Review of key risk and protective factors for child development and wellbeing (antenatal to age 25)

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Acknowledgements

This report was prepared for ARACY by

Professor John W Toumbourou, Chair in Health Psychology, Prevention Sciences, School of Psychology, and Centre for Mental Health and Wellbeing Research, Deakin University, Australia

Ms Jess Hall, Research Manager, Prevention Sciences, School of Psychology, Deakin University, Australia.

Mr Jay Varco, Research Assistant, Prevention Sciences, School of Psychology, Deakin University, Australia.

Dr Rachel Leung, Research Fellow, Prevention Sciences, Centre for Mental Health and Wellbeing Research, and School of Psychology, Deakin University, Australia.

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BACKGROUND

The report that follows has been commissioned by the Australian Research Alliance for Children and Youth (ARACY). The report provides a review of key risk and protective factors for child development and wellbeing, by life stage (antenatal to age 25), and a review of the factors associated with the escalation of risk for a child or young person, with the intention of identifying optimal intervention points across the life course of children and young people. The report provides an overview of research on risk and protective factors by life-stage organised from the antenatal period through to youth in the postsecondary school period 17-25. The report identifies risk and protective factors that influence child development across areas relevant to both wellbeing and positive adjustment and also the prevention of health and social problems across a wide range of areas.

What outcomes should be the main priority for prevention efforts?

The term “outcome” is used in this report to describe the health and social problems that can be prevented as children grow up. Emphasis was placed on outcomes that contribute to high levels of social and economic burden in Australia for current or future populations. This report focuses on seven major preventable outcomes including five health outcomes: substance abuse (alcohol misuse, tobacco use, substance use disorders); obesity (identified as top three prevention priorities: Australian National Preventative Health Agency, 2011); developmental injury (leading to preventable disability), mental illness (preventable distress due to depression, anxiety, suicidal behaviour and less common mental disorders); and chronic illness (including preventable Type 2 diabetes, cancer, cardiovascular disease, asthma, allergies) (Vos et al, 2010) and three social/behavioural outcomes: school failure (including leaving school and not participating in further education); antisocial behaviour (including violence and crime); and social exclusion (lack of meaningful and constructive social and economic participation) (Australian Institute of Health and Welfare, 2014).

Defining risk and protective factors

A risk factor is defined as a measurable causal contributor to later developmental outcomes. The definition of risk factors and outcomes are specific to developmental stages. For example outcomes such as antisocial behaviour in adolescence may be defined as risk factors for the later development of a more serious level of the outcome in adulthood. To encourage their practical application in a wide range of policies and programs we have described risk factors at a level that may be measurable for public policy actions (in behaviours, actions and social influences). We have avoided specifying risk factors in terms of their underlying properties at the micro-behavioural, cellular, genetic or epigenetic levels.

There are different levels of evidence in identifying the causal contribution of risk factors. At the highest level, evidence is available through experimental manipulation showing the risk factor reduces the outcome and there is evidence supporting a causal risk process theory of how the risk factor causes the outcome. As most risk factors do not yet have that level of evidence we accepted evidence from longitudinal studies that the risk factor is a predictor of outcomes, after controlling for other known risk factors. Our review of risk and protective

In defining **protective factors** we have avoided the common convention of describing them as the reverse of risk factors. We have used instead the convention of Loxley et al (2004) and defined them as characteristics that buffer, mediate or moderate the influence of risk factors, thereby reducing the likelihood that risk factors will lead to later problem outcomes (Loxley et al, 2004). On this definition where low levels of protective factors independently cause outcomes they are described as risk factors. Researchers have identified several protective factors by studying the characteristics of children who have avoided adversity after being exposed to difficult childhood experiences such as parental mental illness or extreme poverty (Catalano & Hawkins, 1996).

Prevention activity can be focused at a range of levels, ranging from work with individuals, families and communities to state, national and international approaches. A defining feature of child development risk and protective factors is that they vary across communities and are in this way contrasted with broader “macro social” structural and societal determinants that are shared in common across large population aggregations in states and nations. Following previous conventions (Loxley et al, 2004) we define risk and protective factors as developmental influences that can be modified at the local community level. They are in this way distinct from “macro social” structural and societal determinants of outcomes that impact broad populations across states, nations and the world (e.g., war, climate change, national economic and health investment policies). Macro social factors can be influenced by international, national and state efforts and can influence risk factors. Addressing risk factors can contribute to change in macro social factors. For example by reducing risk factors in the United Nations Millennium Development Goals, communities around the world are improving developmental outcomes for children and young people over time in areas such as improved education they expect to contribute to improvements in national and international macro social factors such as social capital and national productivity (United Nations, 2008).

**Risk process theories** provide testable explanations of how risk factors cause preventable outcomes and how protective factors moderate and mediate the risk processes. In order to summarise information the subsequent sections define a selected set of risk process theories and then list risk and protective factors that can be measured to examine the operation of these risk process theories.

**Physical development risk process theories.**

**Toxic stress and trauma risk processes** occur when children and young people have intense negative experiences (such as child maltreatment and peer bullying) that are maintained over time. The extended arousal of the nervous system and the release of stress hormones such as cortisol can result in permanent damage to the development of the brain, and stress and immunity systems (Middlebrooks & Audage, 2008). Toxic stress is thus a risk factor for cognitive and physical disability, poor educational outcomes, mental health problems, and physical health problems due to greater infections and chronic health
problems. Toxic stress risk processes have more severe effects in the early years when the brain and biological systems are rapidly developing and hence more vulnerable to being permanently damaged (Center on the Developing Child, 2010). Because the development of biological stress response systems is influenced by early experience, early exposure to toxic stress can “biologically embed” lifetime vulnerabilities in immune and stress response systems that increase chronic disease and other adverse outcomes (Shonkoff et al, 2009).

The table that follows provides an overview of risk factors that emerge from toxic stress risk process theories.

### Table 1. Overview of risk factors that emerge from toxic stress risk process theories

<table>
<thead>
<tr>
<th>Risk factor domains/ Ages</th>
<th>Risk factor names</th>
<th>Risk factor description and measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family/Community (0 - 25)</td>
<td>Maltreatment, neglect and abuse</td>
<td>Toxic stress risk processes are activated where children and young people face intense negative experiences (such as child maltreatment, victimization) maintained over time. Measures: Official notifications of child neglect and abuse. Youth report of maltreatment and abuse.</td>
</tr>
<tr>
<td>Family (0 - 25)</td>
<td>Family conflict</td>
<td>Families with high conflict activate social development and stress risk processes that increase risk for violence, delinquency, and other problems. Measures: Domestic violence offending. Youth reports: e.g., 'We argue about the same things in my family over and over again.'</td>
</tr>
<tr>
<td>Peer/Individual (4 - 25)</td>
<td>Bullying and victimisation</td>
<td>Being bullied and victimised by peers can lead to child mental health problems, school failure and other outcomes. Measures: Parent and Youth reports.</td>
</tr>
<tr>
<td>Community (4 - 16)</td>
<td>Personal transitions &amp; mobility</td>
<td>Young people experiencing community and school instability and lacking stable personal relationships are more likely to use drugs and become involved in antisocial behaviours. Measures: Population mobility data. Parent and youth survey measures.</td>
</tr>
</tbody>
</table>

The social and emotional competence protective process refers to actions such as relaxation, stress management, problem solving, and mindfulness skills that children and young people can learn that can reduce the harmful physiological impacts of stressful events (Letcher et al, 2009). High intelligence and an easier child temperament may make it easier to develop social and emotional competencies.

### Table 2. Social and emotional competence protective process

<table>
<thead>
<tr>
<th>Protective factor domains/ Ages</th>
<th>Protective factor name</th>
<th>Protective factor description and measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual (4 - 25)</td>
<td>Emotional competence skills</td>
<td>Emotional competence skills seek to reduce negative evaluations of emotions, improve self-management, coping, social support and problem solving. Children with an easy temperament and high intelligence find it easier to develop emotional competence. Measures: Observer, parent and youth reports.</td>
</tr>
</tbody>
</table>

Physical development risk processes occur when exposure to unhealthy and inadequate nutrition, poisonous chemicals and substances are destructive to healthy physical, neurological and immune development. As the early years set the foundations for healthy physical development, unhealthy nutrition and chemical exposure in the early years can cause embed problems in the developmental sequence and result in more severe
disability and poor outcomes in later life (e.g., Shonkoff et al, 2009). Risk factors need to be evaluated not simply in terms of their strength at different ages but also in terms of how common they are across the population. Some risk factors such as child and adolescent substance use are common causes of physical changes such as tolerance to alcohol that increase the likelihood of adult substance abuse and related outcomes for large numbers (e.g., McCambridge et al, 2011). Example risk factors are listed in the table below.

Table 3. Example of physical development risk and protective factors

<table>
<thead>
<tr>
<th>Risk factor domains/ Ages</th>
<th>Risk factor names</th>
<th>Risk factor description and measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual (0 - 25)</td>
<td>Specific physical and mental health risk factors</td>
<td>Early exposure, early and frequent use of substances, unhealthy food, exposure to poisonous chemicals, genetic and familiar susceptibility, low birth weight, early developmental injury and disability. <strong>Measures:</strong> Genetic and medical tests, parent and youth reports.</td>
</tr>
<tr>
<td>Family/ Community/ Individual/ Peer (0 - 25)</td>
<td>Attitudes, laws and norms favourable to unhealthy behaviours: substance use, unhealthy food, inactivity</td>
<td>Favourable attitudes and unclear rules for healthy behaviours, low enforcement of regulations for healthy food service and few restrictions on the availability of harmful substances. <strong>Measures:</strong> Observers, parents, youth reports of easy access to unhealthy behaviours</td>
</tr>
</tbody>
</table>

**Behaviour development theories**

**Behavioural risk theories** refer to the tendency for the early introduction of behaviours to shape the later sequence of behavioural development. The developmental sequence is related to physical development processes whereby neurological changes explain skills that form into habits that are then established in social identify and lifestyles. For example lack of physical activity in childhood and adolescence results in behavioural habits that predict inactive adult lifestyles (Mathews et al, 2010). Many behavioural lifestyle risk process theories trace the first experiences of food and substance use back to the pre-birth environment where mother’s behaviours can influence the development of the foetus shaping the child’s behavioural preferences (Center on the Developing Child, 2010).

The **social development model** (Catalano & Hawkins, 1996) refers to the tendency for the development of behaviour to be influenced by positive social bonding and role modelling. The social development model describes the sequencing of domains of socialisation. Early socialisation occurs in the family (ages 0 -3), then later continues to progress at school and with peers (primary school). In later stages adolescent and youth socialisation is influenced by the wider community. The table below presents the age sequencing of risk and protective factors that emerge from this theory.
Risk factor description and measurement in processes

Risk aggregation theories. A consistent observation 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., Farrington, 2003; Toumbourou & Catalano, 2005; Vassallo et al, 2002). There is no single risk factor that fully explains developmental outcomes, rather outcomes have complex causes involving influences and interactions between multiple risk and protective factors. One heuristic proposed to describe the cumulative effect of early risk factors is to use the analogy of a snowball (Toumbourou & Catalano, 2005). According to this view, snowball risk trajectory processes start early in life. Due to the sequencing of the risk processes described above adversity in the early years 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.

Table 4. Age sequencing of risk and protective factors that emerge from behaviour development theories

<table>
<thead>
<tr>
<th>Risk factor domains/ Ages</th>
<th>Risk factor names</th>
<th>Risk factor description and measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family (0 - 16)</td>
<td>Poor family management</td>
<td>Parenting styles that provide children unclear rules, inconsistent discipline and/or harsh punishment increase social development risk processes. These risk processes can be more common following family breakdown. Measures: Observers, youth reports</td>
</tr>
<tr>
<td>Family/ Community (0 - 16)</td>
<td>Family history and favourable attitudes to behaviour</td>
<td>Parent and family history and favourable attitudes to outcome behaviours (e.g., crime, violence, substance misuse, school failure, unemployment, obesity, mental illness) predict a range of adverse outcomes. These risk factors are often more common in disadvantaged communities. Measures: Official records, observer, parent, youth reports</td>
</tr>
<tr>
<td>Individual (4 - 25)</td>
<td>Antisocial behaviour</td>
<td>Behaviour problems emerging in childhood or adolescence predict later antisocial behaviour and related problems. High rates of antisocial youth can increase stressful experiences in disadvantaged communities. Measures: Official convictions, behavioural observations, family and youth reports</td>
</tr>
<tr>
<td>School (4 - 16)</td>
<td>School failure and low commitment to school</td>
<td>Academic failure, irregular school attendance, school suspension, not completing homework, disliking school predict school failure and other outcomes. Measures: School assessments, parent and youth reports</td>
</tr>
<tr>
<td>Individual/ Peers (8 - 25)</td>
<td>Friends and attitudes favourable to outcome</td>
<td>Around puberty adolescents attitudes and peer relationships are differentiated by attitudes to outcome behaviours (e.g., crime, violence, substance misuse, school failure, obesity, mental illness). Measures: Official records, observer, parent, youth reports</td>
</tr>
<tr>
<td>Protective factor domains/ Ages</td>
<td>Protective factor name</td>
<td>Protective factor description and measurement</td>
</tr>
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<td>---------------------------</td>
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</tr>
<tr>
<td>Family/ School/ Community (0 - 25)</td>
<td>Attachment and bonding to prosocial adults</td>
<td>Early family (secure) attachment and later pro-social relationships can provide a moderating effect that protects against situations of high risk that may otherwise lead to poor developmental outcomes. Measures: Observer ratings of child attachment, parent and youth reports</td>
</tr>
<tr>
<td>Peer/ Individual (4 - 25)</td>
<td>Social skills</td>
<td>Social skills can be taught and offer a protective advantage that can moderate the effects of negative social environments. Measures: Observer ratings, parents, youth reports of social behaviours</td>
</tr>
</tbody>
</table>
(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 snowball risk trajectories (Catalano et al, 2012).

Unsafe community environments: Children don’t have to have a high number of risk factors to be put at risk by unhealthy environments in childhood, adolescence and early adulthood. Think of a snowstorm blizzard. Even healthy children can be put at risk by dangerous conditions. If exposure to environmental hazards continues for long enough and the child has little protection, health and survival are placed at risk. Where the child has low protective factors (analogous to providing shelter in stormy weather: such as parents or community members being unavailable to supervise activities) in communities with easily accessed hazards (e.g., internet pornography, online access to substances), the likelihood of an adolescent succumbing to unhealthy outcomes increases. The snowstorm risk process occurs in communities that have high levels of child development hazards such as injury risks, community disorganisation, and marketing by vested interests for substances, and unhealthy foods. From this perspective solutions lie in making communities safer for the healthy development of children and young people (Toumbourou & Catalano, 2005).

Table 5. Community risk factors

<table>
<thead>
<tr>
<th>Risk factor domains/ Ages</th>
<th>Risk factor names</th>
<th>Risk factor description and measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family/ Community (0 - 25)</td>
<td>Family/ Community disorganisation</td>
<td>Poor standard housing posing child injury risks and with few home learning resources. Communities where marketing occurs by vested interests selling substances, and unhealthy foods. Poorly planned neighbourhoods with injury risks and lack of natural surveillance. <strong>Measures:</strong> Injury surveillance, observers, parents and youth reports.</td>
</tr>
<tr>
<td>Peer/ Individual/ Community (8 - 25)</td>
<td>Social and cultural alienation</td>
<td>Children and youth that have few purposeful activities, lack structured time use and who fail to develop a constructive social identity are at risk of affiliating with disaffected peers and gangs increasing the likelihood of a range of adverse health and social outcomes. <strong>Measures:</strong> Observers, parents and youth reports.</td>
</tr>
<tr>
<td>Protective factor domains/ Ages</td>
<td>Protective factor name</td>
<td>Protective factor description and measurement</td>
</tr>
<tr>
<td>School/ Community (4 - 25)</td>
<td>Safe and stimulating environments</td>
<td>School and community including faith-based efforts to increase resourcing for safe and constructive time use options and that reduce causes of developmental injury (accident and injury prevention) can contribute to reducing the risks of unsafe environments. <strong>Measures:</strong> Observers, parents and youth reports.</td>
</tr>
</tbody>
</table>
In what follows risk and protective factors are described at different developmental periods. We begin with the antenatal period and include in this discussion youth (17-25 years old) and late adolescents (13 to 16) as these age groups conceive and raise children. Later sections work backwards through the developmental sequence to the early years (0-3) that represent critical early stages in the sequencing of a number of risk process theories. An important implication is that interventions to reduce risk in the early years are likely to be most effective where they begin prior to conception to reduce risks in adolescents and young adults. Figure 1 provides a summary of some of the influential risk and protective that will be described in later sections.

Figure 1. Key Risk and Protective factors for each life stage

- **Adolescence (13 -16 years)**
  - Substance use
  - Family conflict
  - Emotional competence
  - School connections

- **Youth (17 - 25 years)**
  - Unsafe alcohol environments
  - Maternal alcohol use
  - Positive youth development

- **Antenatal**
  - Maternal alcohol use
  - Maternal nutritional behaviour
  - Mother's mental and physical health
  - Access to early intervention services

- **Early Years (0 - 3 years)**
  - Child maltreatment
  - Income inequalities and place-based disadvantage
  - Breastfeeding
  - Secure maternal-child attachment

- **Preschool/Early Primary (4 - 8 years)**
  - Child maltreatment
  - Income inequalities and place-based disadvantage
  - Family conflict
  - School and community prosocial bonding

- **Middle Years (8 - 12 years)**
  - Substance use
  - Family conflict
  - Emotional competence
  - School connections
ANTENATAL PERIOD

Because healthy development in the earliest years is dependent on the future mother’s health and social adjustment before she becomes pregnant, taking action to support healthy child, adolescent and adult development sets the critical foundations for health and social development in the early years (Center on the Developing Child at Harvard University, 2010). The present report is organised to explain how knowledge of healthy adolescent and youth development can support healthy development across the life course.

Preventable outcomes: There is evidence that risk processes in this period can biologically embed developmental problems that contribute to causing substance abuse, obesity, mental illness and chronic illness. These problems then go on in later developmental periods to influence school failure, antisocial behaviour, and social exclusion.

Risk factors: Due to physical development risk processes the risk of future substance abuse can be increased through foetal exposure to maternal substance use (Loxley et al, 2004). The child’s propensity for future obesity is influenced prior to birth both by maternal nutritional behaviour and by epigenetic changes triggered by the nutrition of previous generations (Center on the Developing Child, 2010). Due to genetic and toxic stress risk processes, mother’s mental and physical health during pregnancy influences the child’s mental health and risk of chronic illness (Anda et al, 2006).

Protective factors: Access from the antenatal period to early intervention services for genetic, medical and psychiatric conditions can moderate the influence of some risk factors.

Effective intervention strategies may include early home visiting (Kemp et al, 2011) and intervention within maternal health services. The intervention strategies listed in later sections describe some approaches delivered to assist mother’s in early adulthood and adolescence.

YOUTH (~17-25)

Development in early adulthood (commonly called emerging adulthood) is characterised by considerable diversity in lifestyle transitions. Young people are variously involved in activities such as completing secondary school, engaging tertiary education, starting employment, leaving the family home, travelling and having children.

Preventable outcomes: There is evidence that substance abuse, social alienation and developmental injury (to youth and the next generation of developing children) can be prevented by addressing risk and protective factors in the young adult age period (Scholes-Balog et al, 2013; Toumbourou et al, 2014). As will be discussed in later sections, substance abuse and mental health outcomes in this age period can progress to more severe levels influenced by behavioural and physical development processes.

Risk factors: Risk processes that emerge in the young adult years include unsafe community risks processes such as exposure to poorly managed workplaces contributing to developmental injury and unsafe alcohol and entertainment environments contributing to
developmental injury and substance abuse (Wallin et al, 2004). Behavioural risk process theory posits that young adult outcomes for substance abuse, antisocial behaviour and mental illness are partly determined by progression in the development of these behaviours from the earlier adolescent and childhood periods. For some youth behaviours and lifestyles occur in the context of reproduction and child rearing. Where parents’ lives are unstable, chaotic or antisocial, children may experience conditions that promote toxic stress risk processes or exposure to chemicals and foods that trigger physical risk processes.

With high rates of maternal alcohol use Australia needs to prepare for an epidemic of foetal alcohol-related problems that is currently unfolding as described below. Australian young adults including young women have some of the highest rates of alcohol-related disorders and levels of substance use of any nation in the world. A study of young adults (average age 21) across Victoria in 2010 found 50% of young men and 34% of women had alcohol disorders and related problems. Rates of alcohol use, tobacco, and heavy illicit drug use were higher than for matched aged youth in the USA, with this trend continuing in age groups beyond the US drinking age of 21 (Toumbourou, Evans-Whipp et al, 2014). The high rate of youth alcohol use and related problems is related to increasing alcohol availability and early age alcohol in recent decades in Australia. Alcohol outlet densities increased in recent decades and explained increasing rates of alcohol-related harm and violence (Livingston et al., 2007) and contributed to early age use (Rowland et al, 2014). During the 1990s the rates of early secondary student alcohol use increased in Australia (White & Hayman. 2004). Youth alcohol use is an important contributor to child abuse and family conflict. According to the National Drug Strategy Household Survey report in 2010, there were statistically significant increases between 2007 and 2010 in the proportions of victims of alcohol-related physical abuse, from 4.5% to 8.1%. The proportions of victims of being ‘put in fear’ increased from 13.1% in 2007 to 14.3% in 2010. Further, the report reveals that amongst alcohol users in the past 12 months, 5.7% and 1.1% of alcohol users verbally and physically abused someone respectively in 2010 (Australian Institute of Health and Welfare, 2011).

Protective factors can occur for youth through social development processes whereby interaction with prosocial community members may moderate the effects of other developmental risk factors. Behaviour such as volunteering within effective mentoring and tutoring programs enables youth to contribute a protective resource to their community by moderating the potential for negative outcomes for children and adolescents who have a high number of risk factors. The positive youth development literature conceptualises young people as a potential asset for building community social capital where their developmental trajectories have encouraged a sense of trust, and a commitment to become civically engaged to care for community members (Guerra & Bradshaw, 2008; M Hawkins et al, 2012).

Effective intervention strategies in the youth age period include increasing the legal age for purchasing alcohol to 21, which would immediately reduce youth alcohol problems by more than 10% and be a major step to protecting Australia’s children from a major current threat (Toumbourou et al, in press). Increasing the price and regulation of alcohol can also reduce population rates of harm (e.g., Homel & Graham, 2008). Other strategies that can
reduce harms in youth include brief interventions in primary health, education or employment settings aimed at reducing behaviour-lifestyle risk processes (Loxley et al, 2004). Community mobilisation can be effective in this period to reduce unsafe community risk factors by increasing the enforcement of health and safety regulations in areas such as road safety, occupational health, and responsible service of alcohol (Loxley et al, 2004).

**ADOLESCENCE (~13-16)**

Adolescent development in Australia occurs in the context of compulsory secondary school attendance. During this age period, peer and community influences continue to increase.

**Preventable outcomes:** There is evidence that some aspects of substance abuse, obesity, developmental injury, mental illness, school failure, antisocial behaviour, and social alienation can be prevented by addressing risk and protective factors in this period (Toumbourou, Olsson et al, 2014).

**Risk factors:** Many of the risk processes listed above can emerge in the adolescent years. Behavioural risk process theory posits that adolescent outcomes will be partly determined by progression in the development of the behaviours from the earlier childhood phase. For some adolescents, behaviours occur in the context of reproduction and child rearing with risks similar to those described above for young adults (Vassallo et al, 2002).

Toxic stress risk processes that emerge from the early years continue to operate during this period. Children and adolescents are increasingly exposed to toxic stress risk processes in Australia given that child neglect and abuse notifications and substantiations have been steadily rising in most Australian jurisdictions in recent decades (Australian Institute of Health and Welfare, 2011). Family conflict is a highly prevalent risk factor, with 33% of Australian children exposed to harmful levels (Habib et al, 2013). Family conflict together with related parenting risk factors increase child and adolescent--onset antisocial behaviour (Hemphill et al., 2009) and depressive mental illness (Habib et al, 2013) which are associated with a range of subsequent adverse outcomes.

**Protective factors:** Encouraging emotional competence and social development protective processes appears particularly relevant in this period and are also relevant in earlier phases of childhood (Toumbourou, Williams et al, 2011; Vassallo et al, 2002). School connections are particularly important in this period (Patton et al, 2006).

**Effective intervention strategies** targeting the secondary school age period include school education curricula to increase emotional competence protective processes. Parent and school interventions and community mobilisation can encourage social development protective processes and reduce rates of teen pregnancy (Patton et al, 2006). More intensive strategies including family intervention, mentoring, and preventative case management may be promising strategies for encouraging social development to reduce the continuity of behavioural risk processes for adolescents who have a high number of risk factors (Toumbourou, Olsson et al, 2014).
MIDDLE YEARS (~8-12)

The middle years span physical development through puberty and the individual and social transitions that occur during the entry into secondary school. During this period children continue to be dependent on their families, but with sexual maturity increasingly seek peer approval.

Preventable outcomes: There is evidence that some aspects of substance abuse, obesity, developmental injury, mental illness, chronic illness, school failure, antisocial behaviour, and social alienation can be prevented by addressing risk and protective factors in the middle years (Toumbourou, Olsson et al, 2014).

Risk factors: All risk processes listed above operate during this period. Through this age period behavioural development processes lead earlier behaviours to be risk factors for later outcomes and the peer group become increasingly important sources of developmental risk (Vassallo et al, 2002). In the middle years and in younger age groups, risk processes tend to be more clustered within place-based disadvantage with school risk factors more common in these settings in the middle years. School risk factors have increased for students in disadvantaged communities in recent decades with the lowest rates of school completions in non-metropolitan areas and lower rates of school completions in schools in outer ring compared to middle ring suburbs (Access Economics, 2008). Many teacher training programs do not include child behaviour management strategies, hence Australian schools now commonly use suspension to address student discipline. A national study found 6% of children had been suspended in the previous year, with higher rates in disadvantaged communities (Hemphill et al., 2010). School suspension can trigger social development risk processes and has been found in longitudinal research to be a unique and cross-nationally stable predictor of adolescent-onset antisocial and violent behaviour (Hemphill et al., 2009).

Protective factors: Encouraging emotional competence and social development protective processes can moderate risk trajectories in the middle years (Toumbourou, Williams et al, 2011).

Effective intervention strategies targeting the middle years include parent education and school organisation programs to encourage social development protective processes and school curriculum interventions to promote emotional competence protective factors. Targeted strategies such as mentoring and cross-age tutoring may reduce the continuity of behavioural lifestyle risk processes. Community mobilisation strategies in this period can effectively reduce unsafe community risk factors (Toumbourou, Williams et al, 2011).

PRESCHOOL/EARLY PRIMARY (~4-8)

This period includes the transition into primary school. Through this period the child is increasingly influenced by peers and adults within the community.

Preventable outcomes: There is evidence that some aspects of substance abuse, obesity, developmental injury, mental illness, chronic illness, school failure, antisocial behaviour, and
social alienation can be prevented by addressing risk and protective factors in the pre-school and early primary years (Center on the Developing Child, 2010; Hawkins et al, 2005).

**Risk factors:** Snowball risk trajectories tend to be more common in disadvantaged communities (Williams et al., 2009), due to clustering from the early years of toxic stress, physical development, social development and unsafe community risk processes (Moffitt & Caspi, 2001). Income inequalities have increased in Australia in recent decades (OECD, 2012) and are reflected in location differences whereby some suburbs and neighbourhoods have high numbers of disadvantaged families living in close proximity (Williams et al., 2009). Williams et al., (2009) demonstrated in an ARACY analysis of a large Australian study that rates of child and adolescent antisocial behaviour differed markedly between communities and were significantly higher in disadvantaged communities in Australia. In longitudinal research, community disorganisation and peer antisocial involvement (indicators of community disadvantage) have each been shown to be cross-nationally stable predictors of future adolescent violent behaviour (Hemphill et al., 2009).

**Protective factors:** Social development protective processes can be effective in the preschool/early primary school period in increasing school and community prosocial bonding and thereby reducing the developmental effects of physical and mental health disability biologically embedded from earlier developmental periods (Hawkins et al, 2005; 2009; Homel et al, 2007; Moodie & Fisher, 2009).

**Effective intervention strategies** targeting the middle years include parent education and school organisation programs to encourage social development protective processes and school curriculum interventions to promote emotional competence protective factors. Targeted strategies such as mentoring and cross-age tutoring may reduce the continuity of behavioural lifestyle risk processes and seek to reduce the progression of snowball risk trajectories. Community mobilisation strategies in this period can effectively reduce unsafe community risk factors. Much of the research has been completed in North America and many of the effective programs have not yet been implemented in Australia.

**EARLY YEARS (~0-3)**

This period includes the critical years from birth when the child is dependent on external support from the mother.

**Preventable outcomes:** There is evidence that contributions to preventing all seven outcomes can be made by addressing risk and protective factors in this period.

**Risk factors:** Toxic stress is a significant risk process resulting from distressing events such as child maltreatment. Community disadvantage tends to increase stress triggers such as domestic violence and child injury, with these problems more common in societies with larger income differences (Stiglitz, 2012). Income inequalities and place-based disadvantage have increased in Australia in recent decades (OECD, 2012).
**Protective factors** include access to healthy behaviours such as breastfeeding, healthy food, and physical activity. The critical beginnings of social development protective factors are established in the early years through secure maternal-child attachment.

**Effective intervention strategies** include parent intervention programs to encourage healthy attachment through social development protective processes. Health service organisation strategies seek to ensure public health and provide targeted medical interventions that may address biological and genetic risk factors. Targeted strategies include family home visitation with disadvantaged families to reduce toxic stress and physical risk processes. Community mobilisation strategies in this period may effectively reduce unsafe community risk factors. Although much of the research has been completed in North America and many of the effective programs have not yet been implemented in Australia.
REFERENCES


