

Donald Stewart
Jing Sun

School of Public Health, Griffith University, Australia

Resilience and Depression in Children: Mental Health Promotion in Primary Schools in China

Keywords: resilience; depression.

Introduction

The implementation of the one-child policy in China has caused increased attention to be directed towards the quality of children's life and development. Learning has always been valued highly in Chinese culture, and in recent years families have invested increasing amounts of money in education as a result of economic improvements and the increase in family income. China has long-standing and traditional cultural beliefs about rearing children, such as

'passing ideas on to the next generation', 'extending one's life through one's child', 'having one's child rising up in the world' and 'doing credit to one's ancestors'. Guided by these philosophies, parents have been forced to focus their hopes and dreams on their one child, investing their time, energy, money and intellect in the development of this child. Young Chinese parents make elaborate plans for their child, often forgetting their child's personal interests. Parents also often use inconsistent parenting methods and do not encourage their children as they might (Sun & Lui, 1995).

Most Chinese studies of achievement, however, suggest that single children outperform others in academic achieve-

A B S T R A C T

This population-based study reports depression rates in primary schools in China and application of a holistic intervention program to promote resilience and prevent depression in primary schools using a prospective intervention research design. Kovaks' Children's Depression Inventory (CDI) was used to measure depressive symptoms in children and a student survey was developed to measure student resilience and associated protective factors. A health-promoting school intervention approach was used to promote resilience to prevent depressive symptoms. The

study indicates that 13.2% of primary school children were clinically depressed. Resilience had a statistically negative relationship with depression. The intervention significantly reduced subclinical depressive symptoms in intervention schools. The study provides school staff, health and education officials and researchers with increased understanding of the significance of mental health issues among young people, and valuable guidelines to help implement intervention programs for prevention of mental health problems in children.

ment (Chen, 1985; Falbo *et al*, 1989). This finding is consistent with the Western finding of academic advantage among single children (Falbo & Poston, 1993). On the other hand, studies in the social emotional area suggest that single children are egotistical and low in independent thinking, persistence, behaviour control and adjustment, co-operation, peer prestige and tolerance of frustration (Falbo & Poston, 1993). Evidence indicates that Chinese primary school children often have no time to play, spending about eight hours studying in school and four hours doing assignments at home (H. Sun, 2003). One possible outcome of competitive study among children is that they develop poorer social emotional competence because they have no time to interact with other children in play, non-academic extra-curricular activities and so forth. The cumulative effect is that these children's overall social emotional abilities do not develop in concert with the goals of their school programs and the requirements of a competitive environment. Numerous studies suggest that poor social emotional development may underlie mental health problems such as depression (Anderson, 1999; Brown & Harris, 1998; Lau *et al*, 1999).

The term 'depression' is often used to describe the temporary sadness, loneliness or emotional isolation that almost everyone feels from time to time. Major depressive disorder (MDD) as a mental illness, on the other hand, has been defined as a consistent experience of deep, unshakable sadness and diminished interest in all activities for a period of at least two weeks (DSM-IV: *Diagnostic and Statistical Manual of Mental Disorder* [4th edition, text revised]). People with MDD usually experience feelings of despair, hopelessness or worthlessness, have difficulty in thinking or concentrating, and sometimes have thoughts of committing suicide. Depression in young people has both immediate and long-term detrimental effects when regarded categorically as a disorder and also as a dimension along a continuum of symptoms.

The evidence on comparative levels of depression in childhood populations is unclear. Overall, approximately two to six per cent of the general child population meets diagnostic criteria for a depressive disorder at any one point in time in Western societies (Phillips *et al*, 1999). A number of studies have compared depression among Chinese children with that of children in Western countries, especially North Americans. The results have been mixed. Chen, Rubin and Li's (1995) study of depression in 468 2nd-grade children reported that levels of depression, as measured by the Children's Depression Index (CDI: Kovacs, 1981), were similar to those reported for children in the West. Dong, Yang and Ollendick's (2002) study of

825 school children in Tianjin found that the CDI scores they obtained in China were comparable to data reported by previous U.S. children studies. Other studies report that Chinese children are more depressed than American children (Weine *et al*, 1995). However, relatively little is known about the prevalence of depression in primary school aged children in China at the population level, and there is little understanding of how social, economic and cultural variables interact to produce the local constellation of risk factors, protective factors and treatment networks for depression in China.

Low levels of social support from peers, families and teachers have been found to be closely related to depression in Chinese children (Lau *et al*, 1999). This study found that low levels of social support, as reflected in children's loneliness, was predictive of overall depression and depressive affect, and that these patterns of relationships existed in every grade level and among both boys and girls in samples of children (grade 4–6) and adolescents (grades 7–9). The same study found that children and adolescents highly valued friendship with peers and, in particular, lack of peer-related social supports were more predictive of depression. The study indicated that positive social relationships are protective and a major aspect of youngsters' healthy development.

Depression may affect many areas of a child's life, such as disturbed family relationships (Hamilton *et al*, 1997), diminished academic performance (Kovacs & Goldston, 1991), poor peer relationships (Connolly *et al*, 1992), conduct problems and socialised delinquency (Norvell & Towle, 1986) and suicide (Phillips *et al*, 2002). Subclinical depression must also be taken seriously, as adolescents with subclinical depression have been found to be significantly more likely to develop clinical disorders during the next two years (Horwath, 1992). Adolescents with high self-report depression scale scores were three times as likely to develop MDD as those without elevated scores.

Guided by a resilience framework, it is proposed that an understanding of the significance of protective processes is of great value in determining approaches to enhancing resilience and thereby preventing negative outcomes. High self-esteem has been repeatedly identified as a protective factor that helps to minimize the negative effects of risks (Franck & Raedt, 2007; Masten & Coatsworth, 1995; Rutter, 1987). Consistent with an approach that promotes resilience, scholars suggest that self-esteem serves as a crucial factor by insulating young people from the stress that stems from negative life events and, specifically, protecting against depression. In one longitudinal study, children with a more negative self-concept became more depressed than their counterparts who had a more positive self-concept.

Cross-sectional studies have identified a significant negative relation between self-esteem and depressive symptoms for adolescence (Kraemer *et al*, 2001).

Good relations with parents and with people in general have been found to be vital sources of social support (Belle, 1990). Family connectedness, perceived as a sense of closeness and caring with family members, has been found in many studies to be one of the most important contributors to the positive mental health of adolescents (Doll & Lyon, 1998; Resnick *et al*, 1993). Adolescents from families with high levels of family connectedness report fewer mental health problems than those with lower levels of family connectedness (Resnick, 1997). They had later initiation into sexual activity, decreased pregnancy rates, lower levels of substance abuse and fewer suicide attempts.

Longitudinal studies of children and adolescents who have experienced severe adversity also indicate the importance of caregiver relationships for resilience and mental health outcomes. The protective elements of family connectedness appear to derive from the connection to at least one nurturing adult (Masten & Reed, 2002; Resnick *et al*, 1993). Regardless of other risk factors, strong connections with family appear to provide children with the resources that promote mental health (Turner & Butler, 2003). Thus it follows that family connectedness may mediate the negative influences of stress and academic pressure in childhood and adolescence.

Connection to school is another potential protective factor. This can be defined as the experience of caring about school and a feeling of connection to the school environment and school staff (Roeser *et al*, 2000). Previous research supports the view that students with higher levels of school connectedness report significantly lower levels of psychological problems, suicidal thoughts, suicide attempts, violent behaviour, substance use and sexual behaviours (Resnick, 1997). Strong connections to school exert a powerful influence in the lives of students. Relationships between students and teachers have been positively associated with students' motivation, achievement, feelings of belonging and affect in school (Roeser *et al*, 2000).

Based on the literature reviewed above, the purpose of this study was to explore the association between resilience, as a critical protective factor, and depression. Two primary hypotheses guided this study. First, it was posited that low resilience scores predispose individuals to mental health risks including depression. Second, it was posited that an intervention program to promote resilience factors such as self-esteem/efficacy, family connectedness, school connectedness and community connectedness will prevent or alleviate depression levels.

Methods

Research design

A cross-sectional design was employed to study cohorts of children in fourteen primary school communities in the cities of Nanjing and Hefei in China, as part of a two-year, multi-strategy health promotion project. The project was oriented to a whole-school (holistic) approach to promoting resilience in children of primary school age in school, family and community settings.

Sample and procedure

A total of 8399 students from grades 3 to 6 in 14 primary schools in Nanjing and Hefei participated in the study. Once consent had been obtained from the students, baseline data were collected from the student sample by administration of a student survey in the student's classrooms during normal school hours.

Measurements

Student resilience was measured using a modified version of the California Healthy Kids Questionnaire. The modified Student Resilience scale has a high level of reliability and validity (Sun & Stewart, 2007a). Children's self-reported experience of depressive symptoms was measured on an adapted version of the Children's Depression Inventory (CDI). The CDI is a 27-item self-report measure of the severity of depressive symptoms, and has demonstrated satisfactory levels of reliability and validity. For this study a CDI score of 19+ was identified for defining clinical depressive symptoms, scores within 12–18 were classified as subclinical depression, and scores under 12 were considered normal.

Intervention strategies

Strategies that promote a healthy school climate or social and emotional environment were identified as those which promote personal characteristics associated with resilience, those which foster positive relationships within school and family social networks, and those that promote supportive environments within the school. Using the global Health Promoting School framework (WHO, 1986), activities were introduced, facilitated and supported that helped do the following.

Build a supportive environment

School project teams were encouraged to create student-friendly learning environments in their school, helping to

reinforce positive teacher–student interactions and relationships. Projects focused on developing a school climate where students felt safe, that they belong, and that they have opportunities to experience success.

Embed the resilience concept in the curriculum

Social and emotional learning resources were accessed, developed and included in teaching programs in the general curriculum for all classes. This provided formal learning support to strengthen those factors that protect children from developing mental health problems such as anxiety, depression and behavioural problems. Issues addressed in the curriculum included teaching children about social and emotional competence, about self-esteem, having confidence about themselves, and about problem solving. The intervention program also encouraged students to be involved in extra-curricular activities, such as drama, music, sport and interest groups.

Build partnerships between school, family and community

These activities involved in-school prevention workers and services, and sought to promote strong school–community links through parents, carers and families.

Data analysis

All data were analysed using the SPSS package version 14.0. Logistic regression was conducted for each of the demographic variables. Chi-square was used to compare the difference between the pre- and post-intervention phase in depression rates in both intervention and control schools. Multiple Analysis of Variance (MANOVA) was used to analyse the relationship between resilience and depression, and the difference between the pre- and post-intervention phase in relation to levels of depression.

Results

Hypothesis 1

The student sample in the first phase of the project comprised 8399 students from grades 3, 4 and 5. Of these, there were 6213 valid responses to the CDI survey with a response rate of 75.6%, and 6346 valid responses to the Student Survey with a response rate of 74%, 52.6% from males and 47.4% from females. The mean age of this student sample was 9.36 years (S.D. = 1.22) for grade 3 students, 10.23 years (S.D. = .749) for grade 4 students, and 11.13 years (S.D. = .700) for grade 5 students. There were no differences between the mean ages of boys and girls.

The demographic variables entered simultaneously into a logistic regression analysis included the grades and gender of the students. These results are presented in **Table 1**, below. Boys showed more depressive symptoms than girls. No significant grade effects were observed on the depression levels of the students.

As gender has a significant effect on depression, this factor was entered into the MANOVA model and adjusted in the MANOVA model when children with clinical depression were compared with non-depressed counterparts in resilience.

The differences between depressed and non-depressed group in resilience is shown in **Table 2**, opposite.

The pre-intervention survey indicates that 24.0% of students had subclinical depressive symptoms, and 13.2% of students had clinical depressive symptoms.

We conducted multivariate analysis of variance (MANOVA) with individual factors entered as the dependent variable, group (normal, subclinical and clinical) and gender as factors, on the resilience scores. The same analytical procedure were repeated for protective factors. The MANOVA showed the main effect for group on individual

TABLE 1 Demographic Characteristics of Students

Variable	Depressed	Non-depressed	β	p	Odds ratio (CI)
Grade^a					
3	226 (34.9%)	1424 (33.5%)			
4	213 (32.9%)	1407 (33.1%)	-.058	.647	.943 (.735-1.211)
5	209 (32.3%)	1420 (33.4%)	-.106	.405	.899 (.700-1.155)
Gender^b					
Male	426 (65.1%)	2153 (50.1%)	.494	.000	1.639 (1.332-2.018)
Female	228 (34.9%)	2144 (49.9%)			

^a: reference group: grade 3
^b: reference group: female

TABLE 2 Differences Between Depressed Group, Subclinical Group and Clinical Depressed Group in Resilience in both Intervention and Control Groups in Pre-intervention Phase

Resilience	Depressed group (A) (5965)	Subclinical group (B) (2241)	Clinical depressed group (C) (1230)	F	Post hoc
Family connection	4.39 (.57)	3.93 (.67)	3.59 (.87)	417.14***	A>B*** B>C*** A>C***
Teacher connection	4.33 (.75)	3.81 (.91)	3.38 (1.08)	336.64***	A>B*** B>C*** A>C***
Community connection	4.37 (.79)	3.89 (.96)	3.59 (1.10)	215.33***	A>B*** B>C*** A>C***
Autonomy experience	3.40 (.88)	2.83 (.84)	2.55 (.85)	276.98***	A>B*** B>C*** A>C***
Pro-social peers	4.18 (.74)	3.67 (.86)	3.32 (1.02)	307.84***	A>B*** B>C*** A>C***
Pro-Social group	4.22 (1.11)	3.66 (1.30)	3.42 (1.43)	134.44***	A>B*** B>C*** A>C***
Peer support	4.05 (.74)	3.40 (.86)	2.86 (1.04)	554.65***	A>B*** B>C*** A>C***
Communication and cooperation	4.17 (.74)	3.60 (.86)	3.26 (1.05)	345.35***	A>B*** B>C*** A>C***
Self-esteem	4.25 (.68)	3.78 (.79)	3.46 (.95)	296.75***	A>B*** B>C*** A>C***
Empathy	3.99 (.78)	3.64 (.88)	3.37 (1.00)	143.54***	A>B*** B>C*** A>C***
Help seeking	3.93 (.80)	3.39 (.86)	3.04 (1.01)	303.29***	A>B*** B>C*** A>C***
Goals	4.08 (.83)	3.54 (.97)	3.19 (1.09)	267.31***	A>B*** B>C*** A>C***
School connectedness	4.38 (.52)	3.85 (.64)	3.33 (.81)	766.74***	A>B*** B>C*** A>C***

* $p < .05$, ** $p < .01$, *** $p < .001$.

characteristics with Wilks' Lambda $F(12, 7824) = 132.9$ $p < .001$ and the main effect for group on protective factors with Wilks' Lambda $F(14, 7930) = 101.3$, $p < .001$. Univariate results of the MANOVA showed that the group had effects on all the individual characteristics and protective factors (**Table 2**) when gender was adjusted in the analysis.

Post hoc testing showed that there are statistically significant differences between the non-depressed group, the sub-

clinical group and the clinically depressed group across all resilience factors. With an increase in depression levels, the resilience scores decrease, indicating a negative relationship between resilience scores and depression. Specifically, the clinically depressed groups had lower scores than both the non-depressed group and the subclinical depressed group, and the subclinical group had lower scores than the non-depressed group across all resilience factors.

Hypothesis 2

A comprehensive, or holistic, intervention using the health promoting school approach to promote resilience was implemented in the study. The differences between the pre- and post-intervention phases in depression rate and resilience scores in the intervention schools are presented in **Table 3** and **Table 4**, below and opposite. Chi-square was used to compare the difference in depression rate, and MANOVA was used to compare the difference in resilience factors.

Table 3 indicates that there is a marginally significant difference between the pre- and post-intervention phases in the three groups in the intervention schools. This is largely explained by the difference between the pre- and post-intervention phases in student proportions of non-depression group and subclinical depression group. At the post-intervention stage, there was an increased proportion (2.3%) of students who were in the normal group, and there were fewer than 2.8% students in the non-clinical group than in the pre-intervention phase. There was no difference in the clinical depression group in the proportion of students who were depressed between pre- and post-intervention phases. In the control group, there was a significant difference between the pre- and post-intervention phases in the proportion of students in the normal and subclinical group. That is, there was a reduction in the proportion of students in the normal student group where 8.1% of students moved to the subclinical group in the post-intervention phase.

Discussion

The CDI survey indicates that the prevalence of depression, defined as clinical symptoms in primary schools in Nanjing and Hefei in China, is 13.2%. This is much higher than the generally estimated two to six per cent depression prevalence among children in other countries (Phillips *et al*, 1999). The findings of the survey indicate that depression is a mental health problem among Chi-

nese children that warrants further investigation. Such a high percentage of children with depression in the context of China's large population and its current family size policy is a major concern.

The results showed significant gender differences, boys tending to be more depressed than girls. Recent studies have shown (Shochet *et al*, 2001) that the average level of depression in boys is greater than in girls. In general, most empirical data suggest that in prepubescent children, boys are equally or slightly more likely to report depression than girls. This gender difference reverses at some point during adolescence, girls becoming much more likely to report depression than boys.

The aim of this study was to investigate the implementation and efficacy of a comprehensive school-based program to reduce depression symptoms in primary school children. The first question was whether a low level of resilience is related to high levels of depression. The results indicate that a low level of resilience is significantly related to depression symptoms. With decreasing levels of resilience, there is an increasing level of depressive symptoms. This finding is consistent with previous studies which found that high levels of self-esteem, self-worth and social competence were related to lower levels of depression and anxiety. These results are also consistent with recent research which has shown that perception of the self and emotional adjustment are positively related (Umaña-Taylor & Updegraff, 2007) and that depression is related to self-esteem (Franck & Raedt, 2007).

Important findings of the present study extend the work of various intervention programs (Barrett, 2003; Cutuli *et al*, 2006; Shochet *et al*, 2001), since:

- constructs relating to resilience were extended to other aspects such as social support from peers, families, school and communities in addition to individual resilience characteristics such as self-esteem

TABLE 3 Comparison Between Pre- and Post-Intervention Phase Depression Rate in Intervention and Control Schools

Schools	Group	Pre-intervention	Post-intervention	Chi square	p
Intervention schools	Non-depressed	1512 (64.3%)	1709 (66.7%)	5.61	0.06
	Subclinical depression	574 (24.4%)	552 (21.6%)		
	Clinical depression	267 (11.3%)	300 (11.7%)		
Control schools	Non-depressed	1630 (63.5%)	1197 (55.7%)	7.31	0.03
	Subclinical depression	546 (21.3%)	632 (29.4%)		
	Clinical depression	389 (15.2%)	320 (14.9%)		

TABLE 4 Differences in Resilience Scores Between Pre- and Post-Intervention Phases in Depressed Group, Subclinical Group and Clinical Depressed Group in Intervention Group

Resilience	Non-Depressed Group			Subclinical Depression Group			Clinical Depression Group			F ^d for three groups in Post
	Pre (1269)	Post (1582)	F ^a	Pre (437)	Post (511)	F ^b	Pre (296)	Post (273)	F ^c	
Family connection	4.39 (.57)	4.10 (.80)	91.29***	3.93 (.67)	4.09 (.79)	10.97***	3.59 (.87)	4.12 (.76)	34.08***	.15
Teacher connection	4.33 (.75)	4.07 (.93)	32.92***	3.81 (.91)	3.97 (.98)	14.61***	3.38 (1.08)	4.09 (.92)	66.18***	2.62
Community connection	4.3 (.79)	4.18 (.94)	14.99***	3.89 (.96)	4.19 (.92)	29.10***	3.59 (1.10)	4.22 (.96)	53.48***	.19
Autonomy experience	3.40 (.88)	3.14 (.96)	21.96***	2.83 (.84)	3.09 (.92)	35.23***	2.55 (.85)	3.17 (.91)	61.61***	1.01
Pro-social peers	4.18 (.74)	3.94 (.92)	26.58***	3.67 (.86)	3.91 (.97)	31.46***	3.32 (1.02)	3.92 (.89)	50.54***	.33
Pro-Social group	4.22 (1.11)	3.92 (1.30)	27.48***	3.66 (1.30)	3.89 (1.33)	7.17***	3.42 (1.43)	3.94 (1.28)	22.41***	.16
Peer support	4.05 (.74)	3.75 (.98)	68.77***	3.40 (.86)	3.71 (.96)	54.43***	2.86 (1.04)	3.76 (.94)	102.99***	.33
Communication and cooperation	4.17 (.74)	3.82 (1.01)	92.63***	3.60 (.86)	3.79 (1.01)	25.25***	3.26 (1.05)	3.87 (.99)	34.21***	.62
Self-esteem	4.25 (.68)	4.01 (.91)	43.63***	3.78 (.79)	3.98 (.85)	27.51***	3.46 (.95)	4.00 (.88)	38.81***	.31
Empathy	3.99 (.78)	3.58 (1.07)	103.86***	3.64 (.88)	3.58 (1.03)	.11	3.37 (1.00)	3.59 (1.04)	10.46***	.01
Help seeking	3.93 (.80)	3.53 (1.03)	99.05***	3.39 (.86)	3.45 (1.03)	7.34***	3.04 (1.01)	3.56 (1.04)	27.33***	1.41
Goals	4.08 (.83)	4.19 (.98)	18.11	3.54 (.97)	4.16 (.99)	120.54***	3.19 (1.09)	4.21 (.96)	96.33***	.32
School connectedness	4.38 (.52)	4.10 (.76)	103.97***	3.85 (.64)	4.03 (.77)	24.97***	3.3 (3.81)	4.08 (.74)	99.97***	1.42

Notes:

F^a refers to the F value for the comparison between pre- and post-intervention phases on resilience scores in non-depressed group.

F^b refers to the F value for the comparison between pre- and post-intervention phases on resilience scores in subclinical depression group.

F^c refers to the F value for the comparison between pre- and post-intervention phases on resilience scores in clinical depression group.

F^d refers to the F value for the comparison between three groups (non-depressed, subclinical depression group, and clinical depression group) in resilience scores

* p < .05, **p < .01, *** p < .001.

- depression is related to low level of family support
- depression is related to low level of school support
- depression is related to low levels of community support.

To date, virtually all the research that has examined predictors of depression in children and adolescence has focused on individual characteristics such as self-esteem or self-competence. However, it is apparent that much more research needs to be conducted on potential predictors of depression such as social support from family, school and community, since depression and anxiety are common during adolescence (Compas *et al*, 1993; Lesionsohn *et al*, 1994; Sun & Stewart, 2007b), and since gender differences in anxiety problems become apparent during this time, when boys are at more risk of experiencing problems than girls in primary schools (Angold *et al*, 2002).

Although the results from the present study indicate that resilience accounts for the depression symptoms in children and adolescents, it should be noted that these results do not imply causality. For example, even though resilience was found to precede emotional adjustment, it may be the case that other variables (such as genetics, puberty) predict both resilience and emotional adjustment during childhood and adolescence. Further investigations are needed to address this possibility.

The second aim of the present study is to examine the effectiveness of intervention programs to reduce the depression rate in primary school children. With regard to the prevention effect, it was expected that the intervention group would be associated with fewer depressive symptoms at the post-intervention phase than the non-intervention group. It was expected that children's resilience levels in the intervention group would also be increased. With regard to the hypotheses, results have shown that there were significant differences between the pre- and post-intervention phases in the proportion of students who had subclinical depression symptoms in the intervention schools, and differences between intervention and control schools in the post-intervention phase. Only 21.6% of students in the intervention schools compared with 29.4% of students in the control schools in the post-intervention phase were subclinically depressed. From a health promotion perspective, 2.8% of subclinical children in the intervention schools fell into the normal category; in contrast, 8.1% of healthy children moved to the subclinical category in the control schools at post-intervention.

This confirms that children in the intervention schools showed a significantly greater decrease in depressive symptoms as measured by the CDI at the post-intervention

phase. For both subclinical and clinical depression groups in the intervention schools, all resilience scores increased significantly over scores in the pre-intervention phase. One aspect of the findings that is difficult to interpret is that there was a significant difference between the pre- and post-intervention phases for the non-depressed group in resilience scores in the intervention group, such that all resilience scores except goals and aspirations decreased for the non-depressed group students. Further investigation is needed to examine whether their decreasing scores in resilience factors might lead to later depressive symptoms.

Major beneficiaries of the program were those subclinical students who began with moderately elevated depressive symptoms. Those in the intervention program were more likely to shift into the healthy range and less likely to fall into the clinical range. There were 2.8% of students with subclinical depressive symptoms who moved into the normal range. These results are consistent with recent studies which have indicated that the intervention program is likely to be most beneficial to subclinical groups (Shochet *et al*, 2001).

The universal nature of the intervention program also appeared to be of benefit to adolescents who were initially considered healthy. That is, there was a significant difference between pre- and post-intervention phases in the proportion of students who were in the healthy categories in the intervention group. At post-intervention, none of the healthy students moved into the subclinical category, but in the control schools, 8.1% of healthy children moved into the subclinical category. This result is similar to that of Shochet *et al's* (2001) study, where 10.1% of the healthy adolescents moved into the subclinical category if they were not recruited into a universal intervention program. The intervention program was therefore beneficial to both subclinical and healthy groups.

Another important finding is that approximately 0.5% of children moved into clinical depression ranges at the post-intervention phase in the intervention group. These are adolescents who might not normally be detected in typical intervention programs. There was no difference between the pre- and post-intervention phases in the proportion of students who were in the clinical depression category. The question remains, however, whether a universal approach as used in this study is appropriate to children with clinical depression symptoms.

There are methodological limitations to this study that suggest we should interpret the results with some caution. We were able to control school size and the socioeconomic status of the intervention and control schools, but we were not able to control the difference in clinical depressive

symptoms between intervention and control schools at baseline level. This could confound the intervention effect. Another limitation of the study is the nature of self-report measures in resilience and depression. Due to the unstable social emotional characteristics of children and pre-adolescents, data collection using self-report measures may not be reliable. However, this limitation was addressed to a degree by recruiting a large sample population to reduce the error inherent in using a self-report tool.

The results of this study are encouraging in terms of the value of investing resources in a comprehensive intervention program, as it found this approach to be beneficial through a prevention impact on children with subclinical depressive symptoms in primary schools in China. The findings suggest that future research in the area may prove beneficial, especially if it incorporates various levels of intervention program including clinical therapy for children with clinical depressive symptoms, for example having two types of intervention program to address different levels of depression in primary school children. Further improvement of the intervention program is also possible, for example by recruiting parents to participate in the programs, as this has been proved to be beneficial (Beardslee *et al.*, 2003).

Address for correspondence

Professor Donald Stewart, School of Public Health, Griffith University, Logan Campus, Meadowbrook Q4131, Australia. Tel: +617 338 21487, Fax: +617 338 21034, Email: Donald.Stewart@griffith.edu.au.

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