., Newcomb & Felix-Ortiz, 1992). There is no single risk factor that fully explains developmental problems; rather, these problems can be regarded as having complex causes involving influences and interaction of multiple risk and protective factors.

One heuristic proposed to describe the cumulative effect of risk factors is to use the analogy of a snowball (Toumbourou & Catalano, 2005). According to this view, risk factors that emerge early in life (e.g., maternal smoking and alcohol use) can lead to subsequent risk factors that tend to “adhere” and accumulate as a consequence of the experience of earlier problems (e.g., school failure, antisocial behaviour).

Social and economic mobility patterns in our society have increased socioeconomic differentials and led to a situation whereby children experiencing snowball risk trajectories tend to be disproportionately clustered within disadvantaged geographic communities and schools (Toumbourou *et al.*, 2007). Using this analogy, the solution is to invest within these targeted areas to prevent the potential for an avalanching snowball by building protective solutions and reducing early life risk factors. For example, by increasing support and the availability of substance use treatment to at-risk mothers before they conceive, it may be possible to prevent the sequence of events that can result in the cumulative escalation of risk (Catalano *et al.*, 2012).

In many cases, the cumulative effect of risk is more temporal and can be better described with the analogy of a snowstorm (Toumbourou & Catalano, 2005). According to this view, a healthy child can be put at risk by temporal events, such as exposure to extreme weather. If such exposure continues for long enough and the child has little protection, adverse health outcomes can result. Where the adolescent has low protective factors (such as parents being unavailable to supervise activities, or poor relationships with teachers) in a community with high rates of youth drug use, the likelihood of the adolescent becoming involved in drug use may increase. The protective advantages of positive relationships with adults suggest that there is potential to protect health within risky social environments by increasing healthy adult relationships or other protective factors (analogous to providing shelter in stormy weather). From this perspective, solutions lie in improving social environments (by reducing peer risk factors and increasing protective social relationships) through the course of development (Catalano & Hawkins, 1996).

The social development model (Catalano & Hawkins, 1996) is a theory of child and adolescent socialisation that has grown out of behavioural and attachment research. The model aims to provide a theoretical description of how protective factors in the social environment can be enhanced to increase adolescent resilience.

The social development model describes four main domains of socialisation (namely family, school, peer, and community/ neighbourhood) that influence development in different phases.

What Works in Different Settings to Promote Adolescent Health?

Although it can be challenging to design and implement interventions and to complete evaluation trials, there is a mounting body of social and economic evidence indicating that intervening during the child and adolescent years can enhance healthy adult development and have beneficial consequences for the community. Most of this evidence is of the highest quality, in the form of systematic reviews, meta-analyses, and economic syntheses of controlled trials (Aos *et al.*, 2011; Catalano *et al.*, 2012; Toumbourou *et al.*, 2013; Vos *et al.*, 2010).

In the section that follows, policies, programmes, and activities are described that have evidence for efficacy (beneficial impacts in evaluations with high internal validity) or effectiveness (evaluation trials with high external validity) in reducing priority adolescent health and social problems. Psychologists have assisted the identification of factors that contribute to behaviour change, in designing and evaluating interventions, and in the implementation of evidence-based prevention and early intervention policies (Toumbourou *et al.*, 2013).

Interventions in the International and Australian Context

Australia’s experience setting up a modern public health system and health research and training facilities provides an important opportunity to offer assistance internationally to promote the health of the world’s burgeoning adolescent population. As will be argued in later sections, there may be synergies whereby supporting young Australians to volunteer and offer service to children and youth in developing nations may produce benefits in improving the mental health, health behaviour, and positive development of Australian adolescents.

In their review, Catalano *et al.* (2012) identified the potential to promote the worldwide implementation of prevention science programmes, with the goal of controlling fertility, reducing sexually transmissible disease, and preventing alcohol and tobacco use and obesity. Their review identifies the requirement to address structural policies at the national/state levels, and to implement effective interventions at the community, school, family, and individual/peer levels. Relevant structural policies supported by at least quasi-experimental evidence in their review included adolescent access to contraception, taxation to reduce the economic availability of alcohol and tobacco, raising the legal age for alcohol use and purchase to 21, and graduated licensing to reduce alcohol-related harm among drivers. Effective interventions include mentorship at the community level, school reorganisation and health curricula, parent education and family therapy, and web-based and interactive skill development interventions for individuals and peer groups (Catalano *et al.*, 2012).

Although space limitations preclude a comprehensive overview, Australian examples of these interventions and their evaluation evidence are emphasised in the sections that follow. While many interventions aim to address only one outcome, it

should be noted that adolescent interventions that address multiple risk factors often demonstrate preventive effects on more than one outcome (Bond *et al.*, 2004).

Structural and Macro Policy Interventions at the National/State Levels

Structural inequality and socioeconomic differentials are increasing in Australia and internationally (Office of Economic Cooperation and Development, 2012), and adversely impact children and adolescents and typically require national and state action to be effectively addressed (Toumbourou *et al.*, 2007). Strategies that have evidence from overseas randomised trials and Australian evidence for feasibility include supportive home visiting to vulnerable mothers to reduce snowball risk processes (Kemp *et al.*, 2011). Efforts to improve primary school effectiveness have been demonstrated in US trials to break down the intergenerational transfer of poverty (Hawkins, Kosterman, Catalano, Hill, & Abbot, 2005) and show feasibility in Australia (Trinder, Roberts, & Cavanagh, 2009). Many strategies that have been the subject of large Australian investments, such as Neighbourhood Renewal, have never been subject to rigorous evaluation.

In Australia, the major structural interventions that have been proposed to prevent adolescent health priority problems are taxation reform to reduce economic access to alcohol and tobacco, and increased industry regulation to control the marketing and availability of alcohol and tobacco (Loxley, Toumbourou, & Stockwell, 2005; Vos *et al.*, 2010). Although similar controls have been proposed to reduce access to unhealthy foods, there have been few evaluations. While there has been success in implementing tax and regulatory reforms relevant to tobacco, recommended reforms relevant to alcohol and food have not been implemented. Psychologists can play a potentially valuable role in developing media and advocacy strategies, and in communicating evidence to align public opinion with evidence-based public health reforms (Loue, Lloyd, & O'Shea, 2003).

Australian Community-level Interventions to Advance Adolescent Health

Community-level interventions are coordinated by government and non-government organisations. As will be summarised below, there is evidence that adolescent alcohol and tobacco use can be prevented through community approaches that reduce supply, enhance early intervention, and improve the profile of developmental risk and protective factors.

Reductions in adolescent alcohol use have been demonstrated in community interventions implemented in the USA (Perry *et al.*, 1996). An Australian randomised community trial using similar strategies shows promise in reducing alcohol availability and use in early secondary school students (Rowland *et al.*, 2013). Strategies to monitor and enforce the legal minimum purchase age restrictions are currently well implemented with respect to tobacco, but poorly implemented with respect to alcohol (Vos *et al.*, 2010).

In Australia, the Good Sports programme has been designed and widely disseminated to introduce effective alcohol harm reduction policies into sports clubs. Research examining the

implementation of the Good Sports programme has associated the level of exposure to the programme with lower levels of club member risky alcohol use (Rowland, Allen, & Toumbourou, 2012) and drink driving (Rowland, Toumbourou, & Allen, 2012).

Australian community interventions have been demonstrated to reduce adolescent risk factors for obesity in the areas of physical activity and healthy nutrition (Mathews *et al.*, 2010). Local neighbourhood redesign to increase opportunities for active transport has been proposed as a local government strategy for encouraging physical activity, but has not been strongly evaluated (Vos *et al.*, 2010).

The Communities That Care framework has been developed to assist communities to use youth survey data to develop a prevention science-based plan to reduce locally elevated risk factors and enhance locally depressed protective factors. Randomised trials in the USA reveal that the intervention can reduce adolescent alcohol and drug use and delinquency (Hawkins *et al.*, 2009). The framework has been adapted for use in Australia, and pre-post evaluations reveal that it has achieved targeted improvements in risk and protective factors and population reductions in alcohol and drug use (Williams, Canterford, Cini, Rajan, & Williams, 2012), with effects similar to overseas trials.

School Interventions to Advance Adolescent Health

A Cochrane review (Waters *et al.*, 2011) has identified that a number of strategies are effective in the school setting to tackle the issue of obesity, particularly for children between the ages of 6 and 12. Strategies should largely focus on increasing the capacity of schools and teachers to implement health promotion strategies, and focus on policies that create environments that enable children to make healthier food and activity choices, including school curriculum that includes healthy eating, physical activity, and body image; increased sessions for physical activity and movement; environments and cultural practices that support children eating healthier foods and being active throughout the day; and support for teachers and staff to implement health promotion strategies and activities (*i.e.*, professional development and capacity building). Australian secondary school trials have demonstrated reductions in adolescent obesity (Millar *et al.*, 2013).

Although school health curricula can offer benefits in encouraging adolescent health behaviour (Toumbourou *et al.*, 2013), school reorganisation whereby curricula are supported with teacher training and policy reform may offer greater advantages. The Gatehouse Project was delivered in Australian secondary schools, and included components addressing healthy school policies, teacher support and training, and student emotional competence training. A randomised trial revealed that exposure to the intervention was associated with reductions in alcohol and tobacco use, antisocial behaviour, and risky sexual behaviour (Bond *et al.*, 2004).

Family Interventions in Adolescence

Family interventions focus both on assisting the parents of adolescents to encourage healthy development and also on

assisting adolescents as they become parents. Parent education has been shown in randomised trials to be effective in preventing adolescent alcohol, tobacco, and drug use by reducing family risk factors and enhancing protective factors (Loxley *et al.*, 2004). Strategies shown to be effective in reducing snowball risk processes in vulnerable adolescent parents include ante- and postnatal home visits by nurses and professionals aimed at supporting high-risk parents to develop good parenting practices, to prevent child abuse, to ensure the child's basic needs are met effectively, and to encourage positive child–parent attachment (Kemp *et al.*, 2011) and supporting families who have problems associated with mental health or alcohol and drug use to ensure opportunities for healthy child development (Loxley *et al.*, 2005). The family environment has also been identified as an important domain in obesity prevention. These interventions support parents to ensure their children spend less time on screen-based activities, eat more nutritious food, and become more active. An Australian randomised trial demonstrated improvements in healthy weight in children from 4 to age 11 (West, Sanders, Cleghorn, & Davies, 2010).

Individual and Peer-based Interventions

There is evidence that brief and interactive online interventions can be effective. Training and evaluation strategies have been implemented successfully in Australia to improve the preventive screening and health promotion offered to adolescents by primary health professionals. Brief interventions by primary care practitioners appear effective for reducing both smoking and early-stage alcohol problems, but uptake of effective strategies is typically poor among relevant professionals (Loxley *et al.*, 2005).

Evaluations reveal that alcohol education programmes have been successfully implemented in universities in the USA using interactive online health interventions reinforced with policy strategies. Randomised trials have shown that they can reduce alcohol use and harms (e.g., Croom *et al.*, 2009).

Synthesising Understanding of Intervention Processes and Programme Logic

While health psychology frameworks have been identified above, understanding the process and logic behind large-scale, universal and multi-component programmes is a critical element in identifying effective evidence. Several planning frameworks have been developed to organise the evidence into a coherent and sound intervention. One popular approach organises complex ecological interventions by considering leverage points in predisposing, reinforcing, and enabling factors (Green & Kreuter, 2005).

Economic analysis is a further method that is being used to synthesise the range of evaluation evidence in order to reach conclusions as to which “portfolio” of investments would be most efficient in reducing the burden of disease within a population (Aos *et al.*, 2011; Vos *et al.*, 2010). These evaluations rely on having available good quality information on the aetiology of disorders and well-controlled evaluations of a range of interventions.

New Horizons

With success in managing infectious diseases and in reducing risk factors for injury, adolescent health promotion is exploring a new and broader range of options for encouraging positive health. New approaches to adolescent health are moving away from the disease model to examine positive development and well-being and the potential to assist young people internationally.

Important debates are emerging around topics such as the characteristics of well-being, its measurement, and monitoring change over time. Well-being is often defined in terms of subjective emotion states or happiness. However, such an emphasis on feeling good (hedonia) can ironically lead to increased disappointment, anxiety, depression, and related health compromising behaviour when perceived needs are frustrated or not attained (Burwell & Shirk, 2006). An alternative focus on well-being is located in the ideas of Aristotle, who espoused eudaimonic rather than hedonic well-being. Eudaimonic well-being is focused upon fulfilling human potential rather than happiness seeking. The emphasis upon being true to self in these alternative approaches is an attempt to counter the powerful pressures to pursue socially referenced success and contingent social approval at the cost of personal authenticity. These eudaimonic interpretations of happiness may provide new ways of enhancing resilience and protective influences, and hence need to be further developed and researched to establish their potential to provide individual and societal benefits for health and well-being. The following sections briefly summarise new models that emphasise the key role of eudaimonia.

In their self-determination theory, Ryan and Deci (2002) argue that happiness can only be found by that eudaimonic behaviour that meets the universal basic human needs for autonomy, competence, and relatedness. When behaviour is overly influenced by the hedonic social values of prevailing culture, personal values can be overwhelmed, leading to a loss of authenticity and decreased fulfilment of human potential (Ryan & Deci, 2002).

Positive youth development (PYD) is a strength-based approach that emphasises positive development as thriving rather than maximising some happy state. Thriving refers to that young person who is active in civic or social activities in a manner characterised by the 5Cs: connection, character, competence, confidence, and caring (Lerner, Almerigi, Thoeoksa, & Lerner, 2005). Positive psychology is distinctive in that it does not aim to heal sick people as much as make everyone better—in as much as all people can learn how to be more fulfilled and happy—and this is the aim of positive psychology (Park, Peterson, & Seligman, 2004). Positive psychology insists happiness can be found through pleasure, engagement, or meaning, or a mixture of the three (Park *et al.*, 2004). Positive psychology involves a concept of happiness as subjective well-being in which hedonic and eudaimonic behaviours add distinctive contributions (Vella-Broderick, Park, & Peterson, 2009).

The above three models conceive of Aristotelian well-being in traditional Western or hedonic mode, where well-being is considered as hedonic happiness and is measured by subjective well-being. However, some researchers are now arguing that it may be inaccurate to interpret Aristotelian eudaimonism in

terms of hedonic philosophy; rather, eudaimonism may more properly be interpreted in terms of the philosophy it is part of—virtue ethics (Fowers, 2012). In this model, character development itself may bring human fulfilment when attained through virtuous living and caring (Fowers, 2012).

Conceptions of thriving in PYD suggest the possibility that the developmental interests of adolescents may be best served where they are encouraged and supported to provide service to others. The emergence of international plans to eliminate severe poverty (defined as a context whereby the loss of weekly income can lead to death) internationally (United Nations, 2008) has led some youth-serving organisations to encourage a movement wherein young people are supported to volunteer and provide service in areas that can be measured against this ambitious plan (<http://www.globalpovertyproject.com>). This focus on youth volunteering and civic action receives support as a potentially valuable means of enhancing adolescent mental and physical health. An experimental trial whereby adolescents were randomly assigned to a weekly volunteering condition found that biological risk factors for heart disease, including cholesterol and body mass index, were reduced in the intervention group (Schreier, Schonert-Reichl, & Chen, 2013). The Australian Temperament Project longitudinal study (<http://www.aifs.org.au/atp>) has recently completed a series of papers modelling PYD. The measure of positive development emerging from this study includes civic action and engagement (such as local and overseas volunteering), together with social competence, life satisfaction, trust and tolerance of others, and trust in authorities and organisations. Hawkins et al. (2012) found that positive development at age 19 predicted higher levels of emotional health, physical well-being, friendship quality, reduced antisocial behaviour, and higher positive development at age 23.

Conclusion

There has been significant progress in advancing the interdisciplinary field of adolescent health, with knowledge from psychology and the behavioural sciences making an important contribution. Psychologists can continue to play an active role in assisting and advocating for the implementation of carefully planned and evaluated programmes. On one vision, advancing adolescent health into the future may involve a greater emphasis on positive development whereby adolescents are trained and supported to provide service to use prevention science to reduce international health differentials.

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