Research, Policy and Planning (2009/10) **27**(3), 187-198

Measuring resilience in childhood using data from the Tellus Surveys

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Abstract
An adequate population measure of the emotional well-being of children and young people has long been a gap in the portfolio of outcome measures. This paper considers the potential utility of the concept of resilience. Resilience has been described as the capacity of individuals to negotiate challenges successfully without experiencing long-term harm. The concept of resilience was operationalised drawing on existing literature and a scale of resilience was developed from questions in the national Tellus survey. The relevance and utility of the scale was explored using data from Tellus for a case study city. Scores on the resilience scale were compared with factors or behaviours that the literature suggests are likely to be present in resilient children. It was found that children with higher resilience scores were more likely to present with characteristics and behaviours consistent with positive emotional well-being.

Keywords: Resilience, outcome measurement, children and young people

Introduction

One of the aims of the *Every Child Matters Outcomes Framework* is for children to be emotionally and mentally healthy (Department for Children, Schools and Families (DCSF), 2008). The National Children's Plan (DCSF, 2007) confirms the centrality of enhancing children's emotional well-being:

> *Emotional well-being and good mental health are crucial for every aspect of a child's life. … Good social and emotional skills are vital for healthy personal development. They build resilience and reduce the likelihood of engaging in risky behaviour.* (p.35)

Until recently, through the Annual Performance Assessment (APA), central government requested that Local Authorities provide data on process measures related to specialist mental health services e.g. waiting times for Child and Adolescent Mental Health Services (CAMHS) and referrals from the Youth Justice Service. These measures considered the adequacy of the service response to the children who are referred to CAMHS but did not address nor attempt to measure the emotional well-being of the majority of the population of children and young people in a child-centred manner.

The roll out of a national, annual survey of school children (Tellus) provided an opportunity to develop a population level, outcome-focused measure of emotional well-being. The government saw this opportunity and developed a single performance measure of the emotional health of children from a combination of responses to the Tellus survey for the National Indicator Set (NIS). The NIS measure is described as the percentage of children who enjoy good relationships with family and friends (Department of Communities and Local Government (DCLG), 2008). The definition of 'good' was not determined. Although good

relationships are integral to emotional well-being, there are arguably many other important aspects which can protect a child's emotional well-being.

This paper focuses on resilience as a measure of child emotional well-being. The importance of resilience to childhood well-being has been highlighted by Newman (2004). Tellus survey data provide information on several factors that contribute to a child's resilience. The paper explores the concept of resilience before considering the utility of Tellus data for measuring resilience and presenting an empirical illustration of that utility.

Resilience

Emotional well-being can be defined as *"the emotional and spiritual resilience which allows us to enjoy life and survive pain, disappointment and sadness. It is a positive sense of well-being and an underlying belief in our own and other's self worth"* (Mental Health Foundation, 2005, p.8).

Resilience appears to be recognised as integral to well-being. It has been strongly developed in the psychological sphere (Masten & Powell, 2003) but has also been used in relation to children in need in social care (Gilligan, 2001), as a predictive factor for offending behaviour in youth justice through the risk and protection model (Rutter *et al.,* 1998), and in the field of education, where it is termed academic resilience (Martin & Marsh, 2007). The risk and protection model is particularly relevant to a focus on childhood and services aiming to promote child well-being. The model links risk factors that increase the likelihood of negative outcomes, to protective factors that decrease that likelihood (Durlak, 1998). Both factor types can eventuate at different levels - child, family, school or community - and both factors and levels interact in a complex and multifaceted way to promote or challenge resilience. Interventions can focus on particular combinations of risk and protective factors.

Resilience can be defined as "a process, capacity or outcome of successful adaptation despite challenges or threatening circumstances … good outcomes despite high risk status, sustained competence under threat and recovery from trauma" (Kumpfer, 1999, p.181). This ability to cope positively or to be resilient can be confidently regarded as a contributory factor to emotional well-being in children, because "resilient children are better equipped to resist stress and adversity, cope with change and uncertainty and to recover faster and more completely from traumatic events or episodes" (Newman & Blackburn, 2002a, p.3). Ungar (2004) provides a timely reminder that resilience among young people need not always positively reflect social norms; some groups may survive and achieve resilience through antisocial activity.

In trying to understand the factors that contribute to resilience, research has tended to focus on children who have experienced good outcomes despite suffering adverse circumstances and high risks (Kumpfer, 1999; Schoon & Bynner, 2003). As a consequence, those children perceived as resilient are defined by the outcomes associated with the presence of resilience. This is problematic because of the myriad of factors associated with those outcomes and the difficulty in separating out the influence of each. To confuse matters further, some of the 'outcomes' of resilience are also factors that promote resilience. The presence or absence of resilience may also only become observable once a person is required to deal with a negative event. This does not mean that those who do not experience negative events are not resilient: the idea of 'everyday' resilience has been introduced by Masten (2001) and explored in the field of education where it is termed 'academic buoyancy' (Martin & Marsh, 2007).

It is generally agreed that resilience is not an objective item that people either have or do not have. It can be created through the dynamic interaction between a person and their environment. Children will act to increase their resilience by seeking out attachments to caring others. Resilience is also dynamic rather than static and thus should be able to be influenced through intervention. It is not, therefore, simply the resilience factors that are important but the interaction between those factors and the environment, as well as the experiences of responding positively to challenges, which build resilience.

In measuring resilience, it is important to consider the factors and processes that tend to co-exist within people who have shown themselves to be resilient and to use these as a guide to predict whether people are likely to be resilient. While there is no definite agreement, there are a number of factors that most would agree are common to resilient people (Kumpfer, 1999; Newman, 2004). These include both internal characteristics and external or environmental characteristics (Table 1).

Numerous research studies have considered the factors that have enabled individuals, often children, to achieve positive outcomes when the odds seem stacked against them and in circumstances where their peers have fared less well (Masten *et al.*, 1990; Luthar & Cushing, 1999; Goldstein & Brooks, 2005; Condly 2006; Schoon 2006; McMurray *et al.*, 2008). The resulting observation that some children are more resilient than others in the face of risk has meant that studies exploring resilience frequently include measurements of risk, often using metric scales. Risk factors tend to co-exist and have a cumulative effect; scales are therefore more useful than a single indicator as they seem to account for more variance in outcomes than any individual indicators.

Table 1 Contributory factors in resilience

The Child	**The Family**	**The Environment**
Temperament (active, good-natured)	Warm supportive parents	Supportive extended family
Gender: Female prior to adolescence Male during adolescence	Good parent-child relationships	Successful school experiences
Age (being younger)	Parental harmony	Friendship networks
Cognitive competence	Valued social role	Valued social role e.g. a job, volunteering, helping neighbours
Social skills	Close relationship with one parent	Close relationship with an unrelated mentor
Personal awareness		Member of religious faith
Feelings of empathy		
Internal locus of control		
Humour		
Attractiveness		
Physical well-being (health, diet)		

(Adapted from Newman & Blackburn, 2002 a&b, and Kumpfer, 1999)

Once the presence of risk has been confirmed, the focus shifts to the measurement of protective factors that contribute to resilience such as those in Table 1. A summative scalar approach is again often used for the same reasons that scales of risk are useful: they account for more variance in outcomes. Care must always be taken to explore the separate components of such scales to ensure that critical trends are not obscured by the aggregation.

A further general issue with the measurement of resilience is that research studies tend not to have a reference group against which to compare the results of the sample so the sample is its own reference. This means that researchers can not be certain whether those who seem to be resilient are objectively resilient or are simply the most resilient among that sample (Luthar & Cushing, 1999, p.140).

Resilience research has made much use of data from longitudinal cohort studies (Schoon, 2006). Early studies include analyses of data from the National Child Development Study (Pilling, 1990) and the Child Health and Education Study (Osborn, 1990) which considered the factors that appear to have the most influence on a child experiencing successful outcomes or adjustment. Experiences of the cohort at a younger age and their situations in later childhood or adulthood were explored to identify the most common and strongest influences. Osborn (1990) suggested the most powerful influence was the behaviour and attitude of the parents although, for families of low socio-economic status, this needed to be supported by strong marital relationships and friendship networks. Pilling (1990) also identified a supportive family as a highly influential factor, particularly support for education. Opportunities for positive experiences as well as some personal characteristics e.g. gender and temperament, have also been found to be significant (Newman & Blackburn, 2002b, p.11). Schoon (2006), in more recent work, has significantly extended these conclusions through a comparison of the National Child Development Study and the later British Birth Cohort Study, noting how resilience can be undermined by problems of social care and educational service provision and delivery.

Method

The above research suggests that any population measure of resilience would need to be summative and points to factors identified as important in resilience. Attention now turns to the utility of the Tellus survey for the identification of resilience.

Data

Tellus is an annual survey of school children in years 6, 8 and 10 in England that is administered by Ofsted and DCSF and completed online by children during the school day. The responses are used to inform inspection judgements and commissioning. Tellus2 was conducted nationally in 2007 and Tellus3 in 2008. The national sample for Tellus2 was 111,325 children from 141 Local Authorities. The data provided for Tellus is not used to measure the performance of schools (data is anonymised when it is fed back to the Local Authority) so there is no incentive to select brighter or better behaved children to complete the survey. The questions cover a variety of areas of children's lives including diet, exercise, aspirations, feelings about the local area, participation in activities, substance use, worries, enjoyment of school and bullying (OFSTED, 2007). Though the questions in Tellus were not developed to measure resilience, close examination suggested that responses to questions in the 'emotional health' section could be combined with questions from other sections to develop a scale for measuring resilience.

Tellus2 asked 9 questions that could be seen as directly relating to emotional health: feeling happy, feeling sad, having friends, being looked out for by family, getting angry, feeling anxious or stressed, worrying a lot, being nervous and asking for help. Tellus3 removed several of these questions so they were not considered for inclusion in the scale. If a scale is to have utility as a population level measure there needs to be the possibility of year-on-year comparison.

The questions directly relating to emotional health that are common to both versions of Tellus relate to feeling happy and having friends. A question is asked in both surveys that can be interpreted as feeling supported by, or close to, family. Having friends and being supported by one's family are undoubtedly central factors in resilience but a measure comprised of these two factors neglects the important influence of the wider environment and school. Feeling happy could also be seen as an outcome of resilience rather than a component and thus to combine the outcome with influences does not make for a logical measure.

Tellus asks a number of other questions that relate to factors important in determining resilience. Factors common to both Tellus2 and Tellus3 were:

- Gender
- Age
- Temperament (generally happy)
- Physical health (and diet)
- Good parent-child relationships
- Successful school experiences
- Friendship networks
- A valued social role.

Children can be proactive in negotiating to increase their resilience, for example by seeking out help from others. Several questions in Tellus also addressed how safe children felt in various situations – home, school and while travelling. It could be argued that, if a child felt threatened or unsafe at school, then a response characteristic of building resilience would be to seek help from responsive adults and, in so doing, increase her or his feeling of safety. In this way, some questions could be used as proxies for interaction with the environment.

Developing the measure

It was important that the measure of resilience was a scale because the more resilience a child possesses, the more likely it is that they will cope positively with exposure to risk or adversity (Newman, 2004). In considering which factors should be included in the scale, it was essential to include where possible the factors that have been identified in research as being present in resilient children and as being influential. Another key issue was the utility of the scale as an indicator. If the factors included were not open to intervention, if they could never potentially be impacted upon by services, then, in this instance, they were deemed less important.

Of those factors highlighted above, several, e.g. age, gender and temperament, are not open to intervention and, instead of being part of the scale, can act as a reference point by which to consider the face validity of the scale. The suggestion would be that, when explored by age and gender, a valid scale would show that younger children were most likely to score highly for resilience and that younger girls would be the most resilient (Newman & Blackburn, 2002b). The factors eventually included in the scale (Table 2) were therefore proximal factors that contribute to resilience.

Table 2 Tellus questions included in the scale and the corresponding resilience factor

Question	Response	Corresponding Resilience Factor
I have one or more good friends	True	Friendship networks
My parents and family look out for me (Tellus2)/ When I'm really worried about something I can talk to my Mum or Dad (Tellus3)	True	Good parent–child relationship
I enjoy school	Always/most of the time	Successful school experiences
How safe or unsafe from being hurt by other people do you feel at school?	Very/quite safe	Ability to actively engage with environment
How healthy are you?	Very/Quite	Physical health

When operationalised into a scale, the responses listed in the table were weighted equally, with the exception of the self-reported health question where 'very healthy' was allocated two points, and 'quite healthy' was allocated one. There were only three possible responses to the healthiness question, the third being 'unhealthy'. The lack of a 'little bit unhealthy' response meant that children were less likely to categorise themselves as unhealthy and more likely to say they were quite healthy. The middle category is therefore likely to encompass a wide range of perceptions of health, including some who may not be particularly healthy. It was, therefore, felt necessary not only to differentiate between this category and those who definitely felt they were healthy but also to recognise that being quite healthy could potentially contribute to resilience. To resolve this, the 'very healthy' group were ascribed an additional point. Any child could, therefore, reach a points total within the range of 0-6, 0 meaning that they have no resilience factors in their life, and 6 meaning that they have all the identified resilience factors. For reporting as a scale, these point scores were collapsed into three categories according to their distribution – poor resilience (0-3), fair resilience (4) and high resilience (5-6). As the majority of observations concentrated in the 'fair' or 'high' groupings, this grouping of scores into a three-fold categorisation was felt to be an appropriate approach to identifying lower levels of resilience while at the same time ensuring an adequate sample size within that part of the overall distribution that was skewed towards higher levels of resilience.

Results and discussion

The Tellus2 sample in the case study city was 403 children. This was considerably smaller than the target sample of 1300 but, despite this, Ofsted stated that the respondents were representative of their peers in the case study city based on gender, ethnicity and receipt of free school meals. The schools that took part were located in different areas of the city and varied in the proportion of children with special educational needs on their roll from 15% to 52.4%. Two pupil referral units also took part.

The majority of the respondents registered as having either fair or high resilience (a score of 4 or above) (Figure 1). It would be expected that the 46% who have high resilience (scored 5 or 6) would be in a good position to maintain positive emotional

well-being when they experience adversity. For the 30% who had fair resilience (score of 4), their emotional well-being could be negatively affected by difficult circumstances of long duration but, in most situations, they should be able to cope successfully (Newman, 2004). This leaves 23% (score of 3 or below) for whom resilience was at a low enough level to suggest that they might struggle to cope positively with life's challenges, so jeopardising their emotional well-being.

Literature has suggested that resilience is likely to decrease as adolescence progresses and to differ by gender (Condly, 2006; Schoon, 2006). When looking at the influence of age and gender separately, the pattern of resilience within the case study city respondents seems to concur with that predicted by the literature. The resilience levels decrease with age (Table 3) and girls are generally more likely to report higher resilience than boys (Table 4). In both cases, the differences between the groups were statistically significant.

Figure 1 Resilience categories for case study city respondents

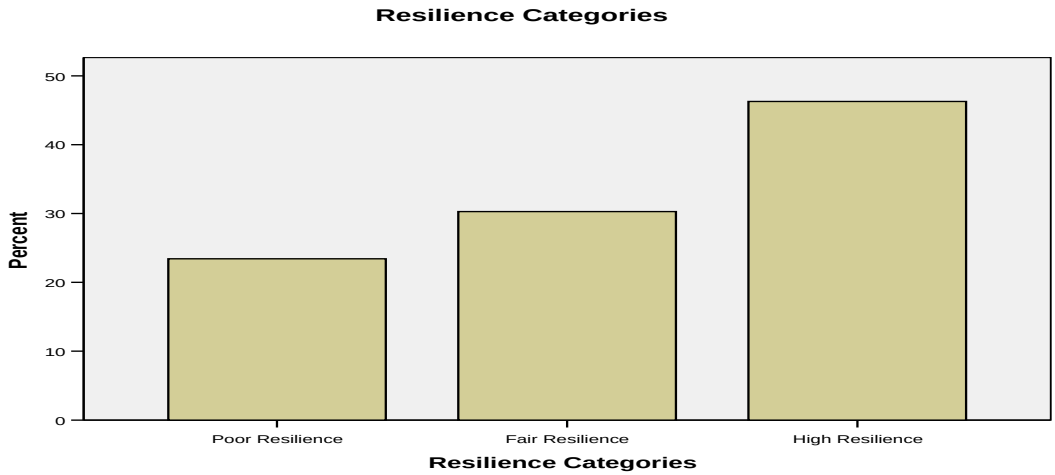

Table 3 Resilience score by age (Column percentages)

Resilience Score	Year 6	Year 10
Good (5-6)	54.3%	32.3%
Fair (4)	27.8%	34.6%
Poor (0-3)	17.9%	33.1%
N	223	127

Age differences in Resilience scores are statistically significant p<.01 (Chi Sq.)

Table 4 Resilience score by gender (Column percentages)

Resilience Score	Girls	Boys
Good (5-6)	46.8%	45.8%
Fair (4)	34.1%	26.5%
Poor (0-3)	19.1%	27.7%
N	173	177

When the resilience scores were computed by age (cohort) and gender together (Figure 2), it emerged that younger children were more likely to have high resilience. Low resilience was much more common in year ten girls compared to year six girls; year ten girls had the lowest levels of high resilience. These findings are consistent with expectations from previous work (Newman & Blackburn, 2002b; Rutter, 2007).

Associations between resilience and outcomes

Tellus does not provide objective information on outcome measures as its aim is to gather the views of young people. It is, however, important for the face validity of the scale to explore whether the children that the scale is highlighting as resilient are the ones who are engaging in less risk and who are reporting themselves as emotionally healthy. It is possible to compare the scores on the resilience scale against self-reported risk taking behaviour and against the responses to the relevant emotional health questions. The strength of relationships was tested for statistical significance using the t-test in SPSS version 16 (SPSS for Windows, 2007). Table 5 shows the presence and strength of associations between outcomes of alcohol use, substance use, reports of anxiety and stress, management of emotions and happiness and resilience levels for each cohort. The results are presented by cohort in recognition of the influence of age and gender.

Although not all of the associations reach statistical significance, a clear trend can be seen in both tables suggesting that higher levels of resilience are associated with self-reports of good emotional health and less likelihood of engagement in risky behaviour. For both boys and girls across years six and ten, there is a degree of certainty that resilience is associated with being happy with life.

Conclusion

The analysis of data available from the case study city Tellus survey suggests that Tellus can be used to provide a population measure of the resilience of children and young people. The factors included in the scale have been identified through research as being important for resilience and are also factors that are open to influence from service interventions and activities. If services are put in place that aim to improve the factors included in the resilience scale e.g. parenting programmes to improve parent-child relationships or the continued use of the Social and Emotional Aspects of Learning programme in schools, then it could be hypothesised that the outcomes will move in the desired direction. At the same time, however, it is important to acknowledge, following Ungar (2004), that there can be negative aspects to resilience.

Figure 2 Levels of resilience by age and gender

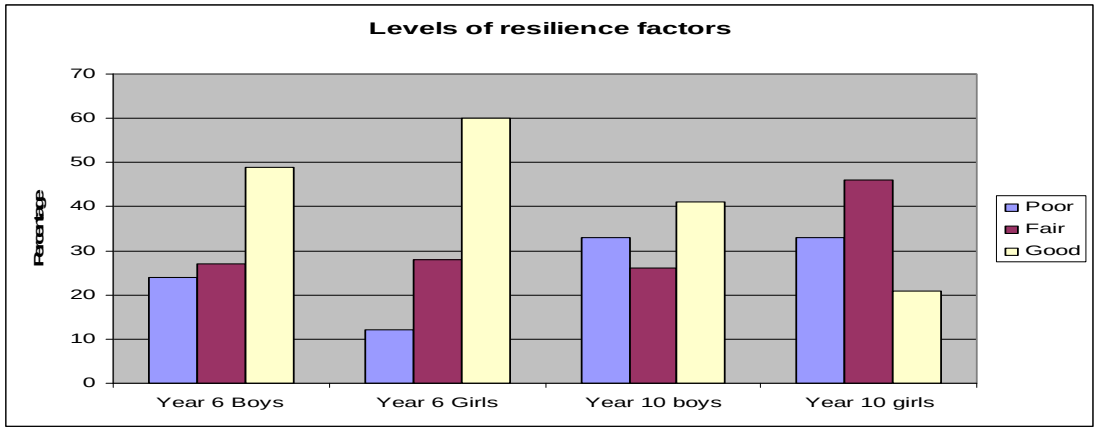

Table 5 Association and pair-wise t tests between average level of resilience and outcome/behaviour

		Year 6		***Year 10***	
Outcome	***Response***	***Girls***	***Boys***	***Girls***	***Boys***
Happy with life	True	*5.03*	*4.68*	*4.29*	*4.58*
	Not entirely true	*4.4*	*3.86*	*3.39*	*3.4*
Worry a lot	Not True	*5.17*	4.56	3.95	*4.4*
	True or a bit true	*4.64*	4.23	3.61	*3.74*
Sad	Not True	4.85	4.51	*4.67*	4.2
	True or a bit true	4.71	4.21	*3.54*	3.76
Often lose temper	Not True	*4.87*	4.47	3.85	4.2
	True or a bit true	*4.35*	4.17	3.44	3.76
Drunk alcohol	No	4.86	*4.9*	4	4.28
	Yes	4.36	*4.12*	3.78	3.96
Smoked	No	4.76	4.42	3.83	4.28
	Yes	4.67	4.00	3.63	3.93

x.xx underlined italics indicates statistically significant difference between cells ($p>0.05$)

This study has limitations that must be acknowledged. An examination of contributory factors to resilience based on secondary data can only be a partial measure of emotional well-being. It cannot be used to state definitively which children are faring well emotionally but it can provide an indication of those who are likely to struggle with remaining emotionally healthy. Neither does the scale cover all aspects of resilience due to the limits of the information contained within the questions and responses to Tellus - such are the difficulties of developing measures from secondary data. This also means that there is little scope for enhancing the survey to provide better validity checks. The resilience scale was not developed in response to a particular risk or negative outcome and, as a result, testing it against specific outcomes may not be particularly informative. For example, outcomes such as smoking and alcohol use may not be valid as the particular aspects of resilience that mitigate against substance misuse may not have been included in the scale (Luthar & Cushing, 1999). The statistical associations found between the resilience scale and the substance misuse responses do not pretend to explain the patterns in substance misuse, merely to indicate that the scale itself has some predictive validity. It is possible that these associations may not remain as expected across a wider range of outcomes (e.g. educational achievement or good behaviour) but, unfortunately, the relevant data is not available to consider such associations and the confidentiality and anonymity promised as part of the administration of the survey means that record linkage to establish such connections is not possible.

The empirical work described in this paper has been undertaken using a relatively small sample of data from one city. It is hoped that agreements can be reached with other Local Authorities regarding access to the Tellus data in their areas to enable explorations of patterns of resilience in different Local Authorities and investigate whether their distributions of resilience by age and gender are as predicted by the literature. It would be particularly

interesting to explore further the associations between resilience scores and self-reported outcomes and, if enough Local Authorities share their data, then it may be possible to consider the impact of resilience levels on other standard outcomes such as educational attainment.

In summary, this paper has considered the utility of Tellus data for the measurement and identification of resilience among school-age children. It has shown that it is possible to develop a simple index that captures resilience and is associated in expected ways with age and gender and with a range of outcome indicators. The potential for interventions that draw on ideas of resilience and have the potential to enhance child well-being is clear.

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