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Beating the odds: an approach to the topic of resilience in children and adolescents

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Summary The concept of good mental functioning despite negative influences first arose more than a hundred years ago and has received increasing interest during the last decades. For a long time, lack of unified definition of concept and terms rendered research difficult to compare. Nowadays, consent is reached on a definition of resilience as "an individual's ability to properly adapt to stress and adversity" and a large number of studies have been performed trying to identify factors that render children resilient. Among these, interpersonal factors like gender, intelligence, aspects of character and temperament as well as genes; factors within the family like a stable and positive relation to an adult; and factors of the broader environment like being integrated into the community have been those most articulately pointed out by research. Although, to date, research on resilience has been extensive, there is still a lack of robust, comparative, empirical studies allowing policy formulation for fostering resilience in children at risk.

Keywords Resilience · Trauma · Children · Concept · Prevention

Den Umständen trotzen – eine Annäherung an das Thema Resilienz im Kindes- und Jugendalter

Zusammenfassung Das Konzept von psychischer Stabilität trotz widriger Umstände, welches vor mehr als hundert Jahren erstmals entstand, hat vor allem während der letzten Jahrzehnte zunehmend an Beachtung gewonnen. Das Fehlen einer einheitlichen Definition des Konzeptes an sich sowie der jeweiligen Begrifflichkeiten machte es jedoch über lange Zeit schwierig, Forschungsergebnisse zu vergleichen. Heute wird Resilienz als „die Fähigkeit eines Individuums, Krisen durch Rückgriff auf persönliche Ressourcen zu meistern" definiert und in vielen Studien wurde und wird versucht, Faktoren, welche Resilienz bei Kindern fördern, zu identifizieren. Hierbei stellten sich persönliche Faktoren wie Geschlecht, Intelligenz, bestimmte Züge von Charakter und Temperament, Aspekte innerhalb der Familie wie etwa eine positive, stabile Beziehung zu einem Erwachsenen sowie Faktoren des Umfeldes wie das Eingebunden sein in eine Gemeinschaft als am stärksten wirksam heraus. Wenngleich es bis heute unzählige Untersuchungen zum Thema Resilienz gibt, fehlt es dennoch noch immer an robusten, vergleichbaren, empirischen Studien als Grundlage für Strategien zur Stärkung der Resilienz bei gefährdeten Kindern.

Schlüsselwörter Resilienz · Trauma · Kinder · Konzept · Prävention

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Introduction

Encountering difficult circumstances is a part of almost everybody's life. Many people will, however, during their lifetime, experience an "incriminating event or situation of extraordinary threat or catastrophic dimension, that will unsettle everybody", in other words, a traumatic event [1]. While some of the subjects confronted with trauma develop mental illness as a consequence, some are struggling to make the best of it and again, others even seem to develop a stronger personality and a more positive view of life after having overcome a suchlike experience [2]. Based on such observations, the concept of resilience has been developed. Drawing a profound

picture of evidence in this field would go far beyond the scope of this paper. Still, with this review, we are attempting to give an overview on important factors connected to resilience in children and adolescents, reviewing what is generally considered the most important quantitative and qualitative studies in this field.

Historically, the idea of protective factors for mental health first arose in the nineteenth century when mental hygiene was defined as "the art of preserving the mind against all incidents and influences calculated to deteriorate its qualities, impair its energies or derange its movements" and included "the management of the bodily powers in regard to exercise, rest, food, clothing and climate, the laws of breeding, the government of the passions and the sympathy with current emotions" [3]. The concept of resilience itself is originally based upon the principles of attachment theory, first developed by John Bowlby and Mary Ainsworth. This theory emphasizes the importance of the mother–infant relationship, which allows the child to develop self-confidence and a sense of security, protecting him later on in life and helping him cope with separation and adversity [4–7].

The idea of good mental functioning despite adverse conditions and beyond risk factors for pathology has become of increasing interest during the last decades [8, 9], but research on the resilience concept in mental health has for a long time been somewhat hampered by poor concept definition and the lack of a unified methodology. Simplified, it can be said that nowadays, the concept of resilience concentrates on how we cope with risk conditions and stressful situations by focusing on personal resources, skills and potentials [10, 11] A vast number of definitions have, however, been developed so far and have somewhat impeded communication about and research on the topic (see Table 1).

For a long time, authors described resilience in their own words based on their own understanding of the term, which usually derived from the working hypothesis or the context of the investigation [12]. Some referred to the "resilient" child [13] within the thinking of an aptitude of a person, while others paid more respect to family relations [14]. For a long time, resilience and protective factors were considered as being stable, long-term attributes, but nowadays, they are rather seen as something temporary that can change anytime in life [11, 15]. In early publications, resilience sounded like a child's invulnerability or another magic quality, which could not be explained in other words [16] and Norman Garmezy, one of the first resilience researchers, had even linked resilience with invulnerability [17]. Other authors, however, argued that resilience was not an inherent personal ability of a child, but rather a capacity, which is acquired during the child's development within the context of a child–environment interaction [11, 18–21]. Currently, the most accepted definition of psychological resilience is that of "an individual's ability to properly adapt to stress and adversity" and is being considered as something that can—to a certain extent—be learned, rendering it thus a process rather than a trait [22, 23].

This current, rather broad definition of resilience emphasizes the need for individuals to exercise enough personal strength to make their way to a number of resources they require in order to reach their developmental needs. These resources include psychological resources like feelings of self-esteem and a sense of attachment, access to health care, schooling, and opportunities to display one's talents to others. Combined, individual, family community, and cultural resources need to be both available and accessible for children if they have to succeed following exposure to adversity [24]. While in the early days of the resilience, research endeavors were mainly to identify risk and safety factors during the development of a child, in the second phase, research of dynamic processes and mechanisms was becoming

Table 1 Descriptions and definitions of resilience

Webster's New Encyclopedic dictionary [93]	1. The ability of a body to rebound, recoil, or resume its original size and shape after being compressed, bent, or stretched: Elasticity: the resilience of rubber, the resilience of arteries
	2. The ability to recover from or adjust to misfortune or change
McCubbin and McCubbin (1996) [94]	The positive behavioral patterns and functional competencies individuals and the family demonstrate under stressful or adverse circumstances, which determine the family's ability to recover by maintaining its integrity as a unit while insuring, and where necessary restoring, the wellbeing of family members and the family as a whole
Emmy Werner (2007) [36]	The absence of learning or behavior problems and the successful managing of development tasks during childhood and adolescence
Luthar and Cichetti (2000) [19]	A dynamic process, which is characterized as a positive adaptation in spite of inauspicious psychosocial starting conditions
Corinna Wustmann (2009) [35]	The psychological resistance of children facing biological, psychological and psychosocial risks of development. Children can only be called resilient, when they develop amazingly positive abilities despite massive impairments, compared to children who experienced the same events, but show psychological derogations
Vsetecka (2012) [95]	Resilience describes a certain mood and a resistance of the individual that allows him or her to overcome obstacles
Garmezy (1991) [17], Fonagy et al. (1994) [96]	Resilience is not as a stable, inherent invulnerability, but rather as an ability, to recover from negative life events and generate a positive development despite difficult circumstances of one's life
Schumacher et al. (2005) [97]	A relative resistance against pathological circumstances and events, which can change depending on time and situations
Welter-Enderlin (2006) [98]	Resilience is a motivation of people that helps them develop a behavior, in order to manage critical situations successfully
Liebenberg and Ungar (2008) [59]	Resilience is indicative of personal characteristics together with access to social resources and engagement in interactive processes that predict positive growth and development despite exposure to significant amounts of risk

more and more important, investigating links between risks, safety factors, resilience, and vulnerability [11, 19, 25, 26]. Most authors, nowadays, consider resilience as not only a capability one can gain during development, but a dynamic, transactional process between a person and the environment that can vary depending on time as well as situation [11, 19]. Even more recent conceptualizations define resilience as a process mediating the interactions between risk and protective factors on the individual, the micro and macro level and moderating the direct coherence between adverse life circumstances and negative psychosocial consequences [27, 28].

Definition of terms

Vulnerability factors

Vulnerability can be considered the opposite of resilience and refers to the inability to withstand the effects of a hostile environment. Vulnerability factors are thus determinants that render a child less resistant against detrimental influences and increase its risk of developing psychiatric symptoms or diseases as a consequence. It can be distinguished between primary vulnerability factors, which are already present at birth (like genetic dispositions, premature birth or birth conflicts) and secondary vulnerability factors, which the child gains during interaction with the environment (like chronic diseases or accidents with neurological squeals) [15, 28, 29] (see also Table 2).

Risk factors

A risk factor is defined as an attribute that increases the probability of the appearance of a disorder in a certain group [15, 30]. The risk factor concept is a concept of probability, not of causality, meaning that risk conditions are not necessarily linked to the appearance of a mental or developmental disorder.

Table 2 Vulnerability factors, risk factors, and protective factors

Vulnerability factors (Laucht 1999 [31], Laucht et al. 2000 [29], Scheithauer 2000 [15], Scheithauer 1999 [28])	Risk factors (Laucht 1999 [31], Laucht et al. 2000 [29], Scheithauer 2000 [15], Scheithauer 1999 [28])	Protective factors (Bender and Lösel 1998 [99], Lösel and Bliesener 1990 [100], Lösel and Bender 2007 [2], Wustmann 2009 [35], Welter-Enderlin 2006 [12])
Pre-, peri-, and postnatal factors (premature birth, birth complications, low birth weight, nutritional deficit)	Low socioeconomic status, chronic poverty	A stable emotional obligation to at least one parental or another attachment figure
Neuropsychological deficit	Aversive residential environment	Flexible and little impulsive temperament,
Psychopathological factors (like a very low level of activity)	Chronic familial disharmony	Realistic perspective of the future
Genetic factors (like chromosomal aberration)	Parental divorce	Emotionally positive, supporting and structured parental climate
Chronic disease	Frequently alternating partner of one parental part	Role models for a constructive coping behavior with stress events
Difficult temperament characteristics, an early impulsive behavior	Unemployment of the parents	Social support of persons standing outside of the family
Unsecure obligation organization	Alcohol and/or drug abuse of the parents	Social responsibility
Low cognitive abilities: low intelligence, deficits in perception	Mental disorders or illnesses of one or both parents	Characteristic feelings like flexibility and closeness
Low abilities to self-regulate tension and relaxation	Criminal parents	Cognitive competences like for example at least average intellect
	Homelessness	Experiences of self-efficacy and a positive self-concept
	Low education level of the parents	An active and not only reactive or avoiding coping strategy with stress events
	Absence of one part of the parents	Experiences with the meaningfulness and structure in the own development
	Very young parents (under 18)	Secure emotional relation to at least one caregiver
	Undesired pregnancy	Support of the environment
	Frequent relocation or change of school	Peer contacts and relations to friends
	Immigrant background	Positive school climate
	Social isolation of the family	Trustworthy teacher
	Adoption, foster family	
	Loss of a sibling or a close friend	
	More than four siblings	
	Mobbing	

Protective factors

Protective factors are characteristics within individuals, families, or communities that mitigate negative effect of stressful life events and help people deal more effectively with challenging life events [32].

Coping

Coping is generally described as "effortful response to stress that intends to reduce the perceived discrepancy between environmental demands and personal resources" [33] and is considered to be a complex process of cognitive, behavioral, and emotional responses to stress that is important in shaping children's postdisaster adjustment [34]. According to Wustmann, the coping process consists of two phases: first, the meaning of the stressful event is being assessed (challenge, threat, loss) and compared to situations experienced in the past, while later, the opportunities of acting according to, coping with and controlling the risk situation are being evaluated and a certain coping strategy is chosen [35]. (see also Table 3)

Resilience profile

Emmi Werner defined a so-called "resilience profile" describing characteristics that are, according to this concept, connected with distinct resilience [36]:

- *During early childhood*: Exposing a carefree, lively, and socially accessible temperament, showing flexible adaptation to new situations, a high level of impetus, being emotionally open, gentle, and sociable.
- *During infancy*: Exhibiting independent behavior allowing exploration of the environment, being open and asking for help if needed.
- *During school age*: Having a positively developed concept of self, good communication and conflict management skills, self-esteem, self-efficacy, and self-competence and being able to cope with problems.
- *During adolescence*: Exhibiting the same features as during school age, plus having developed a sense of responsibility, performance-orientated and independent behavior, showing empathy and helpfulness in contact with others.

Early investigations

Large epidemiological studies that formed the basis of early research on the topic of resilience, evaluated the cumulative effect of risk in a child's life and investigated the constellation of biological, psychological, and social risk factors and processes that are able to protect them [24, 37]. In short, three primary factors have hereby been identified that seem to implicate in the development of resilience in youth: the individual's interpersonal qualities, certain aspects within the family and characteristics of their broader social environment [38].

The "Kauai Study"

Research on resilience somewhat started with a couple of elaborate studies, among which the longitudinal study

Table 3 Tasks, strategies and types of Coping

Main tasks of coping behavior	Coping strategies	Types of coping in children and adolescents
Lazarus and Launier 1981 [101]	Lazarus and Folkmann 1984 [102]	Brenner 1984 [103]
To reduce the harmful influences of the environment	*searching for information* as basis for the reevaluation of the stressful situation or in order to select a coping strategy	*Altruism*: the child tries to help other people like his or her parents or siblings; this supporting role gives him or her the feeling to be useful
To improve the conditions of recovery	*direct action* to relieve the stressful situation and to cope with new challenges	*Humor*: a humorous behavior helps in difficult situations to take problems not that serious, but it isn't always the best way to solve a problem
To keep up the emotional wellbeing and the social relations	*Inhibition of action* to avoid certain actions, which might worsen the situation	*Oppression*: the suppression of negative feelings can help children to not give in to fear; meanwhile they can protect themselves and recover strength, until they have to face the problem again
To secure a positive self-image	*Intrapsychical coping* to regulate emotions	*Anticipation*: the child tries to foresee the next stressful episode, so that it can't be surprised; as a result the child has enough time to prepare coping strategies
	searching for social support -active search for support through others	*Sublimation*: indicates the satisfaction of nondischargeable needs through acts of compensation
		Denial or refusal of the stressful event: the child acts as if nothing has ever happened
		Regression: a regress of development; the child shows a dependent behavior to get more affection
		Withdrawal: the child retires, becomes very quiet and takes refuge in daydreams
		Impulsive actions: the child disguises his or her problems while annoying other people with his or her behavior to get more affection

on the Hawaiian island, Kauai, carried out by Emmy Werner and Ruth Smith can probably be seen as the first, most popular and largest investigation [37–41].

In this study, 698 Asian and Polynesian children, born in 1955 on the island Kauai, were followed for 40 years, data hereby being gathered at birth and at ages 1, 2, 10, 18, 32, and 40. The main ambition of this study was to determine long-term effects of pre- and perinatal risk factors and of inauspicious life circumstances on the psychic, physical and cognitive development of a child. In this study, one-third of the investigated children exhibited a high-risk profile including for example poverty, birth complications and a low education level of the parents, parental psychopathology or chronic familial disharmony. Two-thirds of these high-risk children turned out to have a significant learning or behavioral disorder at the age of ten and later on were conspicuous by becoming criminal or having early pregnancies while the rest of them developed to sanguine, self-confident and capable adults despite their serious risk conditions [37]. In the attempt to identify influences that had helped those children to overcome the difficulties several protective factors could be identified. Among these were, for example, favorable peculiarities of the temperament, scholastic achievements, the ability of communication and problem solving, and the educational level of the mother, autonomy, self-esteem and religious faith or extern support systems of church, youth groups or school [38]. Even among those children who had difficulties during adolescence, some recovered during early adulthood. For these, a continuous education on colleges or other educational institutions for adults, marriage with a stable partner, orientation towards a confession or church, recovery from a life-threatening disease or injury, and to a minor degree, psychotherapy, have been found to be protective factors [29, 31, 36, 38]. Interestingly, those persons being stable in early adulthood were still healthy when in their 40s [36]. Although this investigation has certainly to be considered as groundbreaking in resilience research, it has to be noted that within the study, no distinction is being made between risk and vulnerability factors on one hand and between resilience and protective factors on the other hand.

The "Arizona Twin Project"

The Arizona Twin project is a longitudinal study concentrating on the impact of the early environment on the development of resilience during childhood. The study included 582 twins (26 % monozygotic twins, 36 % same sex dizygotic twins, and 38 % opposite-sex dizygotic twins) and clearly described a positive parent personality as related to increased emotional availability, the latter being protective for children's problem behavior [42, 43]. This result goes well with the finding that a lack of parental warmth and harsh verbal and physical punishment is associated with childhood problem behaviors [44].

Evidence

As already mentioned above, a great number of factors seem to contribute to a person's resilience. Many authors, to some extent, group them into "interpersonal factors, family-related and environment-related factors" Although the importance of interactions between individuals and their environment have often been emphasized, individual resources still seems to have greater impact than the environment on the ability to successfully cope with stressful conditions [21, 45–47]. Also, patterns of coping under stress will vary over the life span [22]. Behavior like withdrawal from emotional attachments in contexts of physical abuse, which generally seem to be more common in children exposed to higher levels of stress [48], may temporarily protect a child but might disadvantage it later in life [49]. The term of "adaptive distancing" has been introduced by Chess [50] as the psychological process whereby an individual can stand apart from stressful events in order to accomplish constructive goals and advance his or her psychological development. In certain cases, moving away to college after high school or even being relocated from noxious family surroundings to foster care can enhance adaptive distancing [51]. In the 1990s conceptual models including several central variables, in order to understand the children's disaster, reactions were developed identifying the kind of immediate coping (along with the kind of disaster exposure, preexisting child characteristics and features of the postdisaster recovery environment) as the primary factor for consideration in predicting children's immediate and long-term disaster reactions [34, 52]. The number of risk factors in a child's life also plays an important role. Being exposed to coexisting risk factors has been shown to represent a fourfold risk for a child to expose developmental abnormalities, being exposed to four or more risk factors to increase the risk a tenfold [19].

Interpersonal qualities

Resilient children are generally described as working and playing well, having high expectations, goals, personal agency, and interpersonal problem-solving skills [17, 53]. All studies with children of school age have shown that intelligence and scholastic competence correlate positively with individual resilience [36]. Intellectual children assess stressful events in a more realistic way and use a variety of coping strategies in everyday life. Intelligence is, however, among the factors that can both be protective or harmful depending on individual and context. Intelligence can, for example, soften risks despite an antisocial environment, because these children can plan as well as perceive negative consequences and more easily develop nonaggressive coping strategies but has also shown to be a risk factor for the development of depression [36, 54]. Temperamental features are also often discussed in connection with resilience. In contrast to children with a so-called difficult tempera-

ment, which often leads to behavior problems, children with a so-called simple temperament are more flexible and willing to accept different approaches. Moreover, they are emotionally balanced and have a more appropriate social behavior [55]. Another factor investigated within the context of resilience is, personality. Although research on this topic is rather scarce [56], it could be shown that resilience is negatively correlated with neuroticism, and positively correlated with extraversion and conscientiousness [57, 58].

Family

Although the individual's influence on resilience seems to top that of the environment, the resilience of a child is still closely linked to that of the young people's families and communities [59]. The majority of resilient children have a strong relationship with at least one adult. This person does not have to be a parent, but these relationships are usually carried by love and trust and provide care, and support on a constant level [53, 60]. Certain values within a family, like emphasis on caring for siblings and other family members or assigning chores, also seem to have a positive influence on a child's resilience [39]. Living in poverty exponentially increases the risk to develop serious adaptation problems for children and adolescents [55]. While poverty is a risk factor, poor children growing up in resilient families have already received significant support for doing well, as they enter the social world when starting in daycare programs or in schooling [61]. A number of protective factors have been identified that seem to be balancing the fact of poverty. These include reasonable expectations for the children combined with straightforward communication structures, frequent displays of warmth, affection and emotional support, family routines and celebrations, and the maintenance of common values regarding money and leisure [62].

Environment

Communities play a huge role in fostering resilience. The child's social and physical ecologies, from caregivers to neighborhoods, became the focus of numerous studies that described different factors that, through interaction, predicted successful development despite exposure to serious adversity [63]. Characteristics of communities that are promoting resilience include the availability of social organizations, the consistent expression of social norms and opportunities for children and youth to participate in the life of the community as valued members [53, 64]. Frequent relocation has to be considered risky in this context as it reduces a child's opportunity for resilience-building, meaningful community participation [64]. Positive influence of church attendance has also been repeatedly described. When youth attend church regularly and are integrated in the respective community, their physical, social and emotional health, as well as their academic performance improves [66]. Cultural differences can be observed with a number of factors. While the pursuit of a hobby is an indicator of individual competency associated with resilience in higher-income countries [67], contribution to the family income even through participation in child labor, has been shown to be beneficial to children when that contribution is recognized as important by caregivers and the child's community [68]. In investigations on Vietnamese immigrants in the US, the parents' positive attitude towards education and the fact that older siblings were routinely supposed to help and support their younger siblings turned out to be protective factors [69–71]. Similar results concerning extraordinary scholastic performance of children of Vietnamese immigrants were reported in a study performed in Germany [72]. Furthermore, strong intergenerational bonds, joint activity between parents and children, being socialized into productive roles in work and social leadership, having a network of positive engagement in church, school, and community life and strong family connections with the community seem to be protective factors [73].

Biology

There is increasing evidence of a strong interconnectivity between genetic dispositions, epigenetic processes, stress-related hormonal systems, and immune parameters in all forms of adjustment to adverse living conditions [74]. Evidence for interactions between the genetic equipment and environmental influences were first given by Caspi and his colleagues through their multidiscipline investigation of health and development of 847 subjects, which was carried out for more than 26 years. The study showed that participants with one or two copies of the short allele of the 5-HTT serotonin transporter gene displayed more depressive symptoms, which they themselves related to life-event stress, than study participants who were homozygous for the long allele. In this study, maltreatment of a child during the first decade of life forecasted a depression during adulthood solely in participants exhibiting the short allele and not to those who were homozygous for the long allele [75–76]. A functional polymorphism in the X chromosome-binding gene, which is responsible for the encoding of the enzyme monoamine oxidase A (MAOA), was also shown to mitigate the ramifications of the maltreatment of boys during childhood. Boys with a highly active MAOA- genotype, who were maltreated during childhood less frequently developed symptoms of an antisocial personality than boys with a lower MAOA-activity [75–77].

Unfavorable constellations of other biological dispositions and systems, such as low-cortisol levels and elevated markers of inflammation also seem to promote the occurrence of psychiatric and physical pathologies such as posttraumatic stress disorder, obesity or diabetes in maltreated children. On the other hand, neuropeptide Y (NPY) and

5-Dehydroepiandrosterone (5-DHEA) are thought have a protective influence by reducing sympathetic nervous system activation and protecting the brain from the potentially harmful effects of chronically elevated cortisol levels [78]. In addition, the relationship between social support and stress resilience is thought to be mediated by the oxytocin system's impact on the hypothalamic-pituitary-adrenal axis [79]. So far, little is however known about the temporal coincidence of stress-sensitive developmental stages during childhood and adolescence and trauma consequences. Prospective study designs are needed to promote a deepened understanding of causal relations between adverse living conditions during childhood and its psychobiological effects.

Gender

Gender has been shown to be an important factor concerning the impact of risk factors as well as of risk attenuating factors [2, 35]. While girls generally seem to be more affected by personal characteristics like temperament, problem-solving attitudes, or self-esteem; boys are more concerned with the social support of others, like parents, other family members, or teachers [80]. The Kauai study depicted "looking for autonomy and self-help" as a protective factor for boys during childhood, while "social orientation" seemed to be more important for girls. Furthermore, resilient girls were in good physical condition, less timid and—unlike their nonresilient contemporaries—showed interest in their environment and in activities that are not gender specific. Resilient boys on the other hand showed more emotions as well as empathy, when compared to their peers and were also more interested in gender-unspecific activities than their nonresilient coevals [38]. Apart from traumatic experience, an early puberty represents a risk factor for both sexes to pursue a non-normative development. Being overwhelmed by their physical development and experiencing a fast decrease of self-esteem or of a positive body image can become a serious problem. Early pubescent girls often report a dissociation of their bodies and being stressed by the disability to regulate their physical development [81]. Further, health dangers that are especially concerning girls include suicide, drug abuse, STDs, early pregnancy and malfunctions like an unhealthy eating behavior or depressions [82]. Boys, who generally show a more aggressive behavior during adolescence [83], rather try to compensate difficulties through externalized behavior [84] and through drug and alcohol consumption, both deriving from a lack of coping strategies [82]. There also seem to be gender-specific times of vulnerability during childhood and adolescence. Boys seem to be more vulnerable to negative effects of critical life events during the first decade, whereas girls are more vulnerable during adolescence [83, 85]. When interviewed, juvenile girls report a larger number of critical life events, report negative psychosocial effects more often and suffer more under chronic stress than boys of the same age [83, 86, 87]. Resilient boys are often from a household with clear structures and rules, where a masculine family member is available as an identification model, while resilient girls are often from a household where independence is connected with caring support from a female relative [36]. Youth with sexual ambiguity and transgender youth seem to be an especially vulnerable population who are more prone to mental health issues, including depression and trauma symptoms [88].

Building resilience

Consequently to the understanding that resilience is a dynamic process, the idea of building resilience, in other words, helping children become resilient arose [25]. Most of the programs developed in this context use techniques of cognitive-behavioral therapy and seem to be effective to a certain extent in reducing depressive symptoms [89, 90]. While the attempt of strengthening resilience in children is certainly to be appreciated, difficulties in evaluation of suchlike efforts remain, again for lack of unified definition [22, 91].

Conclusion

The following conclusions can be drawn:

1. During the last decades, engagement in resilience research has been growing and although communication about the topic has for a long time been difficult due to inaccurate terminology, a vast body of knowledge about factors that render children resistant to noxious influences has been generated so far.
2. Resilience is generated by countless factors within the person and the micro and macro social level that continuously interact rendering resilience itself a dynamic process.
3. There still seem to be a number of constraints of current evidence as a basis for policy formulation regarding child well-being and resilience. In particular, there is a lack of robust—quantitative and/or qualitative—empirical studies [92]. Studies providing such data are needed to provide a basis for programs both identifying children at risk and provide efficient prevention strategies.

Conflict of interest
The authors declare that there are no actual or potential conflicts of interest in relation to this article.

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