

Chapter 7

How to Assess Resilience: Reflections on a Measurement Model

Nora Wille and Ulrike Ravens-Sieberer

Keywords Mental health • Adolescents • Community • Resilience • BELLA study

7.1 Mental Health of Children and Adolescents Within the New Morbidity

7.1.1 *The New Morbidity and Its Consequences for Our Understanding of Health Determinants*

During the past century health of children and adolescents improved radically in Western industrialised countries. Nowadays we can hardly imagine that in the beginning of the past century infant mortality and malnutrition as well as infectious morbidity and epidemics were major health problems (Palfrey et al. 2005; Markel and Golden 2005; Razum and Breckenkamp 2007). However, these characteristics of the “classical paediatric morbidity” were replaced by problems of the “new” and later the “millennial morbidity” (Palfrey et al. 2005). Today children and adolescents in Western industrialised countries are more likely to suffer from problems related to mental health concerns such as social, emotional and behavioural difficulties. Associated problems of raising importance are school violence and injuries, suicide as well as alcohol and drug abuse (American Academy of Pediatrics and Committee on Psychosocial Aspects of Child and Family Health 2001; Palfrey et al. 2005). Today a child in the United States is more at risk “*to die from injuries or violence and suicide than from infectious disease*” (American Academy of Pediatrics and Committee on Psychosocial Aspects of Child and Family Health 2001; p. 1228).

N. Wille (✉)

Child Public Health Research Section, University Clinic Hamburg-Eppendorf,
Hamburg, Germany
e-mail: n.wille@uke.de

With respect to these current health problems, interventions to support healthy development of children and adolescents need to address a variety of factors that influence the morbidity in youth. The necessity to pay attention to children's and adolescents' living conditions was already recognised by paediatricians in the 1800s and led to a variety of community-based activities (Palfrey et al. 2005; Markel and Golden 2005). These efforts focused very basic preconditions for healthy development that were often related to poverty, e.g. clean water supply, improved housing for poor families, maternity benefits and promotion of breastfeeding (Palfrey et al. 2005; Markel and Golden 2005; Razum and Breckenkamp 2007). However, regarding the major health problems within the so-called new morbidity an even broader understanding of health determinants beyond such basic human needs is required. Most current health problems originate from a very complex and multifactorial process in which psychosocial aspects (such as characteristics of a child's personality, its family, and its further social surrounding) are highly important. However, socioeconomic status still plays an important role: poor mental health and its potential consequences such as teen pregnancies, sexually transmitted diseases, injuries or impaired school functioning are more prevalent among socioeconomically disadvantaged youth (Bradley and Corwyn 2002; von Rueden et al. 2006; Palfrey et al. 2005). Thus, efforts regarding prevention and health promotion have to consider different levels of determinants including societal structures and resources, socioeconomic circumstances of a child's family or community, social interactions within families, schools, and communities as well as characteristics of the individual itself.

In the following we will describe the importance of mental health promotion in children and adolescents against the background of the new morbidity. With respect to current knowledge regarding relevant health determinants, the importance of taking health assets into account will be pointed out. Afterwards we would like to introduce important concepts regarding the interaction of risks and resources in the context of mental health and resilience. The potential of population-based studies will be outlined and ways to operationalise risks and – most important – assets will be described. To end, an example from our own study will clarify how the theoretical concept of assets and their protective effects can be supported by empirical evidence in order to develop effective public health initiatives that address not only the individual child and its health problems but also its family and the community in which it lives.

7.1.2 The Rising Importance of Mental Health Problems in Childhood and Adolescence

Mental health problems in childhood and adolescence comprise a wide range of disorders such as depressive disorders, anxiety disorders, disruptive disorders or eating disorders, which are defined by diagnostic manuals (ICD-10: WHO 1992; DSM-IV: APA 2000).

Even though the assessment of mental disorders requires a diagnosis by a clinician, it goes beyond the resources of most large epidemiological studies to conduct comprehensive clinical interviews. Therefore available studies employ different methods (e.g. screening instruments and/or two stage designs) and apply varying case definitions to determine prevalence rates. Consequently, prevalence estimates of mental health problems range widely between 1 and 51% (Roberts et al. 1998). However, despite major methodological problems regarding the comparability of epidemiological estimates, the median of prevalence rates in different international reviews was similar (e.g. 14% in Roberts et al. 1998 or 18% in Ihle and Esser 2002) and the majority of studies indicate that at any given time between 10 and 20% of children and adolescents suffer from disabling mental health problems (WHO 2001a; Patel et al. 2007; Costello et al. 2005; Belfer 2008). This estimate further increases when – beyond single measurement points – life time prevalence rates are taken into account. By the age of 16 years 37% of youth had experienced at least one DSM-IV disorder (Costello et al. 2003).

While the high prevalence of mental health problems is undisputed, there are different opinions regarding an increase of youth mental health problems over the decades. Whereas Roberts et al. (1998) were not able to identify such a trend, other reviews state a substantial rise in psychosocial disorders in many western countries over the past decades, specifically referring to problems such as suicide, delinquency, addictive behaviours, and depression (Rutter and Smith 1995; Fombonne 1998; Prosser and McArdle 1996).

Even if an increase in prevalence rates is hard to confirm, the need to strengthen prevention efforts and to promote mental health in children and adolescents is evident. Not only the sizeable proportion of youth suffering from mental health problems emphasises the necessity of effective public health initiatives. Beyond, mental disorders in young age are highly persistent (Ihle and Esser 2002). Children and adolescents who developed a psychiatric disorder once have a threefold risk to suffer continuously or repeatedly from the disorder (Costello et al. 2003). Further, the high percentage of mental health problems in adults that had their onset in childhood or adolescence highlights the importance of primary prevention in these critical time periods (Costello et al. 2005, 2006).

Mental disorders are accompanied by considerable adverse consequences for the affected young person as well as for society. Since childhood and adolescence are crucial periods of educational and social development, mental health related impairments can disrupt important developments and hamper an adolescent to reach his or her full potential (Ford et al. 2003). Mental health problems can result in educational underachievement or even dropout from school (McLeod and Kaiser 2004) and thus affect later adult life by deteriorating future prospects regarding employment and individual socio-economic position. On a societal level it can therefore result in a loss of economic productivity and higher expenditures in social welfare (Belfer 2008). Furthermore mental health-related social incapacity can lead to poorer social life and lack of a social network. In the worst case pronounced mental health-related behavioural and social problems can result in delinquency or

even criminal careers and destabilisation of communities, which is again associated with high costs for the society.

It is obvious that the individual's quality of life is largely reduced by such circumstances, and that furthermore a high burden is imposed on the direct social environment (Belfer 2008). But also the societal impact is large and contains costs beyond the health care sector, i.e. in the educational system, the social welfare system, and the criminal justice system (Belfer 2008). The adverse consequences of mental disorders were also impressively demonstrated by the Global Burden of Disease Study that identified Unipolar Major Depression as the fourth largest cause of disability-adjusted life years with growing importance (Murray and Lopez 1996; Murray and Lopez 1997).

Regarding the prevalence and the consequences of mental health problems outlined above it can be concluded that, firstly, regarding mental health problems in children and adolescents primary prevention is an important task and beyond, there is a need to buffer the adverse consequences potentially connected to mental health problems for the individual and their surroundings. Measures of mental health promotion and the availability of health assets may play an important role here. Secondly, the diverse potential consequences of mental health problems illustrate how the mental health status affects very different sectors. This is not only true in the case of mental disorders that might harm the individual's surrounding and the society. Beyond – as outlined below – mental health in its positive sense contains the capacity for contributions in diverse fields such as social cohesion and economic capital (WHO 2005).

7.1.3 Beyond Mental Ill-Health: The Importance of Positive Mental Health

Unfortunately, the focus on mental disorders (mental ill-health perspective) restricts attention to a small part of the whole picture of youth mental health. Even though the manifestation of mental disorders is of high public health relevance and should be targeted by prevention and intervention efforts, these problems indicate only “the tip of the iceberg” and partly impede the sight on the broader topic of mental *health* – instead of disease.

If mental health is not conceptualised as a dichotomous state (with two categories “healthy” vs. “sick”) but as a continuum ranging from poor mental health to good mental health, it becomes clear that the mental ill-health perspective does not catch the majority of differences between mental health states. Within the mental ill-health perspective the term “healthy” refers exclusively to the absence of mental disorders. However, mental health can also be conceptualised based on a positive understanding, e.g. as “*a state of well-being in which the individual realises his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community*” (WHO 2001b; p. 1) as it was outlined by the WHO.

This positively defined core concept characterises mental health as the basis for the functioning and well-being of individuals and also expresses the connection between individual mental health and the functioning of the community. It hints at the individual's mental health being an important resource for the closer surrounding (such as the family) or the wider community, where it can contribute in a material or immaterial manner.

The conceptualisation of mental health in this positive sense in addition to the concept of mental ill-health has implications regarding the approaches to improve health. Not only to prevent disorders but also to enhance positive mental health in all its facets then becomes a justified priority. In practice however, although theoretically distinct, actions and outcomes of mental health promotion and prevention necessarily overlap since both address determinants of the mental state in order to modify them (WHO 2005).

7.2 Risks, Resources and Resilience: Promoting the Capacity to Cope with Adversity

7.2.1 Different Levels of Mental Health Determinants

The opportunities for improving the young population's mental health and for reducing the burden caused by mental health problems can only be fully exploited if the multiple factors that can enhance or harm an individual's mental health are recognised (WHO 2005). These determinants of mental health are often beyond the control of individuals and can be found on different levels. There were different approaches to categorise levels of health determinants. One possibility of categorisation is to group them according to their "distance" to the individual on a "*distal-proximal continuum*" (Luthar 1993; p. 444). In the centre of such classifications (e.g. Bronfenbrenner 1979; Dahlgren and Whitehead 1991) stands the individual itself, with its biological or psychological characteristics. Then, crucial proximal determinants can be identified in individuals' so-called microsystems (Bronfenbrenner 1979). These refer to the immediate environments such as family and peers and corresponding material and social circumstances and behaviours. Beyond, distal measures such as the broader social context – the exosystem – play a role. For example some characteristics of the school, neighbourhood, parents' workplaces and community impact a child indirectly, even though it does not directly participate in these contexts. Similarly, the so-called macrosystem referring to the larger cultural context (e.g. national economy, laws) as well as the occurrence of events over the course of life (chronosystem) is important.

The strong interconnectedness of the different levels and factors is expressed not only by Bronfenbrenner's category of the mesosystem, which considers the fact that individual's microsystems (e.g. school and family) influence each other. Furthermore, distal measures of risk are mediated by proximal measures (Luthar

1993). E.g. poverty is the root of many important stresses which in turn are major risk factors for emotional disorders (Albee 2006). It was shown that economically disadvantaged children are exposed to more risk factors for mental disorders such as family conflicts or violence. Their children have an increased risk of exposure to perinatal stress, crowded homes, substance use, inferior schools and dangerous neighbourhoods with high rates of crime that lack supporting social networks (Evans 2004; Patel et al. 2007; Garmezzy 1991).

Other factors are not easy to classify since they are based on interactions between the levels. E.g. at first glance social support seems to be a property of the individual's surrounding. However, since social relations are based on reciprocal actions of individuals, social support is also dependent on personality traits and was even linked to genetic factors (WHO 2005).

Consequently, beyond addressing several levels of mental health determinants interventions must take into consideration the interconnectedness of relevant factors and the accumulation of risks in specific subgroups. Even though macro-level determinants may be hard to address within the framework of mental health promotion programmes, interventions should always be concentrated not only on the individual's characteristics but also on the more proximal and distal environmental factors.

7.2.2 Findings on Risk Factors for Mental Health and Shortcomings of the Risk Approach

Previous research reported convincing evidence on the importance of diverse factors that put children's and adolescents' mental health at risk. Some of these risk factors are biological such as premature birth (Gardner et al. 2004) as well as smoking (Fergusson et al. 1998) or drinking (Williams and Ross 2007) during pregnancy. Recent research also showed the influence of genetic predispositions, however, particularly their interaction with environmental adversity and psychosocial factors as exogenous agents plays an important role in the development of mental disorders (Caspi et al. 2002; Caspi et al. 2003). Many psychosocial risk factors regarding poor mental health have been identified that are connected to stressful life events or circumstances. Whereas factors such as witnessing or being a victim of violence (Ward et al. 2001) or sexual molestation (Briere and Elliott 1994) are extreme examples of adverse conditions with detrimental effects on mental health, other risk factors are highly prevalent and almost "normal" such as conflicts between the parents (Jenkins and Smith 1991) and family breakdown (Amato 2001) or physical illness of a parent (Barkmann et al. 2007). Further risk factors are less prevalent but still affect a considerable proportion of children such as physical illness of the child (Hysing et al. 2007), parental psychiatric illness (Rutter and Quinton 1984; Hammen et al. 1990) or parental alcoholism (Díaz et al. 2008). Some of these and further risk factors (such as large family size and overcrowding in the home, Rutter et al. 1975) again lead to the topic of poverty and socio-economic disadvantage,

which are well-established risk factors for mental disorders (Bradley and Corwyn 2002; Klocke and Lampert 2005).

In general, risk factors do not emerge isolated, but tend to cluster together and interact. It was shown in several cumulative models that particularly the summation of stressors place individuals at risk for the development of mental health problems (Forehand et al. 1991; Sameroff et al. 1997). However, in general it should be noticed that such “risk factors” do not describe causal processes and thus do not predict necessarily negative outcomes. When a child is “at risk”, it belongs to a group which is defined by a circumscribed exposition that makes it only more likely to develop mental health problems. Thus, Rutter (1971) pointed out the distinction between “risk indicators” and “risk mechanisms”. Factors such as parental separation are more likely risk indicators since the key risk does not derive from the separation per se but mainly from other adverse experiences associated with the separation such as ongoing parental conflicts. Due to the difference between risk indicators and risk mechanisms the presence of risk factors stands only in a probabilistic relationship with mental health outcomes. Furthermore it has to be taken into account that the vulnerability to risk factors is not only dependent on their sequential or simultaneous occurrence, but also varies with age and sex and duration of risk impact (Scheithauer and Petermann 1999).

To conclude, risk factor models were helpful in identifying indicators of harmful processes and thus children at risk for mental health problems. Nevertheless these models are of limited explanatory power as well as limited usefulness. Not all children who are exposed to adversity develop mental health problems. Furthermore, a lot of risk factors regarding youth mental health can hardly be reduced by public health initiatives. Thus, the question arises why some children in adverse conditions develop mental health problems while others do not, and, in a second step, if their capacity to develop successfully can be promoted in other children as well by preventive interventions. This basic idea – to identify factors promoting health instead of concentrating on risks – corresponds to the salutogenetic approach by Aaron Antonovsky (1987) as well as to research on resilience which will be described in the following.

7.2.3 How to Maintain Health Despite Adverse Conditions: Taking a Look at Resources

The area of resilience is of special interest to public health professionals since many forms of stress and adversity in children’s environments can hardly be eliminated. With respect to the many children who thrive in spite of adversity it seems reasonable to take a closer look at the resources that contribute to successful coping and development.

There are two important theoretical frameworks that provide a conceptual basis for investigating positive developmental outcomes in the presence of adversity. One is the concept of salutogenesis which was developed by Aaron Antonovsky (1987).

After observations in female holocaust survivors Antonovsky became interested in the reasons for staying healthy, i.e. salutogenic factors instead of pathogenic factors. He then assumed that a developed sense of coherence – a strong confidence that demands of life are understandable, meaningful and manageable – plays a central role in organising resources and maintaining or retaining health.

The second theoretical framework derives from developmental psychology and focuses the concept of resilience. The term resilience includes the latin word *resilire*, which can be translated with “bounce back”. It was introduced to describe the phenomenon of so-called high-risk children who thrive irrespective of great environmental challenges. Correspondingly, research in resilience does not address pathological responses of individuals to stress, but investigates health-protecting mechanisms, i.e. the ability of individuals to maintain good health despite considerable stressors. Thereby the concept offers a broader theoretical framework than Antonovsky’s approach and will be dealt with in detail in the following.

Surprisingly, research on schizophrenia played an important role with respect to the investigation of resilience in children and adolescents. By the 1970s, Norman Garmezy observed in schizophrenic patients that the course of the illness was associated with different premorbid histories. In contrast to the patients with a chronic course of the illness, the patients who recovered after a short treatment period were characterised by competence regarding their professional, family and social lives. Thus, Garmezy hypothesised differences in patterns of adaptation in the presence of exceptional stress. Consequently, he investigated high-risk children (who had poor families or schizophrenic mothers) who adapted well in order to identify attributes of competence that distinguished these groups (Rolf 1999).

A landmark study in the research on resilience was the Kauai Longitudinal Study by Emmy Werner and Ruth Smith (Werner and Smith 1982, 1992). They described characteristics of 698 children who were all born in 1955 and exposed to a high-risk environment and were nevertheless doing very well. Similarly, the British psychiatrist Michael Rutter conducted the epidemiological “Isle-of-Wight” studies (Rutter et al. 1976) and found that the majority of children thrive despite many risk factors.

Afterwards further studies investigated the phenomenon of resilience in a variety of contexts including children who were challenged by poverty and socioeconomic disadvantage, parental mental disease, maltreatment and community violence, chronic disease or traumatic life events (Luthar et al. 2000). These efforts were characterised by “*the paradigm shift from looking at the risk factors that led to psychosocial problems to the identification of strengths of an individual*” (Richardson 2002; p. 309). Researchers concentrated on the identification of resilient qualities, i.e. particular strengths or assets that helped the high-risk children under study to “bounce back” in the face of a stressor. The goal was to identify attributes which differentiated well adjusted children from those who did not cope successfully in order to explain observed variations in individuals’ responses to environmental hazard (Luthar et al. 2000). The search for such correlates of resilience – referred to as protective factors or developmental assets – that can modify a child’s response to adversity was hoped to inform on characteristics that can be promoted in prevention programs.

First research efforts concentrated on personality traits and characteristics of the individual child such as being adaptable and achievement oriented or having high self-efficacy and planning skills. However, with ongoing research, further sources of health assets were increasingly recognised. Eventually, protective factors were assigned to a triad of resilience consisting of (1) the personality disposition of the child, (2) qualities of family life, and (3) the wider social environment (Luthar et al. 2000). The acknowledgement of these important external sources of resilient qualities is in line with early results from Werner and Smith (1982, 1992), who had also pointed out the importance of the caregiving surrounding both inside and outside the family (Richardson 2002). Similarly, Rutter (1985) had highlighted characteristics such as positive experiences in school and a close relationship with a supportive adult as protective factors.

A similarly salutogenetic perspective was adopted by the Search Institute that published “*forty building blocks of human development*” (Benson 1997; p. 27). These 40 developmental assets were identified from literature and do not only contain factors that promote resilience but also factors that promote healthy development in general and the avoidance of health-compromising behaviour. Briefly, health-protecting and health-promoting assets are addressed here, while the concept of resilience primarily focuses factors that buffer effects of adversity. Correspondingly to the categorisation of protective factors these assets are grouped into internal and external assets. Internal assets that support optimal function in life comprise commitment to learning (e.g. achievement motivation and bonding to school), positive values (such as caring, integrity, and honesty), social competencies (e.g. interpersonal and cultural competence), and a positive identity (such as self-esteem and sense of purpose). The external youth assets do not only include receiving support (by family, school, other adults) and clear boundaries and expectations. They also address responsibilities of the community with categories such as empowerment (e.g. community values youth and provides useful roles for youth) and constructive use of time (referring to participation in youth programs and creative activities). Continued studies including more than 250,000 public school students in 460 school districts confirmed the assumption of the authors that as assets rise in number, developmental outcomes improve (Benson 1997).

Research investigating protective factors is still forging ahead. A current study in adolescents from China and the United States observed cross-nationally comparable effects of protective factors (such as control and support by the family and wider social environment) regarding alcohol and substance abuse (Jessor et al. 2003).

7.2.4 Resilience: Some Further Conceptual Clarifications

There is a broad consensus that the term resilience describes the achievement of positive adaptation by individuals within the context of significant adversity or – as Masten (2001; p. 228) puts it – “*Resilience refers to a class of phenomena characterised by good outcomes in spite of serious threats to adaptation or development*”. Thus, besides

positive adjustment, the exposure to stressors is an integral part of the definition of resilience. Only the presence of demonstrable risk justifies the difference between “competence” (referring to adaptive behaviours in general) and “resilience” referring to manifest competence despite significant stressors (Norman Garnezy in Rolf 1999). These two crucial conditions are also displayed in Fig. 7.1.

Furthermore, it needs to be emphasised that the theoretical framework of developmental psychology does not conceptualise resilience as a personal trait, but as being based on an interactive process involving a person’s constitution as well as functional qualities of its environment. These conditions allow individual adaptation since they buffer against the negative effects of harmful living conditions. This dynamic process involving internal and external assets as well as significant adversity, furthermore takes place within developmental progression. Thus, with changing life circumstances and emerging, disappearing or cumulating risk factors and resources the absence or presence of resilient outcomes may also vary. Terms such as “resilient children” are therefore misleading. Similarly, confusion derives from the term “resiliency” and from the literature on “ego-resiliency” (Block and Kremen 1996) which refers to a set of (protective) personality characteristics.

Furthermore, the multidimensional nature of resilience has to be noticed. Positive adaptation can be observed in different domains such as work or school performance, psychosocial adjustment or physical health. However, many individuals display substantial heterogeneity in functioning across different domains. E.g. they may manifest competence by having very successful careers but exhibit large underlying emotional distress. Since in general, consistently positive or negative developmental outcomes across multiple domains are unusual, the observation of such heterogeneity does not question the construct of resilience per se. However, it suggests that the concept of circumscribed domain specific resilience is more useful than the idea of global or overall resilience (Luthar 1993). Thus, researchers should (and increasingly do) specify the particular domains of positive adaptation, e.g. by terms such as “educational resilience” or “emotional resilience” (Luthar et al.

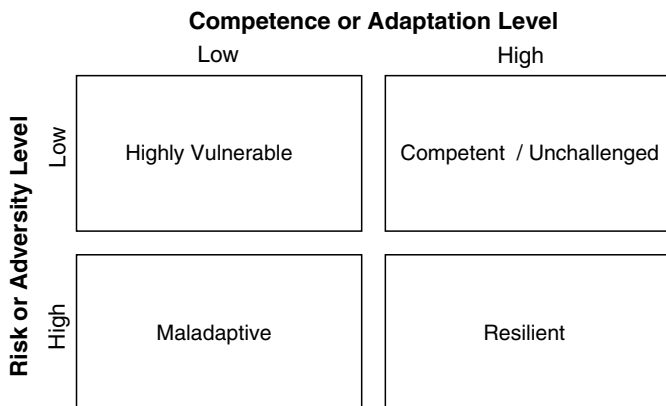


Fig. 7.1 Resilience in development (Masten and Reed 2002)

2000). Beyond this need of specification, all definitions of success need to be handled with care due to their normative character, presupposing universally valid criteria of success and failure.

A further conceptual challenge is the necessity to clearly distinguish resources from risk factors on a theoretical and methodological level. If resources are reduced to the opposite or absence of risk factors, supposed “protective” effects might be attributable to the lower burden by risks. The idea of bipolar risk factors that “*have a positive end associated with positive outcomes [...] as well as a negative end associated with negative outcomes*” (Masten 2001; p. 228) requires special attention here (e.g. the presence of good versus poor parenting). Furthermore risks and resources can be inversely related due to a third variable (Masten 2001).

7.2.5 Models of Resilience

Classic studies of resilience research such as the Kauai study by Werner and Smith (1982, 1992) employed person-focused approaches by comparing poorly and well adapted high-risk children with respect to their resources. Similarly, the other way round is possible by comparing children grouped according to their risks and resources with respect to their developmental outcomes. As person-based data analytic approaches developed, also discriminant function analysis, cluster analysis, and pathway models of resilience were applied (Masten 2001).

Although person-focused approaches are useful in order to detect specific patterns in the lives of “resilient children” they are not appropriate to analyse relationships between risks, resources, and developmental outcomes (Masten 2001). In order to achieve this goal variable-focused approaches are better suitable, since the application of multivariate statistics facilitates to test different models how assets work.

Garmezy et al. (1984) described three models of resilience to guide analyses of relationships between risk, resources and competence variables: the compensatory model, the challenge model and the protective factor model. The “compensatory model” suggests that different cumulating resources and risks compensate and counteract each other by exerting direct influence on the developmental outcome. These beneficial and detrimental effects are independent of each other and can be described by the application of simple linear multiple regression models or main effect models. The second model – the “challenge model” – conceptualises the connection between conditions of risk and developmental outcomes by presupposing a curvilinear association (modelled by a quadratic term in the regression equation). Within this concept a certain degree of stress serves as developmental asset since it poses a challenge to the individual and provides an opportunity to mobilise and develop its resources. However, if faced with excessive stress, the individual is overstrained and cannot longer maintain competence. A third model – the “protective model” – assumes that a protective factor modulates (i.e. buffers) the detrimental effects of stress. In the presence of a protective factor “*variations in stress will*

be less strongly reflected in variations in quality of adaptation” (Garmezy et al. 1984; p. 102) than when the protective factor is lacking. In contrast vulnerability factors moderate the impact of stress by enhancing its effect. Such conditional relationships can be identified by means of adding interaction terms in the regression equation.

The last model particularly corresponds to the construct of resilience. Since protective factors primarily or exclusively reduce the effects of risk factors, their beneficial effects can primarily (or only) be observed in the presence of adversity. Several authors – among them Garmezy et al. (1984) – reserved the term “protective factor” for attributes that promote resilience by interaction effects (i.e. buffering processes against adversity) as outlined in the “protective model”. Similarly, Rutter (1987) stresses the importance of a buffering effect as a precondition for assuming protective factors. The factor in question has to operate differently dependent on the given level of risk. That means either the protective factor is associated with lower rates of mental health problems only in youth experiencing adverse circumstances or the protective factor is linked to less mental health problems in all children, but significantly interacts with the risk factor and proves more effective in risk-exposed children. Therefore the examination of statistical interactions between present risk variable(s) and putative protective factors is crucial.

However, this terminology is not used consistently. In several classic and contemporary publications the term “protective” is also used with respect to main effect models. Furthermore, also with respect to interaction effects the terminology suggested by Garmezy et al. (1984) is imprecise. Against this background Luthar (1993) introduced more differentiated terms, e.g. “protective-stabilising” or “protective-enhancing” in order to specify if interaction results in maintenance or augmentation of competence in high-risk children. The term “protective” was suggested to be used in order to describe direct ameliorative (main) effects. Later, similar differentiations were suggested regarding vulnerability effects (Luthar et al. 2000).¹

An appealingly simple terminology was applied by Steinhausen and Winkler Metzge (2001). According to them, there are risk factors and compensatory factors that have significant main effects on the likelihood of mental health problems by increasing or reducing it. These factors are distinguished from vulnerability factors and protective factors that display significant interaction effects due to intensifying or diminishing effects of the risk variable.

Considering theoretical and measurement problems, both, main effect models as well as interaction models have advantages and drawbacks. However, regarding the

¹Problems with differences in terminology cannot only be found when it comes to the definition of the term “protective factor”. There is further confusion regarding the use of words such as “assets” and “resources”. While some authors use the terms interchangeably (Masten and Coatsworth 1998) others distinguish between assets as internal factors of the individual that help to overcome adversity and resources which are external to the individual (Fergus and Zimmerman 2005).

aim to draw conclusions with respect to prevention, both models can provide useful information. Main effects models can identify important key assets whose promotion might support a decrease in rates of mental health problems. However, since high-risk and low-risk children would gain from such assets to a comparable extent, their promotion cannot be expected to reduce health inequities, e.g. by being more beneficial to disadvantaged children.

7.3 Identifying Health Assets in Order to Foster Resilience

7.3.1 The Potential of Population-Based Studies

With respect to the high public health significance of mental health problems and many inalterable risk factors, to maximise resilience in the population of children and adolescents is a promising public health approach. Consequently, comprehensive knowledge not only regarding high risk groups but particularly regarding direct ameliorative as well as buffering protective factors is needed in order to inform policy makers from a salutogenetic perspective. In this regard large population-based studies that assess a variety of risks and resources can provide important insights that can guide the design of effective public health interventions.

As became obvious from the theoretical background of research in resilience, it is hardly possible to measure resilience directly. Although there are some attempts such as the Ego-resilience scale (ER89; Block and Kremen 1996) these efforts measure rather protective personal attributes (that are probably often involved in resilience) than resilience itself. Against the theoretical framework outlined above, assessment of resilience needs to focus the absence of mental health problems where they are expected due to considerable adversity. In order to derive implications for practice – at the same time – attributes that correlate with resilience need to be assessed, i.e. protective factors that might support the successful response to environmental hazards.

Population-based epidemiological studies have not only the potential to identify important (combinations of) key assets on a population level but – based on representative samples – can also point out their public health relevance and prevention potential. Large sample sizes furthermore facilitate analyses how specific assets may work differently in diverse subgroups at risk (e.g. children in poverty) and provide a scientific basis for particularly adapted interventions maximising assets in circumscribed risk groups to counteract health inequities. In this context, from an epidemiological and public health perspective it is not primarily important to investigate in detail the exact relationships among the individual and environmental factors and the processes underlying resilience. In order to promote public mental health and to tackle health inequities, the most essential task is to identify key assets that can modify or even eliminate the consequences of present risks on a population level. By focusing the potential to create and maintain health in disadvantaged groups this research paradigm also helps to overcome the deficit perspective.

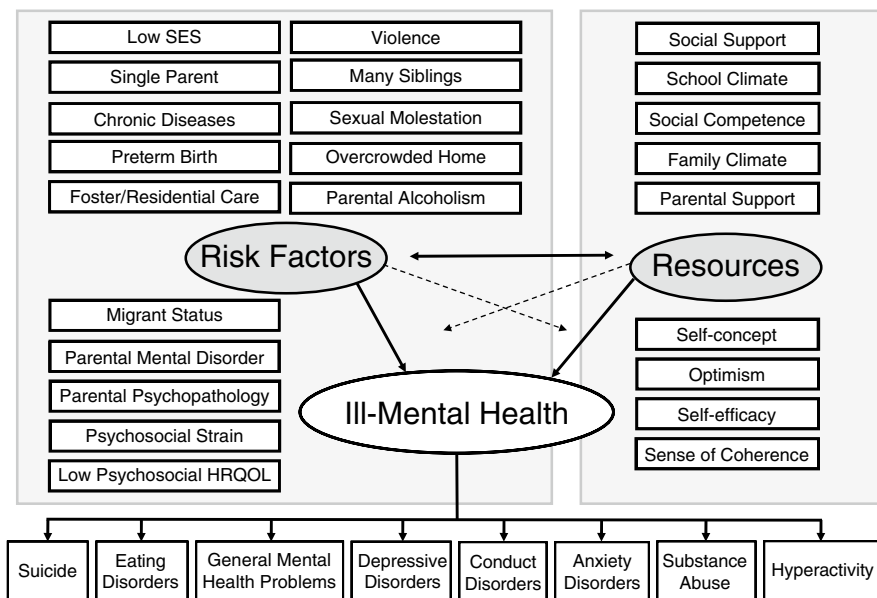


Fig. 7.2 Risks, resources and ill-mental health outcomes in the BELLA study

Despite the comprehensive body of literature examining risk factors or resources, studies including different kinds of risk as well as protective factors in representative population samples are rare (Kinard 1998; Masten and Reed 2002). In the following, an example how phenomena of resilience and – most important – correlates of resilience can be assessed on a population level will be outlined. The descriptions of risks and resources as well as possible operationalisations refer to the BELLA study which is a module of the German Health Interview and Examination Survey in Children and Adolescents (Ravens-Sieberer et al. 2008a). This population-based epidemiological study focuses (the absence of) mental health problems in children and adolescents and associated risks and resources. Thereby, it considers internal personal factors as well as environmental factors specific to the child's family or to the broader social environment. However, the assessment of risk factors and resources as outlined in Fig. 7.2 serves only as an example and cannot claim to be exhaustive.

7.3.2 Measuring Adversity: Risk Factors Assessment

Some important risk (and mediating) factors are available from basic sociodemographic information such as age and gender of the child and family set-up. Regarding the latter, information on circumstances such as growing up with a single parent or with a step-parent or on the number of siblings can be drawn from the

sociodemographic data. The age of the parents can be used to determine early parenthood (defined as one parent being younger than 18 years at the time of the child's birth) as a possible risk factor. Further interesting sociodemographic information is the migration status of a child as well as the family's socioeconomic status. Since the detrimental effects of poverty and social disadvantage were shown in several studies its measurement is essential despite of the co-occurring risk factors discussed above. In the BELLA study low socioeconomic status was determined by means of the Winkler Index which takes into account educational as well as occupational status and income of both parents (Winkler and Stolzenberg 1999). Moreover, inadequate living conditions were assessed such as living in a crowded flat, mildew infested rooms etc.

Several risk factors can be addressed by categorical questions in questionnaires or interviews with the parents. Within the BELLA study information regarding some important biological risk factors, such as smoking or drinking by the mother during pregnancy, perinatal complications and health problems of the child in the first 4 weeks after birth was available. In addition psychosocial risk factors were explored such as parents' alcohol consumption, unemployment or mental disorders, but also family conflicts, and conflicts between the partners. In order to identify high alcohol consumption, the interviewees were asked whether they ever thought about cutting down on their drinking and whether they were ever angry about being criticised for their drinking habits. Regarding unemployment, the parent's interview included a question asking whether the family had been affected by unemployment during the child's lifetime and whether this situation was perceived to be a burden. Similarly, current or former mental disorders in the interviewed parent or his/her partner were assessed. Furthermore, the parent was asked how well the family gets along and how happy the relationship between the partners is. Beyond, family conflicts during one parent's childhood and adolescence were asked after as well as presence of chronic diseases and circumstances such as the child resulting from an unwanted pregnancy or low social support received by the interviewed parent during the child's first year of life.

Other risk factors such as high parental strain or high parental psychopathology as well as low parental physical and psychological health-related quality of life were assessed using continuous measures. A high parental strain was studied using a catalogue of questions asking about the particular burden caused by various aspects of daily life, including household, tending a family member in need of care, job, financial worries, and lack of recognition from others. High parental psychopathology was determined by using a short form of the Symptom Checklist-90-R: the 9-item SCL-K-9 (Brähler and Klaghofer 2001) that considers dimensions such as somatisation, depression, anxiety, hostility, paranoid ideation, and psychoticism. Parental physical as well as psychological health-related quality of life was determined by means of the SF-12 (Ware et al. 1996).

Further questions referring to risk factors such as experience of violence and sexual molestation were assessed by children's and adolescents' self-report. Unfortunately, we did not acquire information regarding fear of violence which might be an important stressor as well when growing up in an unsafe environment.

7.3.3 *Measuring Resources: Protective Factors Assessment*

The resources that were assessed in the BELLA study can be attributed to three broader categories: personal/individual resources, familial resources and further social resources. Personal resources describe features of the child's or adolescent's personality such as high self-efficacy or pronounced optimism. High self-efficacy is conceptualised as a stable trait of personality and describes the firm belief in personal competence to manage stressful situations efficiently (Schwarzer 1994). Different studies provide evidence for the association between high self-efficacy and fewer mental health problems (Schwarzer 1994). In contrast, optimism describes a general positive outcome expectation – irrespective of the belief in one's own personal competence (Scheier and Carver 1985). In the BELLA study these resources were assessed by means of self-report scales developed for children and adolescents that directly target self-efficacy and optimism (Schwarzer and Jerusalem 1999; Grob et al. 1991) by items such as “I can find a solution for every problem” or “My future looks good”. A positive self-concept was assessed by a global self-worth scale (Asendorpf and van Aken 1993) that enquires for example, if children are happy about themselves, about the way they are and the things they do. Moreover, overall perceptions of and satisfaction with one's health and one's self were assessed (Starfield et al. 1994/1997/2000). An aggregate score of personal resources was calculated from a five-item scale developed in the pre-test phase of the survey which included selected items deriving from different personal resources scales. There are many further personal characteristics that were discussed to be of importance such as intelligence, creativity, humor, good coping abilities or social skills (Werner 1993; Wolin and Wolin 1993; Barbarin et al. 2001; Cederblad et al. 1994). However, due to practical reasons, only an assortment of possible factors could be assessed.

Also familial resources such as parental support, authoritative child-raising, and good family climate or cohesion were discussed as important resources (Darling 1999). Earlier research showed that children raised in authoritative homes (characterised by warmth, involvement, support of autonomy as well as clear rules and expectations) show less psychological and behavioural dysfunction (Lamborn et al. 1991). Supportive and consistent parenting styles and a positive parent–adolescent relationship are protective and connected to lower levels of depression and less impaired functioning (Juang and Silbereisen 1999; Forehand et al. 1991; Graham 2004; Jessor 1998). The family has great potential to support resilience in a child and even very early life experiences play a major role here. A recent study showed that an intervention of 1 h home visits weekly enhancing interactions between mother and child had considerable effects on outcomes such as anxiety, depression, and antisocial behaviour in older age (Walker et al. 2006). Studies like this do not only indicate the crucial role of parenting and the family in order to build resilience. They also point out that supportive community structures can largely influence these family characteristics and confirm the statement that “*the key to giving young people a good start in life is to help their parents.*” (Bartley 2006; p. 5).

In the BELLA study family climate was enquired by items such as “in our family everybody cares about each other's worries” or “we often go to the cinema, visit

sport events or go on excursions” (Family Climate Scale, Schneewind et al. 1985). Parental support was measured by means of a scale including items such as “my parents are loving” or “my parents understand my problems and worries” (Currie et al. 2001). However, it also has to be noticed that properties of parents and families that are principally protective may also result in additional problems. Parental overprotection can also hamper a positive development or even result in adverse effects such as antisocial behaviour (Neher and Short 1998). Thus, parental support and supervision are only to a certain degree helpful.

Social resources describe availability of social support outside the nuclear family such as by friends or teachers, relationships in sports clubs or church. Social support has been described as an important psychosocial buffer when confronted with adversity (e.g. Cohen and Wills 1985; Rutter 1987; Werner 1993). It covers not only the objective quantity and function of social relationships, i.e. the degree to which individuals are attached to others. Beyond, the individual’s perception of the support being offered and its interaction with the environment are important since social support is not only a characteristic of the social environment but also a function of the person’s behaviour. Social support systems relieve the child or adolescent, encourage coping and contribute to the development of individual competences. The protective effects of social support regarding mental health have been shown in a variety of studies (Ezzel et al. 2000; van Aken et al. 1996; Werner 1995; Cederblad et al. 1994) and several measurement devices were developed up to date.

In the BELLA study the level of support received by the child (e.g. by being listened to, being shown affection or being given information) was measured by means of a child-friendly adapted Social Support Scale (Donald and Ware 1984). Peer competence was measured by means of a scale including items such as “it is hard for me to find friends” (Currie et al. 2001). Regarding the broader social context some items referring the school climate were administered. However, it was not possible to measure each factor of interest. Thus, one major limitation of our study is the lack of data regarding structure and function of communities such as neighbourhoods, churches, and further groups that proved to be important to children’s mental health (Earls 2001).

7.4 Assets in Socioeconomically Disadvantaged Children: An Example from the BELLA Study

In order to give an example of the benefits of large population-based studies enquiring risks and resources, we will shortly introduce some findings from the BELLA study on mental health in socioeconomically disadvantaged children and the assets they have at their disposal. In order to distinguish a risk group from the rest of our population sample we focused children whose family’s socioeconomic status belongs to the most disadvantaged 10% in our sample (according to the Winkler-Index described above). In these children considerably increased rates of mental health problems can be observed (according to the Strengths and Difficulties Questionnaire; Goodman 1997). In the disadvantaged children 18% show seriously high problem

scores and 17% of them show at least signs of mental health problems adding up to 35% of the disadvantaged children being affected by mental health problems. The corresponding prevalence rates in the remaining 90% of the children are 9% with seriously high scores and 12% displaying signs of mental health problems, adding up to a considerably smaller number of affected children (21%).

In a second step, we looked at the distribution of assets in these groups. Figure 7.3 displays the distribution of parental support scale scores in the socioeconomically disadvantaged children compared to children with more fortunate backgrounds. It is clearly visible that the “poorer” children report less parental support compared to their peers. This difference corresponds to a small effect ($d=0.25$) and proves to be important since results from logistic regression (stratified according to the socioeconomic group) show that parental support is a significant predictor of the mental health status. The Odds Ratio of 0.67 (0.58–0.84) in the disadvantaged children and of 0.84 (0.79–0.90) in the remaining population indicate that parental support may be even of higher importance to the disadvantaged group, reducing the chance to suffer from mental health problems by 33% with each additional point on the parental support scale.

A univariate analysis of variance with the mental health total problem score as dependent variable indicates not only significant influences of the factors status group and parental support. It also shows a p-value of 0.054 for the interaction between status group and parental support, indicating a potential buffering effect.

To sum up, it can be concluded that parental support – as an important asset with respect to mental health – is less available in socioeconomically disadvantaged families. Thus, when it comes to promoting mental health in disadvantaged children, it might be reasonable to address their families and to enhance their potential to provide support.

In order to estimate the availability of social resources within this risk group of socioeconomically disadvantaged children, indicators of school climate as reported

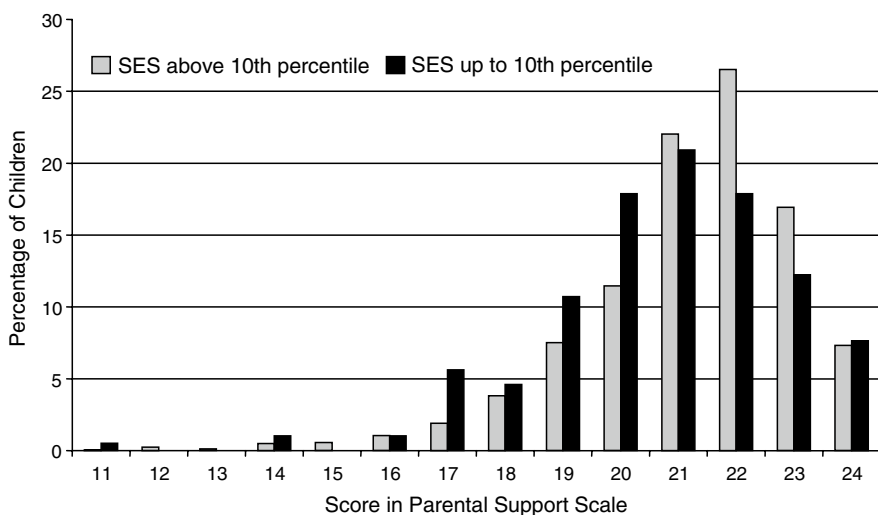


Fig. 7.3 Parental support in different socioeconomicstatus (SES) groups

by the children were compared between the social status groups (10% disadvantaged vs. the remaining population). As Figs. 7.4a–c illustrate children from both groups (dis)agree in similar proportions to statements such as “Most of the students in my class are kind and helpful”. However, it has to be mentioned that a χ^2 -test indicated significant differences between the groups in 7.4a and 7.4c. These differences obviously result from the “strongly disagree” answers (1% vs. 6% in 7.4a and 0% vs. 2% in 7.4c). In total however, the patterns seem comparable.

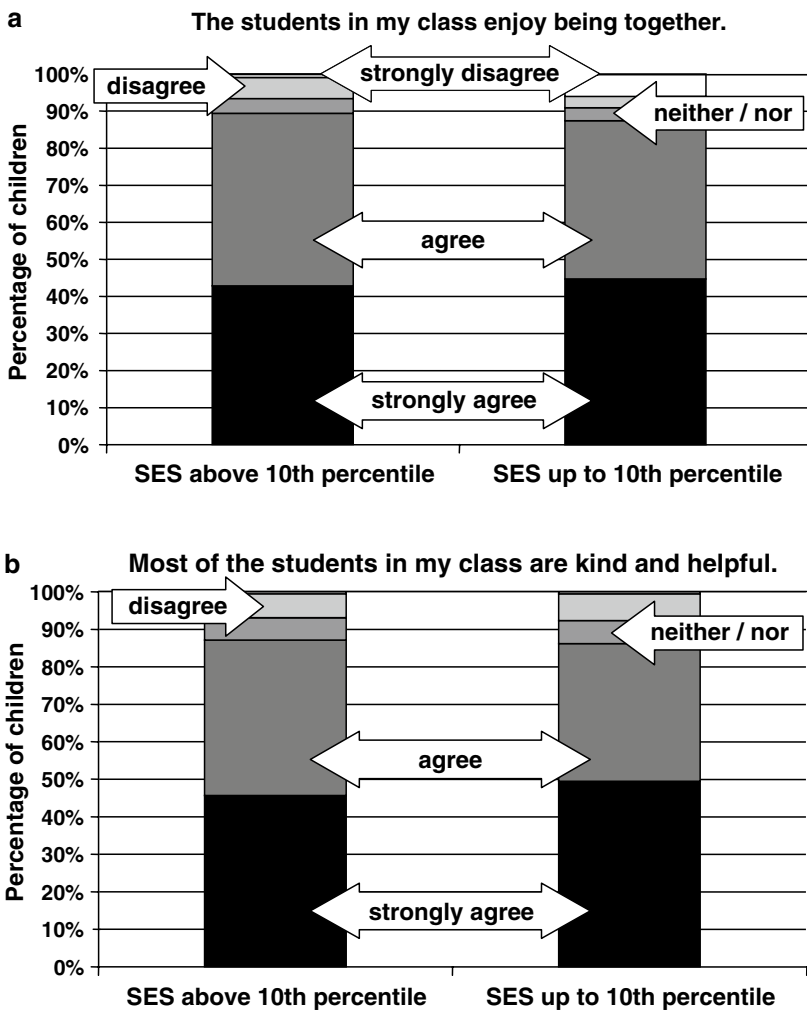


Fig. 7.4 (a–c) School climate in different socioeconomic status (SES) groups

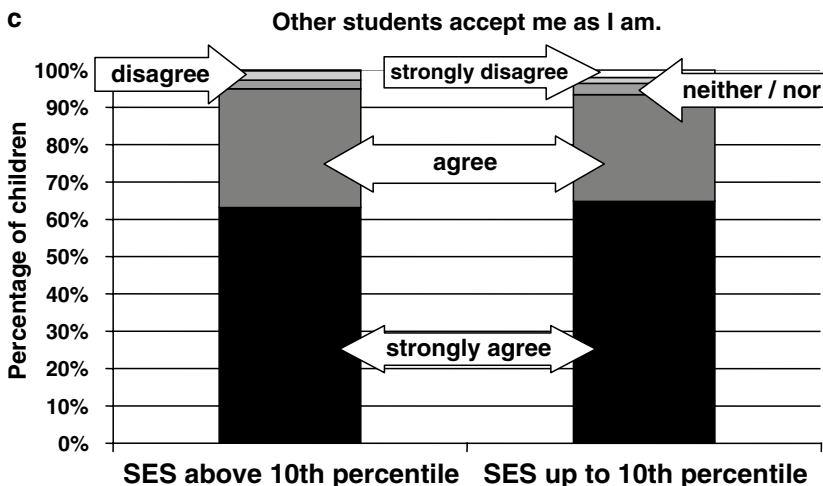


Fig. 7.4 (continued)

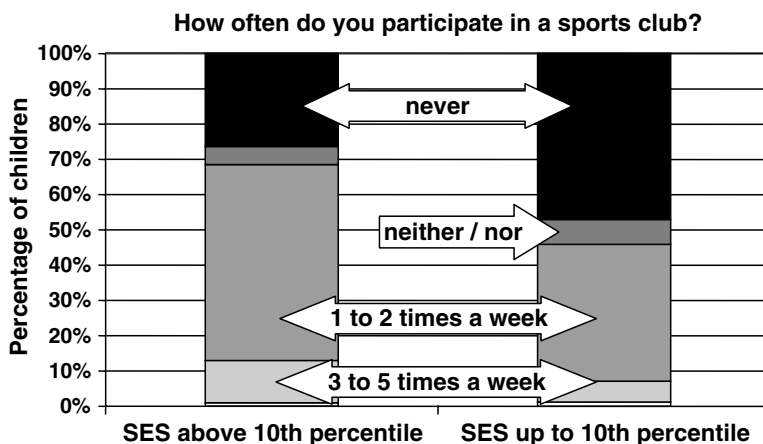


Fig. 7.5 Sport club participation in different socioeconomic status (SES) groups

In order to examine a further source of social support the participation in sports clubs was compared between the groups. Results indicate that about half of the disadvantaged children never participate in organised sport, while this is the case in only a quarter of the children from more fortunate social backgrounds. Thus, a potentially important source of social support is not available in the high risk group (Fig. 7.5).

These results briefly illustrate how large population-based studies can provide crucial information regarding potential approaches to promote the young populations mental health. They do not only enable the identification of particular risk

groups. Furthermore the role of resources regarding mental health and differences in the distributions of these assets can be displayed. The results presented here indicate, that in Germany school-based programs focusing peer support may be ineffective regarding a reduction of mental health inequities.

However, it might be a reasonable approach to target the disadvantaged parents' potential to provide support. Furthermore, the participation of their children in sport clubs (or comparable structured leisure time activities) could be enhanced by, e.g. providing easily accessible and inexpensive offers in the community and encouraging participation particularly in groups at risk.

7.5 Conclusions

Findings from epidemiological research on prevalence rates, persistence and negative consequences of mental health problems demonstrate clearly the high public health significance of the topic and the need of action. Supporting resilience in children and adolescents by enhancing key resources is important not only in order to reduce individual suffering and economic costs of treatment and connected burden. In the first instance effective prevention can avoid a huge loss of potential for the individual as well as for society (Belfer 2008). But despite of the large burden on the individuals and on society caused by mental health problems and despite of their growing importance, this topic has been neglected in most countries. A WHO study revealed that 40% of countries do not have a mental health policy (WHO 2001c). Furthermore, in 2002 only 7% of countries worldwide had a specific child and adolescent mental health policy (Belfer 2008).

One reason for the lack of political initiative might be that research often focused on very proximal health determinants that do not necessarily imply political responsibility. Since research on resilience stems from developmental psychology it traditionally focused characteristics of the individual and close relationships. However, the multitude of mental health determinants on different levels shows that an individual's mental health state is also affected by a broad range of factors deriving from, e.g. the economic, environmental, and social sector. Thus, interventions to strengthen mental health by promoting health assets need to address both, proximal and distal determinants. However, this task cannot be solely connected to the health sector but requires socio-political activities as well as intersectoral policies. Since action in settings such as child care, educational institutions, public infrastructure, labour, welfare, justice, housing and environment (WHO 2005) may positively impact on determinants of mental health, all these sectors should be involved in efforts of prevention and mental health promotion. To sum up, available – mainly psychological – expertise regarding individual strengths and family-level assets needs to be integrated within a broader interdisciplinary public health framework in order to identify community-based actions that support resilience.

Besides the fact, that a multi-sectoral approach might reach the most optimal outcome, the broad positive or negative consequences of good or poor mental health should provide a good rationale for many sectors to take responsibility for this major health challenge. E.g. sectors such as education, labour, welfare, and the legal system should be interested in effective mental health promotion since they bear high costs connected to youth mental health problems (Patel et al. 2007). Only approximately 10% of these costs are subjected to the health sector (Belfer 2008).

However, mental health promoting policies require evidence regarding relevant assets that need to be promoted and sustained. As it was pointed out above, public health research has the potential to provide such evidence as a basis for the decisions of policymakers. The measurement of resources besides the assessment of risks in population based studies thus is an important starting point for establishing and improving mental health-related policies. In this regard, the theoretical framework of resilience provides a useful research paradigm. Although research in resilience has been conducted for several decades now, there is still a need for investigating risk and protective factors and their interaction over time as a basis for preventive efforts and early interventions. Beyond, due to ongoing changes in society and consequently changes in living conditions of children and adolescents, future research will be constantly confronted with new questions. The example from our study showed that children with a higher risk burden have at the same time fewer resources at their disposal. However, this primarily applied to parental support and sport clubs as a source of social support but less to reported school climate. Even though more detailed analysis is needed, this suggests that well directed investment in assets of high-risk groups might help to reduce the health gap between disadvantaged children and those who are more fortunate. In this regard our findings correspond to the assumption that “*strengthening of the fundamental nurturing qualities of the family system and community networks*” is essential in youth mental health promotion (Patel et al. 2007; p. 1310).

This contribution primarily dealt with the identification of important assets on a population level to provide an evidence base for policy making, intervention planning and implementation. However, in a second step the availability of psychometrically sound scales further enables the evaluation of such interventions by facilitating pre–post measurements of the protective factors to be enhanced. Future research should increasingly focus the evaluation of programs targeting critical mental health determinants by monitoring changes in these determinants and further documenting the benefits of possible intervention-related improvements (WHO 2005). A further issue, which deserves attention in upcoming research, is the imprecise terminology that was pointed out above. A consensus on the central terms would be helpful not only with respect to ongoing research efforts but also in order to facilitate unambiguous communication of results (Luthar et al. 2000).

Last but not least the meaning of strengthening assets with respect to secondary prevention needs to be addressed. Epidemiological studies have shown that even in high-income countries many children affected by mental health problems do not receive adequate treatment (Kim and The American Academy of Child and Adolescent Psychiatry Task Force on Workforce Needs 2003; Ravens-Sieberer

et al. 2008b). Mental health problems in children and adolescents, in particular at an early stage, are likely to be overseen by their everyday environment. The opportunity to provide adequate help by simple measures, such as increased psychosocial support is then missed (Patel et al. 2007). In this regard the assets that were discussed regarding primary prevention might also impact the course of mental health problems and the extent of their negative consequences. Thus, strengthening assets may comprise an even larger potential to reduce the mental health-related burden in the young population that should be further examined by future research.

References

- Albee, G.W. (2006). Historical overview of primary prevention of psychopathology: address to the 3rd World Conference on the promotion of mental health and prevention of mental and behavioral disorders, September 15–17, 2004, Auckland, New Zealand. *The Journal of Primary Prevention* 27(5):449–456.
- Antonovsky, A. (1987). *Unraveling the mystery of health. How people manage stress and stay well*. San Francisco: Jossey Bass.
- Amato, P.R. (2001). Children of divorce in the 1990s: an update of the Amato and Keith (1991) meta-analysis. *Journal of Family Psychology* 15(3):355–370.
- American Academy of Pediatrics, Committee on Psychosocial Aspects of Child and Family Health (2001). The new morbidity revisited: a renewed commitment to the psychosocial aspects of pediatric care. *Pediatrics* 108:1227–1230.
- American Psychiatric Association (2000). *Diagnostic and statistical manual of mental disorders – DSM-IV-TR, 4th ed., text revision*. Washington, DC: American Psychiatric Association.
- Asendorpf, J.B., van Aken, M.A.G. (1993). Deutsche Versionen der Selbstkonzeptskalen von Harter. *Zeitschrift für Entwicklungspsychologie und Pädagogische Psychologie* 25:64–86.
- Bartley, M. (2006). Capability and resilience: beating the odds. London: University College London.
- Barbarin, O.A., Richter, L., deWet, T. (2001). Exposure to violence, coping resources, and psychological adjustment. *American Journal of Orthopsychiatry* 71(1):16–25.
- Barkmann, C., Romer, G., Watson, M., Schulte-Markwort, M. (2007). Parental physical illness as a risk for psychosocial maladjustment in children and adolescents: epidemiological findings from a National Survey in Germany. *Psychosomatics* 48:476–481.
- Belfer, M.L. (2008). Child and adolescent mental disorders: the magnitude of the problem across the globe. *The Journal of Child Psychology and Psychiatry* 49(3):226–236.
- Benson, P.L. (1997). *All kids are our kids*. Minneapolis: Search Institute.
- Block, J., Kremen, A. (1996). IQ and ego resiliency: conceptual and empirical connections and separatedness. *Journal of Personality and Social Psychology* 70:349–361.
- Bradley, R.H., Corwyn, R.F. (2002). Socioeconomic status and child development. *Annual Review of Psychology* 53:371–399.
- Brähler, E., Klaghofer, R. (2001). Konstruktion und teststatistische Prüfung einer Kurzform der SCL-90-R. *Zeitschrift für klinische Psychologie, Psychiatrie und Psychotherapie* 49: 115–124.
- Briere, J.N., Elliott, D.M. (1994). Immediate and long-term impacts of child sexual abuse. *The Future of Children* 4(2):54–69.
- Bronfenbrenner, U. (1979). *The ecology of human development. Experiments by nature and design*. Cambridge, MA/London: Harvard University Press.
- Caspi, A., McClay, J., Moffitt, T.E., et al. (2002). Role of genotype in the cycle of violence in maltreated children. *Science* 297:851–854.
- Caspi, A., Sugden, K., Moffitt, T.E., et al. (2003). Influence of life stress on depression: moderation by a polymorphism in the 5-HTT gene. *Science* 301:386–389.

- Cederblad, M., Dahlin, L., Hagnell, O., Hansson, K. (1994). Salutogenic childhood factors reported by middle-aged individuals. Follow-up of the children from the Lundby study grown up in families experiencing three or more childhood psychiatric risk factors. *European Archives of Psychiatry and Clinical Neuroscience* 244:1–11.
- Cohen, S., Wills, T.A. (1985). Stress, social support, and the buffering hypothesis. *Psychology Bulletin* 98:310–357.
- Costello, E.J., Mustillo, S., Erkanli, A., Keeler, G., Angold, A. (2003). Prevalence and development of psychiatric disorders in childhood and adolescence. *Archives of General Psychiatry* 60:837–844.
- Costello, E.J., Egger, H., Angold, A. (2005). 10-year research update review: the epidemiology of child and adolescent psychiatric disorders: I. Methods and Public Health Burden. *Journal of the American Academy of Child and Adolescent Psychiatry* 44:972–986.
- Costello, E.J., Foley, D.L., Angold, A. (2006). 10-year research update review: the epidemiology of child and adolescent psychiatric disorders: II. Developmental epidemiology. *Journal of the American Academy of Child and Adolescent Psychiatry* 45: 8–25.
- Currie, C., Samdal, O., Boyce, W., Smith, R. (eds) (2001). *Health Behaviour in School-aged Children: a WHO Cross-National Study (HBSC), Research Protocol for the 2001/2002 Survey*. Child and Adolescent Health Research Unit (CAHRU), University of Edinburgh.
- Dahlgren, G., Whitehead, M. (1991). Policies and strategies to promote social equity in health. Stockholm: Institute for Future Studies.
- Darling, N. (1999). Parenting style and its correlates. ERIC Digest EDO-PS-99-3, clearing house on elementary and early childhood education. Chicago, IL: University of Illinois.
- Díaz, R., Gual, A., García, M., Arnau, J., Pascual, F., Cañuelo, B., et al. (2008). Children of alcoholics in Spain: from risk to pathology: Results from the ALFIL program. *Social Psychiatry and Psychiatric Epidemiology* 43(1):1–10.
- Donald, C.A., Ware, J.E. (1984). The measurement of social support. *Research in Community and Mental Health* 4:325–370.
- Earls, F. (2001). Community factors supporting child mental health. *Child and Adolescent Psychiatric Clinics of North America* 10:693–709.
- Evans, G.W. (2004). The environment of childhood poverty. *American Psychologist*, 59(2): 77–92.
- Ezzel, C.E., Cupit Swenson, C., Brondino, M.J. (2000). The relationship of social support to physical abused children's adjustment. *Child Abuse & Neglect* 24:641–651.
- Fergus, S., Zimmerman, M.A. (2005). Adolescent resilience: a framework for understanding healthy development in the face of risk. *Annual Review of Public Health* 26:399–419.
- Fergusson, D.M., Woodward, L.J., Horwood, L.J. (1998). Maternal smoking during pregnancy and psychiatric adjustment in late adolescence. *Archives of General Psychiatry* 55(8):721–727.
- Fombonne, E. (1998). Increased rates of psychosocial disorders in youth. *European Archives of Psychiatry and Clinical Neuroscience* 248:14–21.
- Ford, T., Goodman, R., Meltzer, H. (2003). The British Child and Adolescent Mental Health Survey 1999: The prevalence of DSM-IV disorders. *Journal of the American Academy of Child and Adolescent Psychiatry* 42(10):1203–1211.
- Forehand, R., Wierson, M., Thomas, A., Armstead, L., Kempton, T., Neighbors, B. (1991). The role of family stressors and parent relationships on adolescent functioning. *Journal of the American Academy of Child & Adolescent Psychiatry* 30(2):316–322.
- Gardner, F., Johnson, A., Yudkin, P., Bowler, U., Hockley, C., Mutch, L., Wariyar, U., Extremely Low Gestational Age Steering Group (2004). Behavioral and emotional adjustment of teenagers in mainstream school who were born before 29 weeks' gestation. *Pediatrics* 114(3):676–682.
- Garnezy, N. (1991). Resiliency and vulnerability to adverse developmental outcomes associated with poverty. *American Behavioral Scientist* 34:416–430.
- Garnezy, N., Masten, A., Tellegen, A. (1984). The study of stress and competence in children: a building block for developmental psychology. *Child Development* 55:97–111.
- Goodman, R. (1997). The strengths and difficulties questionnaire: a research note. *Journal of Child Psychology and Psychiatry* 38(5):581–586.
- Graham, P. (2004). The end of adolescence. Oxford: Oxford University Press.

- Grob, A., Lüthi, R., Kaiser, F.G., Flammer, A., Mackinnon, A., Wearing, A.J. (1991). Berner Fragebogen zum Wohlbefinden Jugendlicher (BFW). [Bernese questionnaire of subjective well-being]. *Diagnostica* 37:66–75.
- Hammen, C., Burge, D., Burney, E., Adrian, C. (1990). Longitudinal study of diagnoses in children of women with unipolar and bipolar affective disorder. *Archives of General Psychiatry* 47(12): 1112–1117.
- Hysing, M., Elgen, I., Gillberg, C., Lie, S.A., Lundervold, A.J. (2007). Chronic physical illness and mental health in children. Results from a large-scale population study. *Journal of Child Psychology and Psychiatry* 48(8):785–792.
- Ihle, W., Esser, G. (2002). Epidemiologie psychischer Störungen im Kindes- und Jugendalter. Prävalenz, Verlauf, Komorbidität und Geschlechtsunterschiede. *Psychologische Rundschau* 53:159–169.
- Jenkins, J.M., Smith, M.A. (1991). Marital disharmony and children's behaviour problems: aspects of a poor marriage that affect children adversely. *Journal of Child Psychology and Psychiatry* 32(5):793–810.
- Jessor, R., Turbin, M., Costa, F.M. (2003). Adolescent problem behaviour in China and the United States: a cross-national study of psychosocial protective factors. *Journal of Research on Adolescence* 13:329–360.
- Jessor, R. (1998). *New perspectives on adolescent risk behaviour*. Cambridge: Cambridge University Press.
- Juang, L.P., Silbereisen, R.K. (1999). Supportive parenting and adolescent adjustment across time in former East and West Germany. *Journal of Adolescent* 22:719–736.
- Kim, W.J., The American Academy of Child and Adolescent Psychiatry Task Force on Workforce Needs (2003). Child and adolescent psychiatry workforce: a critical shortage and national challenge. *Academic Psychiatry* 27(4):277–282.
- Kinard, E.M. (1998). Methodological issues in assessing resilience in maltreated children. *Child Abuse & Neglect* 22(7):669–680.
- Klocke, A., Lampert, T. (2005). *Armut bei Kindern und Jugendlichen. Gesundheitsberichterstattung des Bundes (GBE)*. Berlin: Robert Koch-Institut.
- Lamborn, S.D., Mounts, N.S., Steinberg, L., Dornbusch, S.M. (1991). Pattern of competence and adjustment among adolescent from authoritative, authoritarian, indulgent and neglectful families. *Child Development* 62:1049–1065.
- Luthar, S.S. (1993). Annotation: methodological and conceptual issues in research on childhood resilience. *Journal of Child Psychology and Psychiatry* 34(4):441–453.
- Luthar, S.S., Cicchetti, D., Becker, B. (2000). The construct of resilience: a critical evaluation and guidelines for future work. *Child Development* 71(3):543–562.
- Markel, H., Golden, J. (2005). Successes and missed opportunities in protecting our children's health: critical junctures in the history of children's health policy in the United States. *Pediatrics* 115(4 pt 2):1129–1133.
- Masten, A.S. (2001). Ordinary magic. Resilience processes in development. *American Psychologist* 56(3):227–238.
- Masten, A.S., Coatsworth, J.D. (1998). The development of competence in favorable and unfavorable environments. Lessons from research on successful children. *American Psychologist* 53(2):205–220.
- Masten, A.S., Reed, M-G.J. (2002). Resilience in development. In: C.R. Snyder, S.J. Lopez (eds.) *The handbook of positive psychology* (pp. 74–88). Oxford: University Press.
- McLeod, J.D., Kaiser, K. (2004). Childhood emotional and behavioral problems and educational attainment. *American Sociological Review* 69:636–658.
- Murray, C.J.L., Lopez, A.D. (1996). Evidence-based health policy-lessons from the global burden of disease study. *Science* 274:740–743.
- Murray, C.J.L., Lopez, A.D. (1997). Alternative projections of mortality and disability by cause 1990–2020: Global Burden of Disease Study. *Lancet* 349:1498–1504.
- Neher, L., Short, J. (1998). Risk and protective factors for children's substance abuse and antisocial behavior following parental divorce. *American Journal of Orthopsychiatry* 68(1):154–161.
- Palfrey, J.S., Tonniges, T.F., Green, M., Richmond, J. (2005). Introduction: addressing the millennial morbidity – the context of community. *Pediatrics* 115:1121–1123.

- Patel, V., Flisher, A.J., Hetrick, S., McGorry, P. (2007). Mental health of young people: a global public-health challenge. *Lancet* 369:1302–1313.
- Prosser, J., McArdle, P. (1996). The changing mental health of children and adolescents: evidence for deterioration? *Psychological Medicine* 26:715–725.
- Ravens-Sieberer, U., Kurth, B.M. BELLA study group, KiGGS study group (2008a). The mental health module (BELLA study) within the German Health Interview and Examination Survey of Children and Adolescents (KiGGS): study design and methods. *Eur Child Adolesc Psychiatry* 17(Suppl 1):10–21.
- Ravens-Sieberer, U., Wille, N., Erhart, M., et al. (2008b). Prevalence of mental health problems among children and adolescents in Germany: results of the BELLA study within the National Health Interview and Examination Survey. *European Child & Adolescent Psychiatry* 17(Suppl 1):22–33.
- Razum, O., Breckenkamp, J. (2007). Kindersterblichkeit und soziale Situation: Ein internationaler Vergleich. [Mortality in children under 5 years and social situation: international comparison] *Deutsches Ärzteblatt* 104(43) A2950–A2956.
- Richardson, G.E. (2002). The metatheory of resilience and resiliency. *Journal of Clinical Psychology* 58(3):307–321.
- Roberts, R.E., Attkisson, C.C., Rosenblatt, A. (1998). Prevalence of psychopathology among children and adolescents. *American Journal of Psychiatry* 155:715–725.
- Rolf, J.E. (1999). Resilience: an interview with Norman Garmezy. In: M.D. Glantz & J.L. Johnson (eds.) *Resilience and development. Positive life adaptations*. New York: Kluwer Academic/Plenum.
- Rutter, M. (1971). Parent-child separation: psychological effects on the children. *Journal of Child Psychology and Psychiatry* 12:233–260.
- Rutter, M. (1985). Resilience in the face of adversity. Protective factors and resistance to psychiatric disorder. *British Journal of Psychiatry* 147:598–611.
- Rutter, M., Smith, D.J. (1995). *Psychosocial disorders in young people: time trends and their causes*. Chichester: Wiley.
- Rutter, M., Yule, B., Quinton, D., Rowlands, O., Yule, W., Berger, M. (1975). Attainment and adjustment in two geographical areas: III. Some factors accounting for area differences. *British Journal of Psychiatry* 126:520–533.
- Rutter, M. (1987). Psychosocial resilience and protective mechanisms. *American Journal of Orthopsychiatry* 57(3):316–331.
- Rutter, M., Quinton, D. (1984). Parental psychiatric disorder: effects on children. *Psychological Medicine* 14:853–880.
- Rutter, M., Tizard, J., Yule, W., Graham, P., Whitmore, K. (1976). Isle of Wight studies 1964–1974. *Psychological Medicine* 6:313–332.
- Sameroff, A.J., Seifer, R., Bartko, W.T. (1997). Environmental perspectives on adaptation during childhood and adolescence. In: S.S. Luthar, J.A. Burack, D. Cicchetti, J. Weisz (eds.), *Developmental psychopathology: perspectives on adjustment risk and disorder* (pp. 507–526). New York: Cambridge University Press.
- Scheier, M.F., Carver, C.S. (1985). Optimism, coping and health: assessment and implications of generalized outcome expectancies. *Health Psychology* 4:219–247.
- Scheithauer, H., Petermann, F. (1999). Zur Wirkungsweise von Risiko- und Schutzfaktoren in der Entwicklung von Kindern und Jugendlichen. *Kindheit und Entwicklung* 8:3–14.
- Schneewind, K., Beckmann, M., Hecht-Jackl, A. (1985). *Familienklima-Skalen. Bericht 8.1 und 8.2. Institut für Psychologie – Persönlichkeitspsychologie und Psychodiagnostik*. München: Ludwig Maximilians Universität.
- Schwarzer, R. (1994). Optimistische Kompetenzerwartung: Zur Erfassung einer personalen Bewältigungsressource. *Diagnostica* 40:105–123.
- Schwarzer, R., Jerusalem, M. (1999). *Skalen zur Erfassung von Lehrer- und Schülermerkmalen. Dokumentation der psychometrischen Verfahren im Rahmen der Wissenschaftlichen Begleitung des Modellversuchs Selbstwirksame Schulen*. Berlin: Institut für Psychologie, Freie Universität Berlin.
- Starfield, B., Riley, A., Ensminger, M., Green, B., Ryan, S., Kim-Harris, S. (1994/1997/2000). *Manual for the Child Health and Illness Profile-Adolescent Edition (CHIP-AETM)* Baltimore: The Johns Hopkins University.

- Steinhausen, H.C., Winkler Metzge, C. (2001). Risk, compensatory, vulnerability, and protective factors influencing mental health in adolescence. *Journal of Youth and Adolescence* 30(3):259–280.
- van Aken, M.A.G., Asendorpf, J.B., Wilpers, S. (1996). Das soziale Unterstützungsnetzwerk von Kindern: Strukturelle Merkmale, Grad der Unterstützung, Konflikte und Beziehung zum Selbstwertgefühl. *Psychologie Erziehung Unterricht* 43:114–126.
- von Rueden, U., Gosch, A., Rajmil, L., Bisegger, C., Ravens-Sieberer, U., the European KIDSCREEN group (2006). Socioeconomic determinants of health related quality of life in childhood and adolescence: results from a European study. *Journal of Epidemiology and Community Health* 60:130–135.
- Walker, S.P., Chang, S.M., Powell, C.A., Simonoff, E., Grantham-McGregor, S.M. (2006). Effects of psychosocial stimulation and dietary supplementation in early childhood on psychosocial functioning in late adolescence: follow-up of randomised controlled trial. *BMJ* 333:472–476.
- Ward, C.L., Flisher, A.J., Zissis, C., Muller, M., Lombard, C. (2001). Exposure to violence and its relationship to psychopathology in adolescents. *Inj Prev* 7:297–301.
- Ware, J.E., Kosinski, M., Keller, S.D. (1996). A 12-Item Short-Form Health Survey (SF-12): construction of scales and preliminary tests of reliability and validity. *Medical Care* 32:220–233.
- Werner, E., Smith, R.S. (1982). *Vulnerable but invincible: a study of resilient children*. New York: McGraw-Hill.
- Werner, E., Smith, R.S. (1992). *Overcoming the odds: high risk children from birth to adulthood*. Ithaca: Cornell University Press.
- Werner, E. (1993). Risk, resilience, and recovery: perspectives from Kauai. *Development and Psychopathology* 5:503–515.
- Werner, E. (1995). Resilience in development. *Current Directions in Psychological Science* 4:81–85.
- Williams, J.H., Ross, L. (2007). Consequences of prenatal toxin exposure for mental health in children and adolescents: a systematic review. *European Child & Adolescent Psychiatry* 16(4): 243–253.
- Winkler, J., Stolzenberg, H. (1999). Social class index in the Federal Health Survey [Der Sozialschichtindex im Bundes-Gesundheitssurvey]. *Das Gesundheitswesen* 61 (Sonderheft 2):178–183.
- WHO. (1992). *The ICD-10 classification of mental and behavioural disorders: clinical descriptions and diagnostic guidelines*. Geneva: World Health Organization.
- WHO. (2001a). *The world health report. Mental health: new understanding, new hope*. Geneva: World Health Organization.
- WHO. (2001b). *Strengthening mental health promotion*. Geneva: World Health Organization. (Fact sheet, No. 220).
- WHO. (2001c). *Mental health policy project. Policy and service guidance package. Executive summary*. Geneva: World Health Organization.
- WHO. (2005). *Promoting Mental Health. Concepts, Emerging Evidence, Practice. Summary Report*. World Health Organization, Department of Mental Health and Substance Abuse in collaboration with the Victorian Health Promotion Foundation and the University of Melbourne. Geneva: World Health Organization.
- Wolin, S.J., Wolin, S. (1993). *Bound and determined: Growing up resilient in a troubled family*. New York: Villard.