Risk and Resilience: a Model for Public Health Interventions for Adolescents

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Introduction

Risk and Resilience, as a conceptual model, has captured the imagination of researchers and program planners over the past decade. The concept assumes that stress is a universal experience; how someone does in life is less determined by the stressors experienced and more related to the resources available to address the stressors. Likewise, it assumes that negative life events are not rare experiences; neither, do such experiences inexorably lead to a life of deprivation. Rather, resiliency research asks the question why some who are reared under adverse circumstances appear to live healthy and productive lives while others seem never to overcome the adversities experienced in early life. The concept does not imply mental health; nor does it suggest that those who are resilient live a life of happiness. Neither is necessarily true. Rather, Qarmezy (1) defines resilience as "the capacity to recover and maintain adaptive behavior after insult." Werner and Smith (2) talk about resiliency as the capacity to moderate internal (physiologic) vulnerabilities (e.g., perinatal stress) as well as external stressors (e.g., family discord).
While originally described as invincible (3) and invulnerable (2), it is now clear that those who are resilient are neither (4). While resilience implies resistance to change, resistance is a graded phenomenon. Likewise, it is erroneous to believe that the term is equally applicable across all risk circumstances, that it is an intrinsic trait of an individual or that it is unchanging (4). In truth, it is counterproductive to conceptualize resilience as a personality trait. Rutter (4) identifies four characteristics of resilience:

- Resilience lies in exposure to, not avoidance of, risk (like immunity);
- Risk or protective influences may stem from experiences at an earlier stage;
- Risk factors may operate in different ways at different ages (e.g., being underweight is a risk factor for neonates while being overweight is a risk factor for adults);
- We need to focus more on risk mechanisms rather than risk factors for a risk in
- one situation may be protective (e.g., sickle cell disease, aggression) in another.

The Link Between Stress, Resilience and Development

The developmental research of the 1970s and 1980s explored discrete aspects of adolescent development: physiological, cognitive, social, moral, etc. There was a search for the identification for universal markers of development; however, it has become increasingly clear through the work of Bandura (5) Harter (6) and others that development does not occur independent of environment. Rather, it represents the adaptation of the individual to the environments in which he or she lives. Within such a transactional model, Sameroff and Chandler (7) note that not only does the individual adapt to the environment but the environment

positively or adversely impacts development. So, too, organic damage, Sameroff and Chandler observe, can impede the physiologic "self-righting" tendency.

Bandura (5) observes that adolescents learn in an "instrumental" way, meaning that behavior is shaped by rewards and punishments that occur in specific social milieux reflecting social values. Additionally, imitation of others influences both behavior and self-identity. This social learning is central to self-efficacy.

It is also central to the development of an internalized locus of control. Specifically, one comes to see himself or herself as powerful (e.g., having an impact on his or her environment and/or those around him) through behaviors that elicit or fail to elicit response from the environment. Without environmental response, there is no feedback, no acknowledgment of the individual and no experience of having an impact. As will be seen subsequently, an internal locus of control is a key protective factor found in resilient young people.

These developmental perspectives of Sameroff (8), Bandura (5) and others view the process of development not as the inevitable unfolding of predetermined characteristics but more as a *social construction* where the self develops through an ongoing interaction between the individual and the social contexts and social groups with whom he or she interacts (Berger & Luckmans (9). It is this interaction that led Goffman (10) to observe that culture influences adolescent development by influencing:

- What they are;
- What they perceive themselves to be;
- How they portray themselves.

The link between resilience and development rests in their both being transactional processes (11) that develop over time in the context of supportive environments. From a developmental perspective, resilience is the capacity to successfully undertake the work of each successive developmental stage (12).

Grotberg (13) uses Erikson's stages (14) to show how the acquisition and completion of tasks at each stage in development is closely linked with resilience. She notes the three major sources of resilience to be an external facilitative environment, intrapsychic strengths and internal coping skills. These are the same elements necessary for developmentally appropriate stage achievement. For children, the achievement of Erikson's *autonomy* stage requires someone who is "crazy about you" (15), someone who displays unconditional love. The consequence is feeling lovable and having a sense of value or positive self-esteem (16). Positive self-esteem is a characteristic of resilience which in turn leads, Grotberg (13) notes, to *empathy* (recognizing emotion, perspective and role-taking, emotional responsiveness) and *pro-social behaviors* (helping, sharing, generosity and sympathy). Prosocial behaviors are one of the hallmarks of the resilient individual, but what is prosocial varies dramatically depending on community norms.

So, too, for the adolescent, opportunities to contribute to the social good of family or community, "required helpfulness", to use Rachman's term (17), contribute to resilience. Blum, et al (18), found chores and responsibilities at home to be a key discriminator between those who

functioned well and those who did not with disabilities. Rutter (19) showed that such experiences of "required helpfulness" were key to developing an internal locus of control which is a key element, at least in western cultures, to resilience.

Grotberg (13) summarizes the impact of community factors on development as follows:

- Contagion (e.g., peer influences);
- Institutional (e.g., the influence of organizations in the community);
- Collective socialization (e.g., adults as agents of social change and role models).

The Origins of the Concept of Risk

Over the past two decades, we have come to use two very different concepts in a nearly interchangeable manner. Specifically, we talk about the "at risk" teenager while concurrently talking about adolescent risk-taking behaviors. Within a risk and resilience frame, *risk factors* refer less to outcome behaviors and more to factors that limit the likelihood of successful development whereas *risk taking* focuses on the behaviors themselves.

Garmezy (3) notes that the concept of risk has its origins in maritime insurance which was based on two factors: a) What was the possibility of a successful voyage; and b) Which factors were important in determining such a possibility. In the health sector, the principles of epidemiology flow from the concept of risk.

Implicit in this notion is the search for predispositional qualities, potentiating factors, and protective factors. But what fundamentally constitutes a "risk"? Rutter (4) suggests that non-shared environmental influences tend to have a greater effect than shared ones. So, for example, the Great Depression would have less impact than poverty in the midst of plenty (20), or generalized family discord would have less negative impact than abuse targeted at one child (21). While as a generalization this may be true, it is also clear that the same event affects people in very different ways depending on age, sex, culture, cognitive capacities, and developmental stage. Thus, it is erroneous to assume than an event is universally perceived as a stressor and, if it is, that it has the same impact on everyone who experiences it. We will further explore these issues when we discuss measurement.

Stress: The Subjective Experience of Risk

If risk consists of events and mechanisms that diminish the likelihood of a successful voyage, then stress is the personal interpretation and subjective experiencing of risk. Gersten, et al (22) quote Cofer & Appley's 1964 definition of stress: "A state where well-being (or integrity) of an individual is endangered and he must devote all his energy to its protection."

What makes an event stressful is its capacity to change an individual's usual activity. Stress demands a response. The extent of the response as well as the extent of the experience of stress lies predominantly in the subjective meaning given the event rather than in its objective reality (23). Antonovsky (23) identifies four stages in response to a problem:

1. Problem confrontation;
2. Tension: the inner response to problem confrontation;
3. Tension management: the speed with which problems are confronted and resolved;
4. Stress: the state where energy is consumed in dealing with problems above the energy required for a resolution.

Garmezy, Masten, and Tellegen (24) propose three models to describe the impact of stress and personal attitudes on adaptation:

1. *Compensatory model*. Stress and personal attributes sum up to equal competence. This model assumes a simple linear regression: as stress goes up, competence goes down.
2. *Challenge model:* Moderate amount of stress enhances competence. This model assumes a curvilinear relationship between stress and competence.
3. *Conditional model:* Personal attributes modify (exacerbate or diminish) the impact of stress on competence. Positive attributes provide a type of immunity to stress.

These three models have lead to the identification of three sets of factors or processes that buffer stress:

1. *Compensatory factors:* These factors act as a counterbalancing force to stressful events. An example would be ego strength.
2. *Protective factors:* These factors are interactive with stress. So, for example, in the face of moderate stress, factors such as social skills enhance a competence.
3. *Vulnerability processes:* Traits that increase vulnerability to stress.

If vulnerability processes predispose to stress, then *resistance resources* are buffering. These include: a) homeostatic flexibility: social role, values and personal behaviors; b) connectedness to others; and c) connectedness to the community.

Resistance resources, protective factors, compensatory factors, and buffering variables all moderate not only the psychological and emotional impact of stress but its physiological consequences as well. In a review of the literature on stress and illness, Barr, et al (25) conclude:

- There is a modest but measurable association between child health status and psychosocial adversity;
- The association between psychosocial stress and illness holds for a wide range of conditions, both acute and chronic;
- The *meaning* an individual ascribes to an individual stressor appears to be able to alter pathology.

It is clear that stress is a real phenomenon that is heavily influenced by the meanings the individual ascribes to an event. There are factors that moderate and others that exacerbate the impact stress has physiologically, emotionally, and functionally.

Issues in the Measure of Risk and Resilience

As is probably clear by this point, risk, stress, and resilience are all multidimensional concepts. How one measures each will significantly influence findings and research results.

Measurement of risk has included: global measures, Stress measures, and life events scales.

Global measures include dimensions such as poverty which was used by Werner and Smith in their study of the Children of Kauai. As Gore and Eckenrode (26) note, however, there are a number of problems using a measure such as poverty. First of all, the meaning of the experience (e.g., growing up in poverty) is often not taken into account; and as Brown and Harris (27) note, it is the cognitive meaning ascribed to the event or experience more than the experience itself that determines risk. Global measures do not allow for variations in meaning.

A second problem with global measures is that they are highly intercorrelated within any cultural situation. So, for example, in the United States, race, poverty, family disruption, chronic illness and parental mental illness (all known risk factors) are highly intercorrelated. It is very difficult to disaggregate these variables to weigh the relative risk each contributes to the overall set of risk factors.

Finally, global measures of risk are problematic for the interventionist who, like the maritime insurance company, is looking for clues to improve the outcomes of the voyage. Few global variables are amenable to intervention.

Stress measures have been used as an alternative to global measures: but stress itself is multidimensional. If it is considered to be the subjective interpretation of risk, then Luthar (28) argues that it becomes important to obtain multiple ratings of perceived stress (e.g., self, teacher, peer and/or parent).

Gore and Eckenrode (26) note that stress tends to be viewed as a situational variable and that it is essential to measure it *in context* so as to understand the psychological significance and social demands of the stressors. *Context* is not limited to the social environment within which one lives. Part of the *context* is the developmental capacities of the individual experiencing the event or situation for cognitive capacity, social maturation, perspective-taking capacity, and many other developmental dimensions influence perceptions of the situation experienced.

Another contextual variable critical to understand is whether the individual experiencing the stressor is alone or part of a cohort experiencing the same event for, as Elder, et al (20) have shown, as a collective experience the stressor may unify a group and bring about the best of human characteristics: however, as an event or situation uniquely experienced it constitutes a significant risk factor.

Antonovsky (23) measures stress as *striving:* the tension created by the gap between aspirations and perceived reality. He characterizes striving along four dimensions *(material; non-material* - such as security and respect; *family* - number of children, relationship with spouse; *personal characteristics*- respect, honesty, attractiveness); and Antonovsky suggests that it is essential to measure stress across all four dimensions.

Stressful Life Events represents a third approach to measuring risk. As Kellum (29) notes, however, one problem with life events scales is that most are atheoretical. As a consequence, it is not clear what constructs are being described. Additionally, the meaning ascribed to a stressful life event varies depending on contexts such as developmental stage, culture, and environments in which the young person lives. It is rare for life events scales to account for these contextual issues in weighing a specific life event. Likewise, such life events measures tend not to account for factors such as gender and socialization as they impact on reactions (26). A final limitation of this measure of risk is that implicit in studying life events is the assumption that each is unique. Rather, life events are frequently intercorrelated and one (e.g., parental divorce) may, in fact, represent an entire set of events.
Hassles: Another life stress measure, as Luthar and Ziegler (30) suggests, is *hassles* which are described as the stressors of everyday life. While less momentous than divorce or relocation, Luthar argues that these are the mediators between life events and health.

Critical Life Events: If, as Anthony and Koupernik (31) suggest, changes are highly correlated with emotional stress, then for adolescents there are perhaps five key life events which may have overarching significance (32) that need to be taken into account in any assessment of critical transitions: School change (e.g., from elementary to junior high school); Pubertal changes; Onset of dating; Neighborhood change; Family disruption.

Measurement of Resilience: Resilience is at least as complex a construct as risk; at times conceptualized as comprised of protective, buffering and resiliency factors, Gore & Eckenrode (27); however, for purposes of this discussion the three dimensions are used interchangeably. As with risk, resilience has been evaluated through studying a range of dispositional, familial and environmental variables. However, there has yet to be developed a multidimensional assessment scale of resilience. As a consequence, most studies are cross-sectional and explore only one or two dimensions of resiliency.

Cross-sectional analyses of resiliency factors fall short for they cannot determine the direct and indirect effects of factors such as social supports and self-esteem. Clearly, certain resiliency factors are linked through:

Co-occurrence of multiple protective factors;
Joint effect when two or more protective factors are present concurrently;
Temporal relationship between two or more protective factors.

To sort out what is operational requires longitudinal research. These are important issues for understanding the relationships among and between resiliency factors. They will (or at least should) influence interventions.

Outcome Measures: There are seemingly as many outcome measures in risk and resiliencv research as there are studies, each reflecting the perspective of the researcher. These include:

- Mental health and psychopathology (33);
- Functional capacity: The ability to carry out social roles such as school, work, and marriage (1,2);

- Social competence: The success of a person in achieving his or her aspirations (34,35);
- Behavior problems (36): Pregnancy, drug abuse, school failure, what Schorr (37) calls "the rotten outcomes" of adolescence.

The outcome measure selected reflects social (or at least researcher) values and will determine the protective factors associated with positive outcomes. For example, if social competence is selected, there may be a bias for females, who are socialized to internalize problems and persist with social role maintenance, thus appearing as more resilient than if a mental health measure were used. Likewise, if problem behaviors are used, there are a whole set of proximal risk factors (e.g., access to weapons if interpersonal violence is the outcome) that need to be factored into the equation. Thus, findings are significantly influenced by how terms are defined and constructs measured.

Factors Associated with Risk and Resilience

Despite the conceptual and measurements issues, there have been a number of consistent findings across a wide varietv of studies that have explored risk and protective factors in the following environmental situations: poverty, abusive families, alcoholic families, homeless, chronic illness/disability, teen mother, juvenile delinquency. The following tables summarize the most consistent of those findings (Table 1, 2).

RISK MECHANISM:	BUFFERING/PROTECTIVE FACTOR:	
A. DISPOSITIONAL FACTORS		
Females are more likely than males to report stress.	Females are more likely than males to seek social supports from peers.	Block, 1993.
While caring is buffering, females consistently experience more stress given a negative life event than male.	Females are more oriented to caring and connectedness than males.	Gilligan, 1982.
Factors associated with negative outcomes at age 18: • Females: Late birth order; serious illness as an infant; multiple life stressors in last two years of life; family discord; problems with father. • Males: Late birth rder, prolonged separation from mother during first year in life; serious illness in first year of life; absence of father in middle childhood; death of a sibling; number of stressors.	Factors associated with resilience at age 18: • Females: Older father; positive parent relationship at age 2; number of caregivers in childhood. Assertive, autonomous, independent, poised, self-asured, vigorous, internal locus of control, interested in politics ans social issues. • Males: Being "cuddly" as an infant, positive mother-son relationship at age 1; autonomy at age 20 months; positive family life; interested in homemaking and the arts. • Resilient youth were not universally gifted; were described as responsible and socially mature; had strong achievement orientation; appreciated structure; more appreciative of female values (gentle, nurturing, sensitive, socially perceptive);	Werner & smith, 1982.

	articulate; self-reliant; curious.	
Caring itself can be a risk factor or stressor with females experiencing it more than males.	It is hypothesized that males mey structure their lives to care about fewer people and may become less over-involved with others than females.	Kesler, McCloud, unpublished.
Females are more vulnerable to minor negative life events.	Males are in better control of their feelings; less emotioonally vulnerable than females. They have better body image and happier.	Offer, et al., 1988.
Risk factors associated with criminal behavior; By age 10, most had school problems; half needed special education; 20% needed mental health services; one-third of males had a father with a criminal record; 50% of females and 25% of males had serious mental health problems as adolescents.	Comparing more successful and less successful teen mothers at age 30: More successful ones had: Higher intelligence; more education; more involvement in school activities; more stable marriages; fewer negative life events.	Werner & Smith, 1992.
Associations with delinquency: • Females: IQ less than 90; perinatal stress; needed mental health services by age 10; congenital disabilities. • Males: Low family stability, congenital disabilities; low maternal education; low SES; hyperactivity at age 2; at age 10: lower IQ, special education.		Wener & Smith, 1982.
	Resistance resources include: Informal networks; personal characteristics; psychological strengths; economic resources.	Antonovsky, 1979. Berkman, 1984.

For those with external locus of control, as stress increases, functioning decreases.	• Internal locus of control associated with maternal and/or family expectations. • For those with internal locus of control as stress increases, functioning stays the same.	Blum, et al., 1991. Luthar, 1991.
Higher intelligence children may be more sensitive to their environment and, thus, more susceptible to stress.	When stress is low, intelligence correlates with performance. When stress is high, those with higher intelligence lost their advantage.	Luthar, 1991. Masten, 1990. Ziegler & Glick, 1986.
Infant stress (perinatal problems), psychological problems, family stress, and negative maternal attitudes.	Internal locus of control and social supports were more predictive of positive outcome than socioeconomic status.	O'Grady & Metz, 1987.
Predictors of serious coping problems: a) Maternal and family problems: poverty, low maternal education and	or more stressors divided "non-copers" from ". rament, as a protective factor, may be less an	Werner & Smith, 1982.

low family stability; b) Severe perinatal stress, moderate to severe physical impairments, mental retardation, mental illness, learning disability.	e characteristic than a "goodness of fit" between vidual and his or her environment.	
Difficulty with expressive and receptive language.	Resilient males and females had better communications skills than same sex controls.	Karniski, et al., 1982.
High achievers who are poor and African American may be at increased risk for poor social adjustment (e.g., "acting white").	Factors associated with high achieving, low income African American children: positive sense of self reflected in academic achievement, internal locus of control, sense of responsibility, positive racial identity, "overcoming the odds," at least one important teacher in their lives; parents who were: nurturing, caring, invested in their school activities, established clear boundaries, organized the home to support academic and social learning.	Ogbu, 1991. Karniski, et al., 1982.
B. FAMILY FACTORS		
Divorce/Single mothers	• "Connectedness" is protective; it can be with parent, others, self or larger purpose. Belonging is a more critical variable in individualistic societies. • Moral energy: Connectedness to a higher purpose.	Dugan & Coles, 1989.
	While external supports are buffering, they can vary in: a) quality (e.g. how a relationship can provide emotional interdependence or companionship; b) multiplexity (emotional support, companionship or both); and c) symmetry (whether give and take in a relationship is equal or not).	Bellingham, et al., 1989.
• Poverty. • Poverty effects are cumulative as the child ages and was associated with poorer relationship with caregiver infancy and poorer school performance. • Poverty caused by the Great Depression. Males had more difficulty than females.	• Informal social supports were protective for young children but not for adolescents. • There were few buffering factors to the effect of poverty and the effects were cumulative: For males, higher intelligence, physical attractiveness, easy temperament and a positive mother-child relationship.	Cauce, et al., 1982, Egeland, Carlson & Stroufe, unpublished elder, 1984.
Poverty, divorce, parental psychopathology, institutionalization.	Child competence was more influenced by interaction with parents than by parent socioeconomic status.	Luthar & Ziegler, 1991.

Among low socioeconomic groups, the following are family risk factors: larger family size, low maternal education, absence of a parent, being an ethnic minority.		Quinton & Rutter, 1977. Sameroff, 1975. West & Farington, 1987.
Low socioeconomic status, large family size, low family support.	• Dispositional attributes of the individual: activity level, sociability, intelligence, communication skills. • Affective ties with family (feelings of connectedness). • External supports (informal and formal).	Werner & Smith, 1982.
Sameroff (.....) found each of the following to be associated with a loss of four IQ points: maternal mental illness, increased maternal anxiety, maternal rigidity, unskilled head of househld, lack of positive child-mother interactions, maternal education, minority status, poverty.	• Individual Factors: temperament, social responsiveness, reflectiveness in new situations, cognitive skills. • Family factors: warmth, cohesion, interpersonal concern, presence of caring adult. • Support: informal and formal social supports.	Garmezy, 1991. Sameroff, 1975.
Maternal stress	• Males: Higher intelligence, better communication skills, structure at home, responsive home environment. • Females: Same as males plus maternal personality characteristics.	Egeland & Erickson, 1990.
Those reared in chaotic or abusive family environments showed little improvement over time. No abused child developed competence across emotional and academic domains.	• For those who were abused: foster home placement, limits on father visits, caring teacher. • Women who broke the cycle of abuse had emotional support from foster parent or relative as a child, long-term therapy, supportive partner.	Werner, 1989.
Parental conflict, witnessing spousal abuse, lack of conflict resolution	Presence of a caring adult, subling closeness, participation in team sports.	Kruttschnitt, et al., 1987.
Six risk factors of the family: severe marital discord,low socioeconomic status, large family, overcrowding, parent criminality, maternal psychiatric illness, admission to foster care.		Rutter, 1993.
In the face of abuse, characteristics of those who did less well; external locus of control, low self-esteem, lack of hope, poorer cognitive skills, self-destructive.	In the face of abuse, "survivors" were characterized as: having an internal locus of control, higher self-esteem, better cognitive performance, hope, belligerent, having a supportive adult. There was no difference in	Zimrin, 1986.

	"survivor" and "non-survivor" groups regarding higher levels of aggression than non-abused, more difficulty expressing feelings, and more difficulty in establishing relationships; sadness.	
	While external supports are buffering, they can vary in: a) quality (e.g., how a relationship can provide emotional support, companionship; b) multiplexity (emotional support, companionship or both); and c) symmetry (whether give and take in a relationship es equal or not).	Hall & Wellman, 1985.
Alcoholic mothers had more impact on male than female children. Likewise, an alcoholic mother was a greater risk factor than an alcoholic father.	• Temparement, communication skills, positive self-concept and internal locus of control. • Children of alcoholic parents develop adaptive distancing.	Sher, 1991.

C. EXTERNAL FACTORS		
Negative life events are not equally experienced by all children in a family.		Beardsall & Dunn, 1992.
Loss events are associated with depression while non-loss events were associated with anxiety.	• Demographic factors: age, sex, socioeconomic status. • Personality style: coping style, locus of control, personality characteristics. • Environmental factors.	Cowen & Work, 1988.
Major adolescent stressors included family relationship problems,maternal mental illness, absent mother and/or father; serious illness or injury during adolescence; teen pregnancy or marriage.	• Resilient youth sought help from informal sources: peers (35%), parents (25%), ministers & teachers (11.5% each). • Resilient youth were more involved in school activities than non-resilient peers.	Werner & Smith, 1982.
The number of stressful life events may be more predictive of negative outcomes than the nature of the specific event.	The meaning ascribed to an event will significantly influence the extent to which it is a stressor. Bandura, 1977.	Sameroff, et al., 1987.

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A Model of Risk and Resilience

Patterson (63,64) presents a transactional model for understanding risk and resilience within a social context. The Family Adjustment and Adaptation Response (FAAR) Model suggests that an individual's response to stress is determined by a balance between the demands (stressors, strains and daily hassles) and capabilities (resources and coping behaviors). As has been previously noted both risk (what Patterson describes as demands) and resiliency factors (capacities in the FAAR Model) are comprised of dispositional, family and external factors. These factors coupled with the meanings an individual ascribes to the event (which itself is influenced by family and external factors) will determine the extent to which an event is experienced as a stressor.

The event (or crisis) creates a response which over time establishes a new equilibrium until the next stressor occurs. This model integrates the multiple components of risk and resiliency and establishes a framework for program interventions.

Intervention Issues

As noted previously, the construct of resilience is closely linked with prevention for if we know what places an individual or group at risk for a certain negative outcome and if we know what factors buffer some from that outcome then we should be able to develop programs that enhance resilience and minimize risk.

If the goal of development is competence, and particularly social competence, then perhaps we can operationalize that concept as "... skills for adaptation to diverse ecologies and settings" (65). Erikson (14) defines competence as: "The free exercise of dexterity and intelligence in the completion of serious (e.g., developmental) tasks." This definition, adopted by the W.T. Grant Consortium on the School-Based Providers of Social Competence, allows for community and

cultural variation. Such a flexible construct is critical, for as has been noted elsewhere in this paper, what is viewed as negative in one culture or setting may be positive elsewhere. Thus, interventions aimed at enhancing competence must be context-specific. Yet, the Consortium (1994) argues that there are certain skills across cultures that allow for competence to develop: Encoding of relevant social cues; Accurate interpretation of cues; Generation of effective solutions to problems; Realistic anticipation of consequences and outcomes from one's action; Translation of a decision into action; Expression of a positive sense of self-efficacy.

Such skill building, like the concept of resiliency itself, is transactional between the individual and his or her environment. Traditionally, such skills - what some have called *life skills training* - were taught in the home: however, today pressures on families throughout the world diminish the likelihood of such deliberate teaching or, even more importantly, such teaching by precept.

Life skills training is individually focused. It is linked to empowerment (66) and selfefficacy (5), all of which have as a goal helping the individual achieve some control over what is happening in his or her life. This is what Brooks (66) notes to be a key to high self-esteem. Such control derives from having decision-making and social skills as well as the opportunity to apply them.

Empowerment and life skills training are person-centered: resilience is system-centered. Using Rutter's construct of resilience, research has identified four intervention processes (67): 1) Redirection of risk impact; 2) Redirection of a negative chain reaction; 3) Self-esteem and self-efficacy development through personal relationships, new experiences, and task accomplishment; 4) Creating opportunity processes that permit the individual to gain access to resources.

Kazdin (68) notes that, to guide intervention theory, one should: *Identify* factors that predict the negative outcome; *Explain* the mechanisms through which they operate; *Identify* the factors that influence the mechanisms; *Predict* optimal points of interruption; *Specify* the interventions to prevent negative outcome.

The social development model which Hawkins, et al (69) describe builds upon the life skills approach but, as Bandura (61) and others have noted, it acknowledges the need for both opportunities for involvement in each contextual unit within which the individual lives (e.g., school, family, community) and provides reinforcements from each unit valuing the newly acquired skills.

Rachman (17) coined the term "required helpfulness" to capture the notion that those who contribute to the social good (e.g., of family or community) through successful completion of obligations are recognized for their contributions. It is a concept Mitchell (70) articulated when he spoke of the positive self-esteem value of youth participation in community. Likewise, Block (38) has shown high intercorrelation between ego resiliency and helping behavior.
Thus, it is not surprising that altruism in adolescence is associated with emotional stability and positive social relations (3); however, it stands in contradiction to Seligman's (71) construct of "learned helplessness" where one is socialized into incompetence. Certainly, there have been numerous interventions which have built upon youth participation; and where it has been studied, benefit to the individual teenager appears to be directly proportionate to the extent of involvement.

Clearly, interventions can exist at multiple levels (e.g., individual, family, community, nation), can have narrow (e.g., drug abuse prevention) or broad (e.g., social skills) foci. In addition, as Gordon (72) notes, interventions may be *generalized* (provided to everyone), *selected* (offered to a subset believed to be at risk), or *targeted* (directed to those at highest risk). One of the caveats, however, is that it appears that interventions that enhance resilience are person-specific and not generalizable to an entire group of young people. Again, an experience such as Werner and Smith (2) note of going into the Army may be resilience enhancing for some and a risk experience for others.

Kaplan and Cassel (73) describe a range of community-based intervention approaches:

1. *Development of support networks':* Given the concurrence of research that both formal and informal networks are of importance in developing stress resistance, it would appear logical that interventions that bolster support networks should be effective. While they may be, few studies exist evaluating this approach (74). Examples of this type of intervention include: Alcoholics Anonymous, Alanon, peer support groups and family-to-family support programs for parents who have a child with a disability. One problem with demonstrating outcomes is sample selection and the lack of randomized groups.

2. *State or community level interventions:* While it is a commonly held adage that one cannot legislate behavior change, there is some evidence that such broad-based interventions, while not affecting underlying dynamics, can influence behaviors. For example, when the United States raised the legal drinking age from 18 to 21 years, juvenile automative fatalities plummeted by over 33 percent in the subsequent two years (75). Likewise, there is evidence that raising the price of alcohol or eliminating cigarette dispensing machines each reduce the targeted behavior. As Pless and Stein (74) note, these are difficult programs to evaluate because of the multiple intervening variables.

3. *Broad-based social interventions:* Such interventions aim to implement structures that improve the social environment for either special populations or the population at large. Examples of such programs include legislation such as the Americans with Disabilities Act that has as its goal the improvement of access to community resources for those with disabling conditions. Other examples in the United States include programs such as Social Security Insurance for special needs populations. Whether improving service availability or diminishing economic barriers is sufficient to improve outcomes (especially social functioning) is difficult to document. keys, et al (76) have shown that one such program (Title V of the U.S. Social Securitv Act: Services for Children with Special Health Care Needs) when extended to those between the ages of 18 to 21 diminishes the morbidity and improves the health outcomes in this special needs population.

In addition to communitv interventions are those more targeted to specific groups of young people. We know that some interventions, such as school-based self-esteem building classes, are ineffective (77). On the other hand, the Consortium on the School Based Promotion of Social Competence has identified a range of individual and group-focused interventions and what is known of their efficacy:

1. *Interventions that focus on teaching personal and social competence:* Such programs are oriented to teaching problem-solving and decision-making. They aim at helping young people to identify the range of options in resolving problematic situations and selecting from among them. Recently, with the rise of juvenile violence in the United States, programs have developed to aid

young people negotiate potentially volatile situations.

As the Consortium notes (78), most of these programs are of short duration. Most such projects are not rigorously evaluated; and what has been shown is that the net result is weakly positive and erodes over time. On a short-term basis, positive effects have been demonstrated when programs teach affective, cognitive and behavioral skills (79,80). Schneider (81) did a meta analysis of 79 social skills programs and found: a) none had a negative impact; b) short-term outcomes were better than long-term; c) no control groups made positive gains; d) overall effect size was modest.

2. *Action interventions that span multi-year programs:* Many life skills training programs fall within this category. An example would be a multi-year, developmentally staged curriculum aimed at developing drug resistance skills (82). Elias and Clabby (83) did a followup in a middle school of young people who received a social skills curriculum in elementary school. Those that received the curriculum had better stress management skills than controls. The effect of the curriculum was still seen in high school.

In the drug prevention arena, Perry's recent work (82) and Pentz, et al (84) have shown that targeted Life Skills Trainning Programs can have a positive impact on tobacco, marijuana and alcohol use. The effect on alcohol use was of shorter duration than the other two substances: and studies have yet to report the long-term impacts of such programs. Howard has shown similar short-term effects of a program aimed at building sexual pressure resistance skills to delay the onset of first intercourse among young adolescents (85).

3. interventions that explicitly change the culture or governance of the environment:: An example, in the United States, is the Comer schools (86) where there is more shared decision-making between parents and teachers than in the traditional setting. Early evaluations appear promising; and there are a number of school restructuring projects underway that are in the preliminary stages of development. Hawkins, et al (69) suggest that it is insufficient to focus on one social system (e.g., schools) if the goal is the enhancement of social skills. Rather, they reason that since the social world of young people is school, family and community, then there must be a coordinated effort among all three to be most effective. Additionally, Hawkins argues, we need to identify contextual, individual and interpersonal factors that are risk and likewise those that are resistance contributing factors. Hawkins notes that the risk prevention approach does not require that risk factors be manipulated directly but does need to be clearly understood what contributes to the risk behavior and which are buffering factors.

Hawkins (87) summarizes the key factors to effective interventions:

- Focus on *known* risk factors;
- Focus on enhancing protective factors;
- The intervention should be based on what has been shown to work;
- Bonding (e.g., social connectedness), not fear, is a motivation;
- Risk and protective factors are generic.

While it is evident that few long-term evaluations have been completed to date on interventions based on risk and resiliency models, short-term evaluations look promising.

Conclusion

The World Health Organization talks about health as not merely the absence of illness but a positive sense of well-being. Similarly resilience is not merely the absence of risk, adversity or stress. As we have come to appreciate that the major causes of ill health among adolescents around the world are no longer infections but rather social and behavioral in etiology, our paradigms have shifted in health care from illness treatment to disease prevention, from disease management to health promotion.

Resiliency research, grounded in the traditions of epidemiology, provides us a clear picture of the mechanisms which predispose young people to risk and those that buffer or protect. The fact that many exposed to severe risk factors function well later in life may lead some to question the need to provide state or community-level resources to improve the outcomes for those at risk. America, in particular, is enamorate with the Horatio Alger myth of, having been born into poverty, one can pull himself up "by his or her bootstraps" to succeed in life. We have seen in this review that human organism is amazingly resilient leading some to describe a "self-righting" mechanism. What we have also seen, however, is that one does not do it alone; rather, it is in the context of family and community that resilience-like development occurs.

Rather than viewing these data as a rationale for inaction we should use them to redouble our efforts. The good news is that for those reared in adversity the outcomes are not necessarily bleak; however, it is likewise clear that, as the African proverb states, "it does take a community to rear a child."

Without such social investments the outcomes are bleak. For some, resources are found in family, relatives, neighbors. For others, it is through more formal institutions of school, church and counselors that support is found. If we choose not to support our young people the outcomes are clear for risk factors do predict risk behaviors and we will be left to pick up the pieces. We have a choice but it is not a choice between action and inaction. Rather, it is a choice, as Hawkins notes, of whether we operate an ambulance at the bottom of the cliff to pick up the children that fall or whether we climb the cliff and build a fence around it.

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