

# Discussion Paper 1

## SCHOOL READINESS



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## Abstract

Until recently interest in 'school readiness' has been at the level of the individual. The question has mainly focussed on whether a particular child is ready for school and how the child's parents and the school might make the transition proceed as smoothly as possible. More recently, particularly in Canada, the United States and England, children's readiness for school has been examined within the broader context. Preparation has related not only to some specific pre-literacy and pre-numeracy skills, it has been expanded to include physical health, social and emotional adjustment, the child's approach to learning and their level of language, cognition and general knowledge. A more radical change in broadening the definition has been to recognise that the task of preparing children for school is a community responsibility, not only a family responsibility. 'Readiness for school' is starting to be used as a benchmark to measure the degree to which early childhood policies, programs and parental support have been effective at a community, as well as a societal, level (Janus & Offord, 2000). Whether or not a broad definition of 'school readiness' is a valid measure of early childhood programs and policies may still be open to debate, nevertheless such a move reflects the increased recognition of the importance of early childhood in setting 'fragile or sturdy foundations' for life.

## Overview

This paper begins by examining the issue of transition to school at an individual level. This involves looking at research that aims to isolate indicators of a child's school readiness, from the parents', teachers' and children's point of view. Next, it examines how to assist a 'school ready' child, from the point of view of the home and the school, so that the transition to school proceeds as smoothly as possible. If a child is deemed 'not ready for school', it looks at what may be the most effective ways to ensure school readiness at a later intake. The second section of this paper examines the research on transition to school at a community level. It looks at possible explanations for why some children and communities are disproportionately represented amongst those who are not ready for school. Recently, research has been undertaken on a larger scale to investigate how community based solutions may redress some of the existing imbalance (Janus, Offord & Walsh, 2001).

## Theoretical standpoints

Meisels (1999) defines four theoretical approaches to looking at children's readiness for school.

From a *nativist/maturationist* point of view, readiness is seen as a 'within the child' phenomenon, with little or no impact from the environment. The child develops through predictable stages. All children follow the same stages, with differences in rate being defined by his or her particular genetic make-up. External influences may have a transitory positive or negative effect but ultimately they make little difference. Assessments following this approach are often checklist style. When used to classify school readiness they tend to be conservative, so that children are likely to be misclassified as 'not ready' when they are ready (Garrett, 2001).

Historically and currently, the main criterion for assessing school readiness has been age

The **empiricist/environmentalist** viewpoint argues that there are a set of skills which have to be acquired before a child starts school. The focus is on external evidence learning, such as knowing colours, shapes, how to write one's name, letters of the alphabet and counting to ten. Children can be trained in these skills and testing the curriculum of specific tasks will reflect whether or not a child has mastered these skills, which in turn reflects their school readiness.

The **social constructivist** viewpoint argues that the community and the environment in which the child lives needs to be considered in order to obtain a fair assessment of the child's readiness to learn. It rejects the notion that readiness is something within the child, or something absolute and external to the child that can be learned. It argues that readiness is a set of ideas or meanings constructed by the people in the communities, families and schools. It shifts the focus of assessment away from the child and towards the community. However, under this definition, readiness may differ from one community to the next, so it "provides little or no guidance on how to resolve differences that are found among communities, schools or even classrooms" (Meisels, 1999 p.48).

The **interactionalist** view incorporates information about the child as well as the community in which the child is reared. It is a bidirectional concept. It focuses on the "children's current skills, knowledge and abilities and on the conditions in which the children are reared and taught" (Meisels 1996 p 410). It integrates "an emphasis on child development with a recognition that the perception of the individuals in the child's environment shape the content of what is taught, learned and valued" (Meisels, 1999 p. 49). In doing so it looks at the contributions of the child and the school to an understanding of readiness.

## School readiness of individual children

### Shift in criteria for starting school

The results of research has lead to a wider acceptance of the notion that children might be learning at an earlier age and that the people caring for them at this age are, in fact, educating them rather than 'just minding' them

Historically and currently, the main criterion for assessing school readiness has been age (Crnic & Lamberty, 1994). Prior to a specified age, children are generally considered to be 'just playing'. In line with a maturational viewpoint, all children in Australia, regardless of experience, and to a large extent genetic make-up, are deemed ready to start school at the age of five years (or even 4 years 7 months in some states). This is the age when children are regarded as being 'ready to learn'.

However, the range of school starting ages, even amongst Western countries demonstrates the complexity of these issues. In Britain and the Netherlands, like Australia, the school starting age is five years, in Germany it is six years, and in Sweden, Norway and Finland children often start school at seven years (Routley & de Lemos, 1993). The disparities between countries are indicative of differences in cultural beliefs about childhood and differences in the definition of what constitutes 'readiness to learn'. The definition has been most widely considered and researched in the United States after the educational goals of the National Educational Goals Panel were announced in 1990. The first goal was that "by the year 2000 every child in America should start school ready to learn" (Boyer, 1991 p.5).

The results of this research has lead to a wider acceptance of the notion that children might be learning at an earlier age and that the people caring for them at this age are, in fact, educating them rather than 'just minding' them. This understanding has lead to paradoxical responses. On the one hand parents are calling for more structured learning (Garrett, 2001). For instance, they ask that long day care centres have pre-school programs with an emphasis on pre-reading and pre-numeracy skills to ensure that their children are 'ready for school' and are not falling behind in a knowledge acquisition race, which is starting ever younger. On the other hand, researchers and early childhood educators are recognising the importance of less structured aspects of early childhood learning on children's readiness for school.

These less structured aspects of early childhood learning include social competence, physical health and emotional adjustment, as well as language and cognitive skills and general knowledge (Janus & Offord, 2000). As Dockett, Perry and Tracey (2000) point out, some of these domains suggest a child is ready for school because they have already mastered specific skills, while other domains suggest that the child is developmentally ready to learn, that is, they have the maturity to cope with the learning imparted at school.

### **Social competence**

McClellan & Katz (2001) argue that there is now persuasive evidence that children need some minimal level of social competence before they start school (Ladd, 1999, Parker & Asher, 1987) to ensure their later social and emotional development is not compromised. According to Hartup (1992) the “single best childhood predictor of adult adaptation is not school grades and classroom behaviour, but rather, the adequacy with which the child gets along with other children. Children who are generally disliked, who are aggressive and disruptive, who are unable to sustain close relationships with other children and who cannot establish a place for themselves in the peer culture are seriously at risk” (Hartup, 1992, p1).

McClellan & Katz (2001) compiled a ‘social attributes checklist’ to use as a guideline to a child’s social competence. They suggest social competence can be categorised into individual attributes, social skills and peer relationship attributes.

- *Individual attributes*

Examples include: children are usually in a positive mood, not excessively dependent on adults, they come to lessons willingly, cope adequately with rebufs, have the capacity to empathise, have one or two positive relationships with peers already, display a capacity for humour and do not seem to be lonely.

- *Social skills*

Examples include: children usually approach others positively, they are able to give clear reasons for their actions, they assert themselves appropriately, they are not easily intimidated by bullies, they enter a group successfully, they express frustration and anger without escalating disagreements or harming others, they can enter discussions, take turns, show interest in others, negotiate compromises appropriately, do not draw inappropriate attention to self and accept and enjoy peers and adults from other ethnic groups.

- *Peer relationship attributes*

Examples include: they are usually accepted by others, sometimes invited by others to play and work and they are named by other children as a friend.

Of course, checklists have inherent dangers, some of which McClellan and Katz (2001) themselves warn against. For instance, all children have bad days and a checklist completed on a bad day, or during a difficult time for a child, may be misleading. A further danger is that labels may be generated from a few observations and these labels tend to stick (Childs & McKay, 2001).

### **Motor coordination and physical health**

Several authors (Dean, Ashton & Elliott, 1994; Dockett et al. 2000) point out that being well coordinated and physically healthy also helps a child to be ‘ready for school’. Lewitt & Baker (1995) report that more than 75% of teachers indicate that being physically healthy, well rested and well nourished are an essential aspect of school readiness. Physical wellbeing and motor development were also included as key factors in the Carnegie Task Force definition (1994) and by the National Association for the Education of Young Children (1997) and the National Education Goals Panel (1998), all in the US (cited in Dockett et al, 2000).

## Emotional adjustment

When Dockett et al's (2000) asked a sample of parents open-ended questions about the domains they thought were important for school readiness, parents mentioned 'adjustment' (36%) more than any other aspect. Included in this was the social competence mentioned by Katz and McLellan (2001), that is, being able to socialise and mingle with their peer group. In addition, they referred to 'being able to cope without their mother'. In the same study, 44% of teachers also mentioned 'adjustment'. This included social skills with others and separating from parents but also another set of 'adjustments', such as 'sit and listen', 'do as adults ask', 'follow basic instructions' and 'sit still and concentrate'. Similarly, the Carnegie Task Force Report mentioned the negative effect of 'restlessness'. Teachers have negative attitudes towards children who are easily distracted or demanding on entering school. These labels can linger for years after the child's behaviour has settled (Childs & McKay, 2001).

## Cognitive skills

It seems clear that children who are "intellectually inquisitive and able to use language to communicate" (Carnegie Task Force, 1994) are going to adapt more quickly to a learning environment which is based on these attributes. Dockett et al (2000) refer to this eagerness to learn and keenness to participate as 'disposition'. In their sample, 23% of parents and 26% of teachers regarded this as the next most important factor after emotional adjustment.

## Language

Language is considered important by most investigators (Carnegie Task Force, 1994; National Association for the Education of Young Children, 1997; National Educational Goals Panel, 1998). More specifically, they highlight the ability to communicate effectively with both teachers (follow instructions - Dockett et al, 2000) and peers (Hains, Fowler, Schwartz, Kottwitz & Rosenketter, 1989; Janus & Offord, 2001), rather than the actual developmental level of language. As Katz (1991) points out, even if children have the same 'mother tongue', they need to speak the same 'language', such as using the same words to refer to particular concepts and ideas.

In the sample interviewed by Dockett et al (2000), neither parents nor teachers mentioned language, however teachers did mention the ability to understand and follow instructions.

## General knowledge and skills

In relation to knowledge and skills, as many parents (14%) mentioned skills as being important (independent action, for example, toileting, dressing, tying shoelaces, unwrapping lunch) as mentioned knowledge (ideas, facts or concepts, for example, knowing the alphabet and numbering). However, more teachers (17%) saw skills as being more important than knowledge (6%). Despite the lack of emphasis on knowledge in predicting school readiness, children who have difficulties in this area are the most likely groups to be held back (Davies & North, 1990). However, they only examined 'academic skills' and it is difficult to know which other factors may have contributed to the decision to hold a child back.

## Rules

The children in Dockett et al's (2000) study overwhelmingly (76%) focused on an awareness of rules as being important for school readiness. These included implicit and explicit expectations, such as sitting up straight, putting your rubbish in the bin, hanging your bag on the hook, not running on the asphalt, wearing a hat and recognising that bells signal class times. Some children mentioned skills and knowledge, but comparatively few. This reflects a remarkable discrepancy between the views of children and adults about what constitutes school readiness. It might be that there is some overlap between categories, for instance the children's 'sitting up straight' might be similar to teachers' ideas about 'sitting still and listening'. In addition, 'following adult instructions', which teachers mentioned (and implies remembering to do the same next time) might accord with 'learning the rules', that children find such a large part of school.

The actual transition to school represents a major change in a child's life

Children are more likely to cope successfully if they have had positive experiences away from their home and familiar adults

When participants are questioned in a group (focus group methodology), their answers are likely to be influenced by the answers of others around them, perhaps artificially inflating the importance of some categories.

## How can parents assist in the transition?

Many parents consult with their child's preschool or long day care teacher before deciding that their child is ready for school (de Lemos & Mellor, 1994). Even if the child appears to be ready for school, the actual transition to school still represents a major change in the child's life. Parents can make it easier for children by making the surrounds more familiar (Kagan & Neuman, 1998; Garrett, 2001).

This can be done by:

- visiting the school first, either informally or as part of an orientation program (Pianta & Kraft-Sayre, 1999). Howard, Dockett & Perry (1998) ran a successful program for Non-English Speaking Background (NESB) Arabic-Australian children who had not attended preschool in term four of the year before they were to start school. Children and parents attended separate sessions for two hours a week for eight weeks. Children, parents and teachers were reported as benefiting from the program.
- familiarising them with the school environment, such as showing them where the toilets are, where the bubblers are and how to drink from them and where they need to go to attend before and after school care (Garrett, 2001).
- showing them where to put their things, such as book trays or the hooks for their hats and bags (Garrett, 2001).
- visiting the school when children are there, so they are used to the numbers and size of the 'big' children, the playground and the noise.
- meeting their teacher, seeing the classroom and knowing how many children will be in their class (Garrett, 2001).
- trying on their uniform and checking that they have everything they need, such as library bag, school bag and hat.

Parents can become more familiar with the school if they become part of the school community. This can help build communication between parent and school and bridge the gap between home and school for the child (Pianta & Kraft-Sayre, 1999). Parents can do this by:

- going to any orientation meetings and talking to other parents
- introducing themselves to the teacher
- introducing themselves to other parents at the school
- attending meetings and social events
- organising car pools or walking to school with children or families who live nearby.

Parents can help make it easier for their child to fit in. The following are some suggestions that have been made.

- Children are more likely to cope successfully if they have had positive experiences away from their home and familiar adults (Katz, 1991; Pianta & Kraft-Sayre, 1999).
- It helps if children know one or two children first. If parents know of another child who is starting at the same school they can arrange for them to come over and play a few times before school starts.

Research suggests that boys are more likely to 'not be ready for school' than girls

- Explain some of the rules – perhaps an older child from the school could come over and discuss these with your child, such as putting your hand up to speak, asking before you go to the toilet, sitting quietly, doing as the teacher asks and not going outside the school fence.
- Have a picnic with a packed school lunch so they can see how to unwrap their lunch and use their drink bottle.
- Some 'rules' are implicit, for instance if there is no sports uniform girls will often wear shorts as well as pants under their uniforms to avoid being teased (parents can check with the teacher or the mother of an older child).

The following strategies, particularly in the first few weeks, can be very beneficial:

- Encourage your child to talk about school at home (Copland, 2000).
- If you have time, try to be involved in your children's education, for example, listening to reading and attending gym classes (Copland, 2000).
- Find out your child's timetable so that you can ask specific questions about their day, for example, "What did you do in computing or gym today?" (Garrett, 2001).
- Give your child plenty of love and opportunities to discuss their day (Garrett, 2001).

## Not 'ready for school'?

Sometimes children are considered 'not ready for school'. Renwick's (1984) research suggests that boys are more likely to 'not be ready for school' than girls. This study found that boys expressed themselves less clearly and had more difficulty writing their names, recognising numbers and letters and tying their shoelaces. Similarly, it tends to be boys who are still having difficulties in adjustment at the end of their second year of school (de Lemos & Mellor, 1994). As a consequence, delaying the entry of more immature boys has been recommended (Griffin & Harvey, 1995).

The question then arises as to the best way of ensuring that these children are ready at the next school intake, often a year away. The way to address this depends on which theoretical standpoint is adopted. Suggestions include:

- waiting a year until the child matures and becomes 'ready for school' (*maturational viewpoint*)
- teaching the child new skills, such as how to tie their laces, write their name or say the alphabet (*environmentalist viewpoint*)
- examining parental ideas and expectations of the community from multiple points of view and in multiple domains before deciding whether or not a child is ready (*social constructivist viewpoint*)
- arguing that the child and the school might need to make some adjustments so that a particular child is more ready for a specific school (*interactionist viewpoint*).

Whichever orientation one adopts, it is often suggested that the child be placed in an enriched environment for some time so that they mature, learn new skills, see what is expected of them and learn to adapt to these expectations. Dockett et al (2000) point out that if putting the child into an enriched environment stimulates them to learn, perhaps sending them to school will hasten their development more than alternative possibilities. This may indeed be the case. At the end of the year, children may be more mature because of the year's experience at school than they would be if they had stayed home an extra year. However, parents are often concerned about the level of pressure and stress experienced by the child in the process. They are concerned that negative labels might endure and lead to more lasting negative effects, and generally prefer the transition be more gentle and comfortable.

## How can parents help their child become 'school ready'?

### Social and emotional competence

- Ensure that children have some regular contact with another child or other children before they start school. Children have to be exposed to other children in order to learn how to make friends. Children who have been to day care or pre-school are more socially competent with peers than those who have not (Lamb, 2000).
- Introduce games that involve taking turns, such as playing on swings, hitting with a bat or jumping on a trampoline.
- Introduce games where children have to share or play cooperatively in order to attain a joint or an individual goal, such as making cakes and sharing coloured pencils.
- Introduce games of chance where children can learn to lose gracefully (such as board games like snakes and ladders) by observing others who lose without worrying about it, as well as experiencing it themselves.
- Encourage them to come up with a fair solution if conflict arises by sitting down and helping them sort through it.
- Make them aware of rules and the reasons for them, such as crossing the road only when the green man walks or that the person who divides the chocolate doesn't get to choose which piece s/he receives.
- Use positive labels to help build their self-esteem, such as 'helpful', 'kind', 'responsible', 'grown up' and avoid using negative ones. Refer to negative behaviour in terms of the event ("That wasn't a very sensible thing to do"), rather than labelling the child's personality ("You're stupid").

If children see you being kind and helpful to your family and friends, they will learn from your behaviour. If you are often angry and solve conflict by shouting or being aggressive, children are also likely to imitate this way of responding (Hartup & van Lieshout, 1995).

Notice if they do something pro-social or do something well. It is easy to take more notice when things are going wrong. Behaviour is more likely to change with praise than punishment.

### Language

- Talk to children, ask them to tell you about events, listen to them and sing familiar songs with them.
- As part of everyday life, give them experience in simple instructions that can also help you, such as getting food out of fridge. Make sure you thank them and let them feel appreciated.
- Children are better readers when they have been read to a lot by their parents (a better predictor than if they read to themselves when young (Offord, 2001).
- Use different sorts of markers to draw and write, such as pens, pencils, chalk and sticks in the sand.

### Physical and motor development

- Avoid junk food where possible.
- Make sure your child is well rested and has a balanced diet.
- Play ball games, skipping games, hopping games and organise obstacle courses.
- Limit TV viewing.
- Join kinder gym, little athletics, ballet or a soccer club.



## General knowledge and skills

- Read to children.
- Talk with and listen to children.
- Visit museums, galleries, the beach, the park, go for walks or see friends.

There are specific skills that can help children to be 'school ready':

- Teach them to dress themselves.
- Ensure that they can manage the toilet by themselves .
- Teach them to tie their shoe laces, or are able to use velcro, buckle or elastic sided shoes.
- Get them to pack away their games and toys after use.
- Give them little errands to help you, such as taking their clean clothes to their bedroom, so they learn to follow instructions.

## Dangers of indicators being turned into assessments - labelling

One of the dangers about checklists for school readiness is that children will be labelled. The chances of misclassification tend to err on the side of suggesting children are 'not ready' (Garrett, 2001). As has been pointed out, the readiness itself will depend on the community in which the child lives and be relative to the other children in that community.

## Is the school ready for your child?

As Rutter, Maughan, Mortimore, Ouston & Smith (1979) have clearly demonstrated, schools are different in the way they impact on child outcomes. By comparing the population of two schools which were geographically close and whose children came from similar socio-economic and family backgrounds, Rutter et al (1979) noted that one school had significantly higher academic achievement, less delinquency, better retention rates and less truancy. The reasons for this were related to the ethos of caring for the children that was generated by the Principal and transmitted via the teachers. It was also related to a discipline style where responsibility was taught by public praise rather than punishment. Indeed corporal punishment was notably deleterious to children. Generally, where teachers were more experienced, classes had children of similar ability, individual work was displayed and there was a system of pastoral care in place, child outcomes were more positive. While this group was made up of ten year old boys, similar discipline styles and values have subsequently been found to provide positive outcomes in younger populations.

Children may do better where the values of home and school are more congruent (Toomey, 1989). From this research, parents might consider the following issues:

- Do the parents feel welcome at the school and are they comfortable talking to the teacher? Parents often find it easier to maintain open channels of communication if the teacher is agreeable to informal chats before and after school (Parr, McNaughton, Timperley & Robinson, 1993 cited in Garrett, 2001).
- How do teachers discipline children? Praise is more effective than shouting and punishment, that is, children respond better to being respected than being 'tamed' (Rutter et al, 1979).
- Do the parents agree with the school ethos of the Principal (Rutter et al 1979)?
- How is the pastoral care system organised (Rutter et al 1979)?

Despite the research and the complexity in defining individual readiness, age is still the most used single criterion for starting school

- Is there recent work of children displayed? Does it have an individual flavour or do all pieces of work look much the same (Rutter et al, 1979)?
- Does the school look reasonably well cared for (rubbish cleared up, toilets clean, no broken windows) (Rutter et al, 1979)?
- Is there plenty of time for informal work and play and not just a focus on isolated skills (Garrett, 2001)?
- Are there extra staff if there are some children who need special attention (Rutter, 1979)?
- Does the school have an emphasis on skills or talents that suit the child? Check if the school has a strong emphasis on sport or music. If possible, match the child's talents with those that are held in high regard by the school.

## Age and school readiness

Despite the research and the complexity in defining individual readiness, age is still the most used single criterion for starting school (de Lemos & Mellor, 1994). It is easy to verify and, despite individual differences, has an obvious correlation with the developmental levels across all domains in a larger population. Nevertheless, the level of school readiness may still differ from one community to another. There are several reasons for this.

First, perhaps because high achievement and social confidence are becoming more prized in our society, some children are starting school later. This is not an homogenous trend but school entry age seems to be related to geographic location and socioeconomic status, both in Australia and the United States (Meisels, 1992; Routley & de Lemos, 1993). Only more financially secure families can afford to delay school entry. For many families it would otherwise mean another year of child care fees or another year with the loss of the only, or second, income. This delay applied more particularly to boys from financially secure families, where the mother was not likely to be in paid work anyway (Routley & de Lemos, 1993).

The reverse was true for lower income families where children were sent to school earlier for financial reasons. This means that, at a community level, poorer areas will generally have children starting school younger and probably less 'ready' than children in wealthier suburbs. Rankin and Vialle (1996) also found that more NESB families sent their children to school early. School readiness in this sense is likely to be relative to the rest of the children starting school in that class or community.

## School readiness of a community

The concept of school readiness has now been extended beyond the assessment of the developmental level of individual children. In a radical shift of emphasis from the individual to the society, responsibility for 'school readiness' is not seen solely as a function of the maturity of the child or a test of parenting skills within the family. It is used as an index of how well a community has served a cohort of children through their early childhood years; a benchmark to measure the degree to which early childhood policies, programs and parental support have been effective at a community as well as a societal level (Janus & Offord, 2000).

One of the defining moments in this progression from an individualised to a community concept of school readiness was the setting of six educational goals by the National Educational Goals Panel in 1989 in the United States. The first goal was that "by the year 2000 every child in America should start school ready to learn" (Boyer, 1991 p. 5.). As a result, what constituted 'readiness to learn' was widely debated throughout the 1990s and the components of the resulting definition have been discussed earlier in this paper.

Where children appear to be on a negative trajectory, the earlier the intervention, the greater the chance of altering the course of the trajectory towards more positive outcomes

The period of early childhood represents a critical time for brain development in terms of its rapidity and complexity

To be properly understood, the interest in 'school readiness' at a community level needs to be placed in context. It has been precipitated by the findings of two seemingly disparate research arenas. First, there is mounting evidence of broader negative changes in society which appear to have their roots in early childhood. Second, there has been a simultaneous dramatic expansion of knowledge about brain development in the early years of life.

### **Broader changes in society have their roots in early childhood**

Societal concerns are reflected in the rising number of disillusioned young people, as evidenced by the increasing rates of youth depression and suicide, school drop out, youth unemployment, youth homelessness, welfare dependence and juvenile crime, in particular violent crime. Examination of individual life pathways indicated that many of these children seemed to follow defined trajectories which could be traced back at least to school starting age (Moffit, 1993). The time of school entry represents, in effect, a time to take stock.

For many children it is the first time that they are in the public eye and are forced to interact with others outside the confines of the family. The predictive value of this 'stocktake' in terms of the broader societal changes has been supported by recent large sample prospective studies. For instance, a large Australian study showed that one in six children classified as aggressive when starting school, were considered delinquent by 14 years. Only one in 33 children classified as non-aggressive at five years were delinquent by 14 years (Bor, Najman, O'Callaghan, William & Anstey, 2001). The belief that this trajectory may begin even earlier is reinforced by several prospective studies with younger children showing that about two thirds of children who are aggressive at two years are aggressive at five years (Richman, Stevenson & Graham, 1982; Shaw, Gilliom & Giovannelli, 2000; Watson, 2000). It can be reliably concluded that a substantial portion of aggressive, defiant, overactive toddlers and preschoolers continue to have problems at school entry age (Campbell, Pierce, Moore, Marakowitz & Newby, 1996; Shaw, Winslow & Flanagan, 1999).

Where children appear to be on a negative trajectory, the earlier the intervention, the greater the chance of altering the course of the trajectory towards more positive outcomes. However, given the existing orientation towards a tertiary, rather than preventative, intervention, in most instances problems have become severe and entrenched before attempts are made to redress the situation. By this time, often law courts are involved, one-to-one counselling and therapy is required, welfare benefits and remand costs have been incurred and furthermore it is often too late (Shonkoff & Phillips, 2000). This means that not only is the tertiary intervention less effective, it is substantially more expensive. It has been shown that for every dollar spent in primary intervention, seven dollars of tertiary treatment costs are saved (Barnett, 2000). Researchers and clinicians have begun to advocate early intervention in the form of universal prevention as a more fruitful avenue to follow. Advances in knowledge about brain development have provided some scientific underpinning for possible avenues of intervention.

### **Recent advances in neuro-science**

Concurrent with societal changes over the last decade, enormous advances made in the area of neuro-science have highlighted the importance of brain development in the early years.

Shonkoff & Phillips (2000) summarise some of the major findings. They point out that from prenatal to school entry age brain cells develop and migrate to the part of brain where they belong. Nerve cell complexity increases through new axons sprouting or increasing their dendritic surface and new synaptic connections being made between cells. New types of cells are also formed post-natally. Over this period the spinal cord and almost all the neurons of the mature brain are formed. The nerve cells differentiate and migrate to establish the neuron's functional roles and new synaptic connections more rapidly than at any other stage of life. There is especial concern at the burst of synaptogenesis early in life, as evidence suggests that synapses which are used are retained, while those which are not used are discarded.

The experiences a child has will have long-term consequences for the child's social, emotional and cognitive development

By assessing school readiness, a community will be able to evaluate itself to ensure that it's doing the best it can for its young children

While this reflects the normal process in all brain development, it also raises a 'use it or lose it' concern. The nature of the relationship between these processes and cognitive, emotional and behavioural outcomes in children is still subject to debate (Bruer, 1999).

Shonkoff and Phillips (2000) argue that neuro-chemical receptors may be even more central to how the brain alters its physical structure. For instance, in the development of neural systems there are sometimes increases in neuro-chemical receptors that, in turn, increase the strength of synaptic connections. It is suggested that increased synaptic strength is associated with 'long term potentiation', which aids learning.

In short, the period of early childhood represents a critical time for brain development in terms of its rapidity and complexity.

## Links between early experience and brain development

The belief that the rate and complexity of a child's brain development is a function of the child's genetic predisposition and the impact of early experiences is gaining widespread recognition. This in turn affects their capacity to learn effectively.

Shonkoff & Phillips (2000) review some of the research relating early experiences to temperament and emotions. They cite evidence that elements of early caregiving may assist in the modulation of the neuro-chemicals involved in pain and distress. For instance, breast milk stimulates receptors which produce a mild analgesic effect. Stimulation of the mouth seems to affect brain pathways which control distress. Rats reared with others, or with more enriched environments, have larger and more complex brain structures than those reared alone or in more impoverished environments.

There is now evidence that early biological insults, such as infectious diseases, malnutrition and neurotoxins or prematurity and experiences such as neglect, stress and trauma within the caregiving environment, compromise brain development. Animal studies indicate that the way in which the brain learns to cope with fear and anxiety-inducing situations is largely affected by the capacity of the infant's caregivers. If stress is induced in the mother, it affects the infant's developing reactivity to stress, resulting in high levels of fearfulness. A nurturant environment, where the mother protects the infant from the stress, can protect the infant from these consequences (Shonkoff & Phillips, 2000).

Although much of the research has been carried out on animals, some has been demonstrated with human infants. It provides evidence that basic caregiving activities and early environmental experiences are involved in the regulation of neuro-chemical systems and the complexity of the developing brain. Enough evidence exists for Janus and Offord (2000) to conclude that the sort of experiences a child has, even before they are verbal themselves, will have long-term consequences for the child's social, emotional and cognitive development.

## A good start – the responsibility of a community

Children who warrant the greatest concern are those growing up where they may be exposed to biological insults, be without adequate nutrition or in abusive or neglectful care. Despite this, Shonkoff & Phillips (2000) advocate giving all children a 'good start' early in life and by doing so improve all children's life chances. Their argument is not directed at a small subgroup of 'at risk' families and their children but targets entire communities. They advocate increasing the social and human capital of entire communities with the aim of reversing the negative trends reflected in, for instance, rates of mental illness and suicide.

One way of assessing how well a community has served its youngest members is to check their progress against a wider societal norm. A logical time for this check is when children start school. In Canada there was a commitment to extend the informal 'school readiness' check of individual children by parents and teachers to a more formal process "so that we

can assess our progress in providing children with the best possible start” (Janus & Offord, 2000 pp71-72). By assessing the school readiness of all children, at best nationally and at least in some communities, it may be possible to monitor or ‘keep score’ of children’s progress and to direct resources where they are most needed. In this sense, readiness for school is far removed from a knowledge race. Rather, it is a time when the community evaluates itself and ensures that it is doing the best it can for its young children. It is less the children being checked and measured than the community and governmental policies and programs.

In order to assess the level of school readiness at a community level in Canada, the Early Development Index (EDI) was developed (Janus & Offord, 2001). This was based on the National Longitudinal Survey of Children and Youth which examined correlates of healthy development of children and adolescents. This survey produced a list of indicators of children’s readiness to learn, of which five domains were deemed most relevant. These were (a) physical health and well-being; (b) social knowledge and competence; (c) emotional maturity; (d) language and cognitive development and (e) communication skills and general knowledge. The aim of this instrument is to assess strengths and deficits in groups of children, assess the effectiveness of early childhood intervention and provide a predictor of how well this group might do in primary school. Individual scores are not made available. Specific children cannot be labelled or refused entry to school on the grounds that they are not ready. Rather, it is intended as an index of the effectiveness of early childhood services and policies within a community. The overall results are made available to the community and can be used to assist in deciding which services might be required to overcome any gaps that are apparent. The results for an area can then be fed back to the community and, in collaboration with the community, service providers can work on strategies which are likely to improve outcomes. ‘Bottom up’ rather than the prevailing ‘top down’ models allow the community to have input into, and take responsibility for, developing programs, rather than have them imposed upon them.

Where there were high levels of support, 90% of school starters had no serious problems

Use of the EDI in two communities in the same city in Canada has already produced results of great significance to the early childhood field. They are also in line with current brain development research. Where communities have relatively easy access to high quality early childhood and effective parenting programs, children are generally more ready to enter school at school entry age. Janus and Offord (2000) report on two communities which were located in the same city but had markedly different levels of support in terms of day care centres, family resource centres, family support services, parenting support, libraries, toy libraries and literacy programs. Where there were high levels of support, 90% of school starters had no serious problems and 6% had problems in only one of the EDI domains. In the community where there were low early childhood support services, 73% of children had no serious problems, however, as many as 23% had problems (poor scores in the worst 5%) in at least two domains. These school starters would be regarded as being in the clinical range in terms of distress and, therefore, in need of professional help. While other factors will also help account for differences between these two communities, interestingly this association was unrelated to socio-economic status. This sort of information helps target the problems that communities might have and gives them the leverage with which to lobby for the resources and services they need.

Assessing school readiness needs to be universally applied. Where programs are aimed at only the most vulnerable (such as lower socio-economic families, single parents, parents suffering depression) the numerically larger number of middle class children, whose life chances have also been compromised by a ‘bad start’ for less demographically obvious reasons, will miss out on the benefits offered. Many children from apparently advantaged backgrounds have multiple, changing and not necessarily high quality care (for instance, there is no quality control on the nannies increasingly employed by families where both parents work long hours).

It is now clear that high quality child care, parenting programs and early intervention can significantly improve children's life chances at an individual, as well as a community, level

An advantage with this approach is that all children are tested but no children or families feel targeted or stigmatised. The community is privy to the overall results and can be informed about programs that have been shown to be most effective in redressing specific difficulties. From the programs available they may select those that they think would be most in line with community goals and values. By assessing school readiness every year, the efficacy of the early childhood policies and programs is constantly monitored and evaluated for each new cohort of children, and results can be fed back and adjustments made accordingly.

It is now clear that high quality child care, parenting programs and early intervention can significantly improve children's life chances at an individual, as well as a community, level. Governments are quite justifiably less prepared than in the past to fund programs that are not utilised by those who need them and which cannot be shown to be effective in terms of outcome and cost. This has led to the promotion of research and policies which are conducive to improving school readiness on a large scale, most notably in the United States (NICHD longitudinal study, Family Support Movement) and Canada (National Longitudinal Study of Youth and Children) and the UK (eg AVON longitudinal study, *Sure Start*) and to a lesser extent in Australia (federally-funded longitudinal study, *Children in Australia*). Before it is possible to improve outcomes for children, there needs to be a baseline by which to measure any improvement, decline or stagnation. The EDI in measuring school readiness of a community provides an excellent starting point.

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