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Addressing the Challenges and Opportunities for Today's Youth: Toward an Integrative Model and its Implications for Research and Intervention

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This article calls for, and proposes some tenets of, model building in adolescent psychosocial development. Specifically, it is suggested that there is a need for a model that draws from the risk-protection approach, from which many prevention science approaches are drawn, and the applied developmental science perspective, from which many positive youth development approaches are drawn. The model to be built, and the integration it proposes, is based in the overlap between protective factors and developmental assets (drawn from the applied developmental science and positive youth development perspectives), as well as on the complementarity of the intrapersonal mechanisms proposed within the two perspectives. The article also poses important questions for future research and presents an empirical agenda for addressing these questions in the service of building and testing a model of adolescent psychosocial development and of integrating the prevention and positive youth development approaches to intervention and policy.

Editors' Strategic Implications: *The authors propose an innovative, integrative model that will be useful to preventionists in areas beyond the adolescent development example described in the article. This kind of developmental focus in prevention research is long overdue.*

KEY WORDS: risk; protection; applied developmental science; adolescents; prevention; positive youth development; intervention.

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Adolescence is a time of both great opportunity and great risk. For the first time in their lives, many adolescents can begin to think abstractly about their future selves (Nurmi, 1991; Piaget, 1972), to take on active responsibilities in managing family life (Steinberg & Silverberg, 1986), to engage in deep interpersonal relationships (Montgomery, 2005), and to contribute positively to their own lives and those of their peers, families, and communities (Lerner, Dowling, & Anderson, 2003). At the same time, however, conduct problems often appear or escalate in adolescence (Broidy et al., 2003; Moffitt, 1993), and rates of substance use (Johnston, O'Malley, Bachman, & Schulenberg, 2004), unsafe sex (Grunbaum et al., 2004), and delinquent or criminal behavior (Snyder, 2005) increase over childhood levels. For example, a recent study by the National Institute on Alcohol Abuse and Alcoholism (2003) found that rates of DSM-IV diagnosed tobacco, alcohol, and marijuana dependence increase nearly ninefold in middle adolescence—from less than 0.2% of the general population at age 14 to 1.7% at age 18. Similarly, reflecting increases in risk-taking behaviors, whereas the estimated mean number of new HIV cases (per 100,000 individuals) for each additional year of age was 25 for 13 and 14 year-olds, this mean was 385 new HIV cases per additional year of age for individuals aged 15 to 24 (Centers for Disease Control and Prevention, 2004).

A systemic view of development would hold that, given that positive and negative developmental trajectories can coexist within a single adolescent, they must be related in some way (cf. Lerner & Galambos, 1998). If they are indeed related, it is important to map the relationships of different putative causal factors to these positive and negative adolescent outcomes—for example, what causes adolescents to develop character and compassion, and what causes them to use drugs and engage in unsafe sexual practices? It may be that the same set (or complementary sets) of intrapersonal and contextual mechanisms is associated with both positive and negative outcomes in adolescence (e.g., Fredricks & Eccles, 2005; Scales et al., 2005). Accordingly, the purpose of this paper will be: to begin to build a model for studying these mechanisms and their relationships to adolescent developmental outcomes; to review and synthesize efforts to prevent negative outcomes and to promote positive outcomes under the umbrella of redirecting and facilitating adolescent development; and, to outline an empirical agenda for evaluating this framework and for developing interventions based on these evaluations. Although we will likely raise more questions than we will answer, such efforts are consistent with recommendations for model building and model testing (Dishion & Patterson, 1999). In accordance with the literature on positive and negative outcomes in adolescence (e.g., Jessor et al., 2003; Scales, Benson, Leffert, & Blyth, 2000; Scales et al., 2005), positive behavioral outcomes are referred to as "thriving," whereas negative behavioral outcomes are referred to as "problem behaviors." In the sections that follow, we lay out some of the issues and tenets involved in building an integrative model of adolescent development.

Theoretical Issues Involving Positive and Negative Outcomes in Adolescence

Extant literature indicates that both thriving (e.g., academic success, competence) and problem behaviors (e.g., conduct problems, substance use) in adolescence are associated with mechanisms in contextual domains such as family (Ardelt & Eccles, 2001; Demuth & Brown, 2004), school (Bryant, Schulenberg, O'Malley, Bachman, & Johnston, 2003; Sanchez, Colon, & Esparza, 2005), peers (Allen, Porter, McFarland, Marsh, & McElhaney, 2005; Fredricks & Eccles, 2005), and neighborhood (Duncan, Duncan, & Strycker, 2002; South, Baumer, & Lutz, 2003). Similarly, intrapersonal mechanisms have been associated with both positive and negative developmental outcomes. Academic self-concept, for example, has been found to be closely related to school performance (Guay, Marsh, & Boivin, 2003); and aspects of identity have been found to be related to drug and alcohol use (e.g., Jones & Hartmann, 1988; Marsiglia, Kulis, & Hecht, 2001). Attitudes, beliefs, and intentions toward substance use have also been associated with the extent to which adolescents engage in these behaviors (Barkin, Smith, & Durant, 2002; Jemmott, Jemmott, & Fong, 1998).

What is not known, however, is the extent to which similar—or complementary—mechanisms within specific contextual and intrapersonal domains are associated both with positive and negative developmental outcomes in adolescence, both cross-sectionally and longitudinally. Because building a viable and useful model is dependent on a reliable empirical knowledge base, formulating an integrative framework for studying the development of thriving and problem behaviors will require answering a series of empirical questions. We will provide some of these questions following a brief review of some aspects of two of the dominant scientific disciplines—the risk and protective factors approach and applied developmental science—that have been advanced to explain, predict, and intervene in adolescent development.

The Risk-Protection Approach and Applied Developmental Science

Broadly, at least two metatheoretical orientations have been introduced to map, explain, and intervene to redirect outcomes in adolescence. The *risk and protective factors approach*, drawn in part from developmental psychopathology (Cicchetti & Rogosch, 2002; Kazdin, Kraemer, Kessler, Kupfer, & Offord, 1997), holds that adolescents engage in destructive or abnormal behaviors, such as drug abuse, delinquency, and sexual risk taking, as a result of compromised developmental trajectories. In turn, compromised developmental trajectories are assumed to be caused, at least in part, by maladaptive intrapersonal processes (e.g., beliefs, attitudes, self-perceptions; Ludwig & Pittman, 1999; Ripple &

Luthar, 2000) and conditions in the youth's environment (e.g., family problems, neighborhood poverty and disorganization, or cultural incompatibilities between families and their environments; Bronfenbrenner, 1979, 1986; Pantin, Schwartz, Sullivan, Prado, & Szapocznik, 2004; Sampson, Raudenbush, & Earls, 1997). The risk and protection approach also attends to "resilient" individuals, who adapt well in spite of adverse social-ecological conditions (e.g., Luthar, 2006; Masten et al., 2004). The risk and protection approach is based on intrapersonal or environmental factors, conditions, or processes empirically identified as increasing or decreasing the likelihood that adolescents will engage in health risk behaviors. Although there is some evidence that risk and protection may operate somewhat differently across cultural contexts (e.g., Piko, Fitzpatrick, & Wright, 2005), these mechanisms are fairly consistent across ethnic, national, and cultural contexts (Dmitrieva, Chen, Greenberger, & Gil-Rivas, 2004; Vazsonyi, Hibbert, & Snider, 2003). Risk factors represent conditions associated with increased likelihood of problematic outcomes, whereas protective factors represent conditions associated with decreased likelihood of problematic outcomes. Although some protective factors represent the absence of risk (e.g., not dropping out of school), other protective factors operate by attenuating the effects of risk factors on developmental outcomes. For example, family organization and academic achievement have been found to offset the effects of deviant peer associations on conduct problems and substance use (Crosnoe, Erickson, & Dornbusch, 2002). Moreover, researchers working within the risk and protective factors framework have found that various negative outcomes in adolescence tend to co-occur, that risk and protective factors tend to have similar effects on various negative outcomes, and that protective factors may offset the effects of risk factors on the likelihood of problem behaviors (Jessor et al., 2003). Protective factors may also be directly and inversely related to problem behaviors (Sale et al., 2005). However, in the presence of large amounts of risk, the degree of risk present may overwhelm the protective factors present, and protection may not operate in such contexts (e.g., Deater-Deckard, Dodge, Bates, & Pettit, 1998; Pollard, Hawkins, & Arthur, 1999).

The *applied developmental science* perspective holds that youth have the potential for thriving, where *thriving* is defined as fulfilling one's potential and contributing positively to one's community (Lerner, Fisher, & Weinberg, 2000a; Lerner, Fisher, & Weinberg, 2000b). The applied developmental science approach grew out of the study of plasticity in human development (e.g., Lerner, 1984), whereby organisms have the potential for positive and adaptive change regardless of their developmental histories. Applied developmental science therefore shares some common themes with the "positive psychology" approach (e.g., Seligman, Steen, Park, & Peterson, 2005), although the two approaches emerged from vastly different metatheoretical traditions.

Within the applied developmental science approach, *developmental assets*—positive intrapersonal processes and mechanisms in one's social ecology (e.g.,

supportive parenting, affiliation with prosocial peers, bonding to school, and availability of familial and non-familial mentors)—are proposed as the primary predictors of thriving (see Scales et al., 2000; Theokas et al., 2005, for supportive empirical evidence). Although research based in the applied developmental science perspective does not explicitly consider negative contextual factors, studies have found that adolescents with fewer developmental assets tend to evidence lower levels of thriving, and greater likelihood of problem behaviors, than do adolescents with greater numbers of assets (Scales et al., 2000, 2005). Lerner et al. (2005) outline the "Five C's" of positive youth development—competence, confidence, connection, character, and caring. Although measurement validation of the Five C's is ongoing, these five attributes have been shown to pattern onto a second-order latent factor labeled as positive youth development (or as thriving; Lerner et al., 2005). This second-order factor is positively associated with youths' contributions to society and negatively associated with their engagement in problematic behaviors (Jeličić, Bobek, Phelps, Lerner, & Lerner, in press). Given the developmental-contextual focus of applied developmental science, the C's can serve both as outcomes (i.e., as dependent variables in intervention studies) and as mediators or moderators (i.e., as mechanisms through which developmental assets influence other behaviors, such as substance use or sexual risk taking; cf. Jeličić et al., in press). The focus of applied developmental science appears to be largely on positive mechanisms and outcomes, such that risk is generally not considered. As a result, within the applied developmental science perspective, it is not known whether the relationship of developmental assets to thriving is equivalent across levels of risk. Additionally, one potential criticism of applied developmental science—at least as manifested in the positive youth development movement—is that it appears to be unipolar and does not attend sufficiently to negative conditions or outcomes. An integration with the risk-protection approach may help to address this issue.

Although the risk-protection approach and applied developmental science focus on different sets of outcomes, they share many features in common (see Table I for a list of areas of contrast and agreement between the two perspectives). These common features may have the potential to support building a larger, overarching model that integrates these two perspectives on adolescent psychosocial development. Such an integrative model may be more useful for research and practice than is either approach alone. It should be noted, however, that although a large body of empirical research has been conducted on the risk-protection approach (see Romer, 2003, for a collection of reviews), comparatively less empirical research has been conducted to validate the tenets of applied developmental science. The applied developmental science approach was developed much more recently and has attracted a somewhat smaller following, and many of the studies validating this approach are underway or have yet to be conducted (Lerner et al., 2005; Phelps et al., in press).

Table I. Comparisons and Contrasts Between the Risk-Protection and Applied Developmental Science Approaches

Issue/Domain	Risk-protection	Applied developmental science
Origins	Developmental psychopathology (Cicchetti & Rogosch, 2002; Kazdin et al., 1997)	Comparative psychology and plasticity (Lerner et al., 2000a, 2000b)
Central tenets	1. Adolescents must be protected from risks for substance use, delinquency, sexual risk taking, and other negative outcomes. 2. Problem behaviors occur as a result of a compromised developmental trajectory (Kazdin et al., 1997). 3. Adolescent development can be redirected onto a positive course by changing the pattern of person ↔ context relations (Cicchetti, 1993).	1. All adolescents possess the innate potential for positive development and contributions to society (Damon, 2004; Lerner et al., 2003). 2. Development can be redirected onto a positive course by changing the pattern of person ↔ context relations (Lerner et al., 2000a, 2000).
Primary outcome indices	Problem behaviors (Jessor et al., 2003): Conduct problems Drug and alcohol use Sexual risk taking Delinquency Academic failure	Thriving (Lerner et al., 2003): Competence Confidence Character Caring Connection
Mechanisms of influence	Risk factors (increase likelihood of problematic outcomes) Protective factors (decrease likelihood of problematic outcomes)	Developmental assets (increase likelihood of thriving)
Primary shortcomings	1. Principal focus is on negative behavioral outcomes (Albee, 1996; Weissberg et al., 2003).	1. Does not consider the role of risk in the relationships of developmental assets to thriving. 2. May be unipolar and does not attend sufficiently to negative behavioral outcomes.

Both the risk-protection approach (Hawkins, Catalano, & Miller, 1992) and applied developmental science (Lerner et al., 2000a, 2000b) are rooted in an assumption of plasticity, where individual development can be redirected by changing the network of person ↔ context relationships. Moreover, on a conceptual level, protective factors and developmental assets appear to overlap considerably. Protective factors are conceptualized as characteristics or processes that decrease the likelihood of negative developmental outcomes (Hawkins et al., 1992), whereas

developmental assets are conceptualized as characteristics or processes that increase the likelihood of positive developmental outcomes (Scales et al., 2000). Within both approaches, intrapersonal and ecological mechanisms affect behavior through a process of developmental regulation, in which person ↔ context relations are interpreted by the individual and translated into courses of action (Dodge & Pettit, 2003; Lerner, Freund, DeStefanis, & Habermas, 2001). Within the risk-protection approach, in the presence of a given amount of risk, the amount of protection determines the extent to which the process of developmental regulation will lead to adaptive versus problematic behaviors and outcomes (Pollard et al., 1999). Applied developmental science scholars, however, generally take into account only the effects of developmental assets on thriving and do not consider the role of risk. So, again, it remains to be ascertained whether the relationship between developmental assets and thriving—similar to the relationship between protective factors and problematic outcomes—is moderated by the amount of risk present. The resilience literature (see Luthar, 2006, for a comprehensive review) may provide some guidance in this regard; young people who function well despite high levels of contextual risk are characterized by a set of intrapersonal and contextual protective factors (e.g., self-direction, availability of familial or non-familial mentorship) that help to offset the risks present. Additionally, to the extent that developmental assets and protective factors refer to similar phenomena, research demonstrating the interaction of risk and protection (e.g., Formoso, Gonzales, & Aiken, 2000; Pollard et al., 1999) may be used to generate hypotheses regarding the role of risk in the relationship between developmental assets and thriving.

Developmental assets and protective factors can be assumed to overlap to the extent that they are promotive—that is, to the extent that they have the potential both to ameliorate or avoid problematic outcomes *and* to increase the likelihood of thriving and contribution to society. Specifically, protective factors include both (a) promotive mechanisms such as positive family functioning, bonding to school, and affiliation with prosocial peers (Hawkins et al., 1992) and (b) purely protective mechanisms such as limits on access to alcohol and cigarettes (Wagenaar et al., 2000) and community policing (Xu, Fiedler, & Flaming, 2005). Developmental assets refer only to intrapersonal and contextual characteristics and processes that are both protective and promotive, such as support, empowerment, and constructive expectations from family, school, and neighborhood (Lerner, 2001; Scales, Benson, Roehlkepartain, Sesma, & van Dulmen, 2006). Whereas protective factors such as community policing and limited access to alcohol and cigarettes can certainly prevent substance use and criminal behavior, "preventing a problem from occurring does not provide children and adolescents with the knowledge and skills needed to contribute productively to self, family, and community . . . because problem-free is not fully prepared . . . A child free of problems associated with substance use, violence, crime, unsafe sex, and so forth, is not necessarily a child who has the knowledge and skills to compete successfully in the global

marketplace" (Lerner, 2001, p. 255). There is clearly variability among "problem-free" children in terms of positive competencies, skills, and attitudes. What is needed is a model that brings together elements from the risk-protection approach and from applied developmental science to derive a set of processes that *both* protect *and* promote, that specifies the relationships of these processes to developmental trajectories in adolescence, that considers the moderating role of risk, and that attends to cultural factors that may alter the form that the mechanisms or trajectories take, their relationships to one another, or both.

The conceptual overlap between the risk-protection approach and applied developmental science can provide the starting point for an integrative model that attends both to thriving and to problem behaviors. We can put forth some tenets of such a model here, focusing on the compatibility and complementarity of contextual and intrapersonal mechanisms in the risk-protection approach and in applied developmental science. Both perspectives clearly delineate mechanisms occurring within the ecological context from those occurring within the individual. Indeed, Lerner et al. (2001) make clear that intrapersonal and ecological processes *interact* to produce developmental outcomes, and Dodge and Pettit (2003) argue that ecological processes affect adolescent outcomes, at least in part, through their effects on intrapersonal processes.

As noted above, the ecological mechanisms specified within the risk-protection approach and applied developmental science are similar and generally operate in domains such as family, peers, school, and neighborhood. The intrapersonal mechanisms are less parallel, but still complementary. Prevention approaches, drawn from the risk-protection approach, often target either (a) social-cognitive mechanisms such as attitudes, beliefs, or intentions about engaging (or not engaging) in problematic behaviors (e.g., Jemmott et al., 1998; Lochman & Wells, 2002); or (b) problem-solving competencies or refusal skills (e.g., Botvin & Griffin, 2004). In contrast, positive identity (Theokas et al., 2005) and agency (reflecting purposeful and resilient interaction with the social environment; Côté, 2000; Lerner et al., 2001) are viewed as important from an applied developmental science perspective.

Although these intrapersonal mechanisms are not as parallel between approaches as are the ecological mechanisms, the intrapersonal mechanisms specified in the risk-protection approach and in applied developmental science can be tied together using Lerner et al.'s (2001) adaptation of Baltes and Baltes's (1990) Selection, Optimization, and Compensation model. According to this model, adolescents choose those stimuli and opportunities to which they wish to respond (selection), allocate their resources toward specific courses of action and to refine those efforts (optimization), and redirect their efforts when they are initially thwarted (compensation). The social-cognitive attitudes, beliefs, and intentions put forth within the Theory of Planned Behavior (Ajzen & Fishbein, 1980) and targeted by some intrapersonal preventive interventions (e.g., Jemmott et al., 1998) may

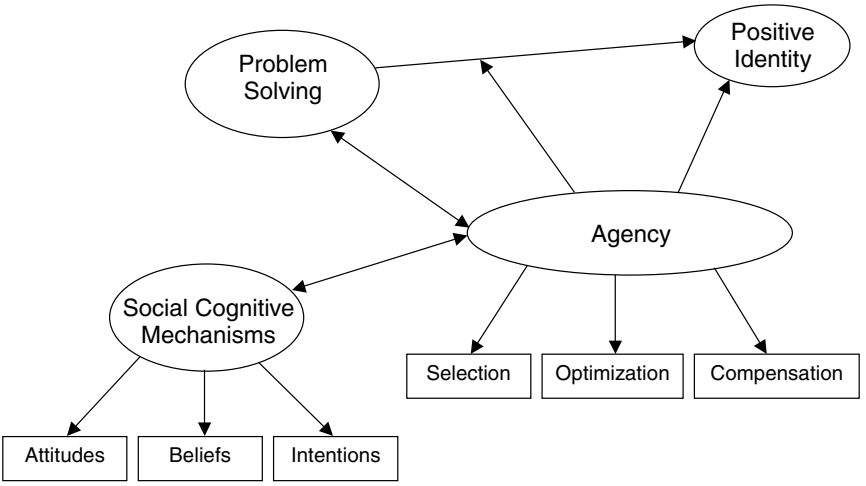

Fig. 1. Integrating intrapersonal mechanisms from developmental psychopathology and applied developmental science.

draw upon the selection component, given that adolescents are assumed to choose whether or not to engage in drug use, unsafe sex, or delinquent behavior based on their attitudes, beliefs, and intentions regarding these behaviors. Problem-solving competencies, such as those targeted by Life Skills Training (Botvin & Griffin, 2004) and other intrapersonally oriented preventive interventions, may be associated with optimization and compensation, given that critical thought and sound decision making are important components of allocating resources and "changing course" when one's initial course of action is obstructed (Berman, Schwartz, Kurtines, & Berman, 2001; Schwartz, Kurtines, & Montgomery, 2005). Finally, agency underlies the entire selection, optimization, and compensation process (Lerner et al., 2001), in that self-directed adolescents are more likely to utilize the process adaptively and to their advantage than are those who are not self-directed. Figure 1 depicts this model integrating some of the intrapersonal mechanisms posited within the risk-protection approach and applied developmental science.

Although these propositions appear conceptually tenable, they await empirical evaluation. Building a comprehensive model of adolescent psychosocial development and the mechanisms through which it occurs will require empirically addressing a number of important issues (see Fig. 2). As a result, we now turn to an explication of the empirical questions that will need to be answered before a comprehensive model can be developed.

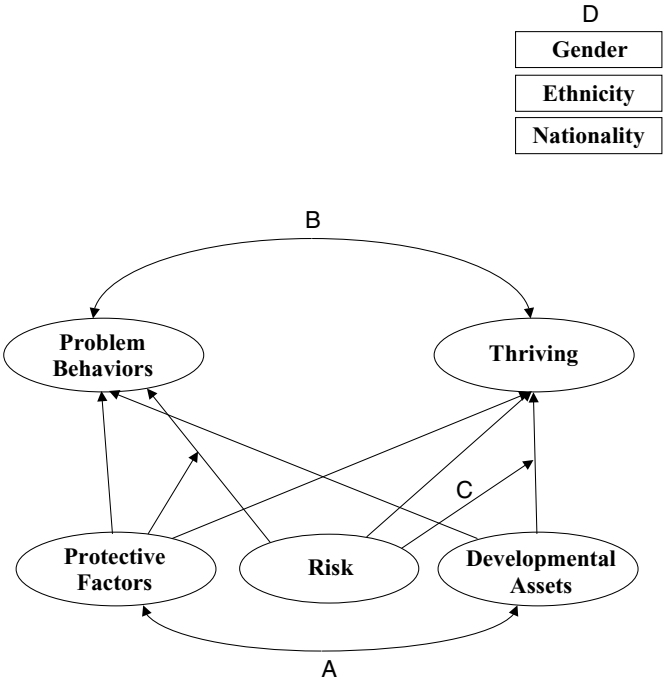

Fig. 2. Areas to be addressed in developing a comprehensive theory of youth development.

Research Questions to be Addressed in Developing an Integrative Model

As outlined above, the primary unresolved issue in the integration of the risk-protection approach and applied developmental science is: *How separate versus overlapping are these two viewpoints and their empirical operationalizations?* This question can be broken down into two parts. First, precisely how much overlap is there between developmental assets and protective factors (depicted as issue A in Fig. 2)? Do the contextual mechanisms overlap as much as would be expected, and can the intrapersonal mechanisms be connected using the model proposed in Fig. 1?

Second, how mutually exclusive are the ultimate outcomes targeted within each theory (i.e., problem behaviors versus thriving; depicted as issue B in Fig. 2)? What is the relationship between thriving and problem behavior over time? Taylor et al. (2003), for example, found evidence of modest levels of thriving among African American gang members in Detroit. Can the converse also be true—can adolescents who increase in thriving still exhibit problematic behavior that needs prevention or treatment? Clearly, the relationship between thriving and

problem behaviors cannot be perfect negative (Phelps et al., in press)—so there remains a possibility for positive and negative developmental outcomes to coexist within a single adolescent. Are there different developmental trajectories characterized by varying change patterns for thriving and problem behaviors? Are there some adolescents whose trajectories seem to violate the implicit assumption that thriving and problem behavior should be inversely related—that is, adolescents whose levels of thriving and problematic outcomes both increase or decrease over time? Such heterogeneity of developmental trajectories is important to examine and would provide information on the different "profiles" that would need to be targeted in interventions to prevent problematic outcomes and to promote thriving. For example, adolescents with consistently high levels of behavior problems and consistently low levels of thriving would likely need a different type of intervention than would adolescents who exhibit behavior problems but who also display some moderate evidence of thriving over time. In the second case, existing levels of thriving might be mobilized to decrease problematic behavior, whereas in the first case, the task involves promoting thriving as well as reducing problematic behavior.

A second major issue concerns the role of risk (issue C in Fig. 2). This may be especially salient for the applied developmental science perspective, in which thriving is conceptualized as a function of individual and ecological developmental assets (Scales et al., 2000; Theokas et al., 2005; Theokas & Lerner, 2006), but in which risk is not considered. However, it is important to consider (a) whether risk also exerts a direct effect on thriving (as it has been found to do with regard to behavior problems; cf. Deater-Deckard et al., 1998) and (b) whether, and to what degree, the effects of developmental assets on thriving are equivalent—or differ—across levels of risk. Do developmental assets and protective factors (both in terms of their overlap and in terms of whatever variability they do not share in common) operate similarly in adolescents at high risk versus those at low risk (cf. Pollard et al., 1999)? For example, do the Five C's, such as character and confidence, have the same effects on positive and negative outcomes for adolescents from middle-class suburbs as they do for adolescents from impoverished, socially disadvantaged, and disorganized inner-city neighborhoods? For adolescents with many risk factors, does the level of risk overwhelm the effects of the five C's (cf. Deater-Deckard et al., 1998; Pollard et al., 1999, who have reported similar findings regarding protective factors)? In one of the few studies addressing the moderating role of risk on the relationships between developmental assets and thriving, Fredricks and Eccles (2005) found that the relationship of extracurricular activity participation—often considered a developmental asset—to positive and negative behavioral outcomes is dependent on the extent to which an adolescent affiliates with prosocial versus antisocial peers. Pushing this idea further, drawing from work on resilience, would a positive family environment, a positive sense of identity, or any other developmental asset exert the same effect on thriving in poor, disorganized, crime-ridden inner-city neighborhoods as they would in a

suburban community? This issue is important for understanding the complexity of human development and the implications of this complexity for interventions to prevent and to promote. For example, it may be necessary to design or modify interventions for adolescents, families, or communities characterized by high versus low levels of risk in various domains (e.g., attending a "failing" school; neighborhood poverty, crime, and disorganization; cf. Pantin, Prado, Schwartz, & Sullivan, 2005; Prado et al., 2006).

Third, the applicability of the risk-protection approach and of applied developmental science (as well as interventions drawn from these perspectives) to adolescents from diverse ethnic, cultural, and national backgrounds is in need of study (Dmitrieva et al., 2004; Schwartz, Pantin et al., 2005; Vazsonyi et al., 2003; marked as issue D in Fig. 2). Here, we refer to "culture" and "cultural background" in terms of individuals from different countries and ethnic groups that place differing emphases on values such as individualism (the importance of the person) and collectivism (the importance of the family, community, religion, or nation; see Schwartz, Montgomery, & Briones, 2006). Is there a "universal" set of relationships among these constructs that can be used to build a comprehensive model, or does the network of associations vary across adolescents, families, communities, or national and cultural groups (cf. Lerner & Galambos, 1998)? That is, can we build an integrative model of youth development that is applicable across contexts and cultures, and if such a model can be developed, to what extent must it attend to variations in gender, ethnicity, context, and culture? Moreover, the meanings of terms such as "thriving" and "behavior problems" may not be the same in one context or cultural group as in another. If a construct has a different structure and meaning across contexts, it may not be appropriate to use this construct in comparisons across contexts (e.g., van de Vijver & Leung, 2001). However, given the distinction between structure and function (Lerner, 1991), it is entirely possible that the *structure* of a given construct (e.g., what comprises thriving or behavior problems) varies across cultural contexts, but that its *function* (i.e., its relationships to other constructs) is consistent across cultural contexts. As a result, the degree of equivalence observed across groups, especially in the structures and meanings of the individual constructs, will provide information as to the extent to which an integrative model of adolescent psychosocial development would need to attend to differences in structure, function, or both across cultural contexts.

Preventive and Promotive Intervention Strategies and their Application to Adolescents

We now turn our attention to intervention. Intervention brings theory and research into action to improve and redirect the lives of adolescents. Results of intervention evaluations can also be used to inform theory and research; when experimentally manipulating specific processes leads to changes in other

processes, causality can be inferred, and the conceptual model can be adapted or refined accordingly (Dishion & Patterson, 1999; Norman, 2005). As applied to adolescent development, the risk-protection approach has guided the prevention science approach (e.g., Dodge & Pettit, 2003; Gorman-Smith, Tolan, & Henry, 2000; Szapocznik & Coatsworth, 1999), whereas applied developmental science has guided the positive youth development approach (Damon, 2004; Lerner et al., 2000a, 2000b). Both of these approaches have inspired literatures on intervention outcomes for adolescents (e.g., Albee, 1996, 1999; Catalano, Berglund, Ryan, Lonczak, & Hawkins, 2004; Lochman & Van Den Steenhoven, 2002; Roth & Brooks-Gunn, 2003; Weissberg, Kumpfer, & Seligman, 2003).

One of the first public health responses to the developmental increases in problem behaviors from childhood to adolescence (noted at the beginning of this article) involved efforts to treat or manage the symptoms. For example, treatment programs have been developed to reduce adolescent drug abuse and associated problems (e.g., criminal behavior; Brown, Mott, & Myers, 1990; Myers, Stewart, & Brown, 1998). However, drug abuse, delinquency, and associated problems are notoriously intractable and difficult to ameliorate, and therapies for these problems are fairly expensive and require a great deal of effort to implement (e.g., Liddle et al., 2001; Henggeler & Sheidow, 2003). Episodes of relapse following discharge from treatment are common (Greenwood, Woods, Guydish, & Bein, 2001), as is recidivism among delinquent adolescents (Vermeiren, Schwab-Stone, Ruchkin, De Clippelle, & Deboutte, 2002).

Prevention is often a favorable alternative to treatment, especially when the problem to be prevented is widespread and treating all cases with the disorder is infeasible (Albee, 1999; Albee & Ryan-Finn, 1993). Although the founders of the primary prevention field envisioned prevention science as both inhibiting problems and promoting positive outcomes, constraints from funding agencies encouraged preventionists to focus almost exclusively on preventing negative outcomes[4] (Albee, 1996). However, despite these constraints, many prevention efforts have focused less exclusively on modifying risk factors and more on multisystemic efforts to increase protection in various areas of the adolescent's life—and therefore to reduce risk and to decrease the effects of risk factors on adolescent outcomes. For example, family communication has been negatively associated with adolescent delinquency and drug use (Brook et al., 2000; Claes et al., 2005; Vakalahi, 2002). Perhaps as a result, substance abuse and delinquency prevention programs for adolescents have often focused on improving family communication and other positive processes (Dishion, Kavanagh, Schneiger, Nelson, & Kaufman, 2002; Lochman & Wells, 2004). In some of these interventions, substance use and delinquency are targeted less frequently or indirectly; rather, the

[4]For a more in-depth review of these funding constraints and reactions from leaders of the primary prevention field, readers are directed to National Advisory Mental Health Council Workgroup on Mental Disorders Prevention Research (2001) and to responses by Greenberg and Weissberg (2001) and by Seligman (2001).

focus is on increasing protective processes that may also serve as markers of positive functioning in the family, school, peer, and intrapersonal areas.

This emphasis on promoting strengths within prevention programs dovetails with a recent rise in attention toward positive aspects of adolescent development. A number of leaders in the field of psychology have called for increased attention toward positive aspects of development (e.g., Gable & Haidt, 2005; Lopez, Snyder, & Rasmussen, 2003; Seligman et al., 2005). Similarly, scholars working in the field of adolescent development have noted the overrepresentation of studies of psychopathology and negative behavioral outcomes (e.g., Brown, 2005). The applied developmental science field's response has been a newfound focus on positive development in adolescence and beyond, championed by researchers such as Lerner (Lerner et al., 2003; Lerner et al., 2005), Damon (2004; Damon, Menon, & Bronk, 2003), and Benson (2003; Benson, Scales, Hamilton, & Sesma, in press; Scales et al., 2000; Scales et al., 2006). The question thus arises as to the extent of overlap between approaches based in preventing problems and those based in promoting thriving and positive development (Catalano, Hawkins, Berglund, Pollard, & Arthur, 2002).

Prevention Science and Positive Youth Development: Opposites or Complements?

If one considers only the ultimate outcomes that are taken to reflect the success of an intervention, prevention science and positive youth development may appear to represent incompatible approaches at worst (Catalano et al., 2002), or complementary approaches at best. If the objectives of a program are conceptualized in terms of the ultimate outcomes that are measured and taken as indicators of the program's success, it can be surmised that preventive interventions—at least those typically supported by federal grants—are generally evaluated based on their ability to *avoid negative or undesirable behaviors* (Flay et al., 2005), whereas positive youth development interventions are generally evaluated on their ability to *encourage responsible citizenship, self-direction, caring, compassion, and other positive outcomes* (Catalano et al., 2004). However, it should be noted that many of the founders of the field of primary prevention (e.g., Albee, 1996; Bumbarger & Greenberg, 2002; Elias, Gager, & Leon, 1997; Weissberg et al., 2003) have consistently called for the incorporation of positive developmental outcomes into the prevention approach and that, for these founders, a focus on prevention does not preclude a focus on promotion. The two approaches may actually be highly compatible and complementary. Although the focus of the present article is on adolescent development, this principle may also apply to other fields in which prevention and promotion may overlap — such as health promotion and disease prevention.

Some prevention interventions involve working within the adolescent's ecosystem (e.g., family environment, peer network, and school system) to reduce risk and increase protection in the domains that affect the adolescent (e.g., Dishion et al., 2002; Hawkins, Guo, Hill, Battin-Pearson, & Abbott, 2001; Pantin, Schwartz, Sullivan, Coatsworth, & Szapocznik, 2003). These programs proceed from the premise that promoting protective mechanisms in the adolescent's environment will reduce the effects of both intrapersonal and contextual risk factors and will provide a more positive and nurturant environment for the youth (e.g., Dishion & Kavanagh, 2000; Szapocznik & Coatsworth, 1999). Other prevention programs work with the adolescent to develop skills (e.g., assertiveness, communication; Botvin, Griffin, Diaz, & Ifill-Williams, 2001) and beliefs (e.g., less favorable attitudes and intentions toward substance use and sexual behavior; Kulis et al., 2005) that are likely to inhibit the development of problem behaviors.

Positive youth development interventions share much in common with preventive interventions (Catalano et al., 2004). Both sets of interventions emphasize developmental regulation and the interplay between individuals and the contexts in which they function (Dodge & Pettit, 2003; Lerner et al., 2000a, 2000b). The primary difference is that, in ecologically based preventive interventions, person ↔ context relations (e.g., family relationships, bonding to school, peer affiliations) are changed primarily in the service of decreasing the likelihood that an adolescent will engage in negative behaviors, whereas in most positive youth development interventions, person ↔ context relationships are changed primarily to promote thriving and the development of positive citizenship (e.g., contributions to society). However, it should also be noted that the primary objectives of preventive interventions serve as secondary objectives for some positive youth development interventions, and vice versa. Some preventive interventions target increases in aspects of competence as ways to prevent problems (Albee, 1996; Botvin & Griffin, 2004), and a secondary aim of some positive youth development programs is to reduce the likelihood that an adolescent will engage in problematic behaviors (Roth & Brooks-Gunn, 2003). However, it is not yet known whether increases in positive youth development are associated with reductions in problematic outcomes, or whether interventions to promote positive outcomes are also able to decrease or prevent problematic behaviors. This is a question for future research.

PREVENTION AS PROMOTION: AN EMPIRICAL AGENDA

Although there have been theoretical efforts to integrate the prevention science and positive youth development perspectives (Catalano et al., 2002, 2004) and to contrast prevention and protection with promotion (Damon, 2004; Lerner, 2001), there appears to be a need for a systematic empirical agenda to substantiate, invalidate, or modify the propositions that have been advanced in this article and

elsewhere. The remainder of this paper is dedicated to advancing such an agenda. The recommendations put forth here build on the model-building propositions and research questions put forth at the beginning of this article, as well as on the key issues in the convergence between prevention and promotion reviewed in the previous section. Although many of the recommendations presented here can be considered "good scientific method," it may be important to mention them nonetheless. This is especially important in light of Catalano et al.'s (2004) finding that, in their review of positive youth development programs, many of the programs they reviewed were not evaluated in scientifically rigorous ways.

Further Examining the Relationships between Developmental Assets and Protective Factors, and Between Thriving and Problem Behaviors

As explained above, developmental assets may be conceptualized as a subset of those conditions identified as protective factors (Lerner, 2001)—specifically as those protective factors that also promote elements of thriving such as responsible citizenship, character, and caring, among other positive developmental outcomes. However, it is important to empirically assess the convergence between developmental assets and protective factors, both concurrently and over time, to assess the extent to which the same, similar, or complementary mechanisms may be responsible for inhibiting problem behavior and promoting thriving. There is some evidence that, at a single point in time, the same set of developmental assets are (a) positively related to indicators of thriving and positive development and (b) negatively related to problem behaviors such as delinquency, substance use, and unsafe sexual behavior (Scales et al., 2005).

However, evidence is only beginning to emerge (Jeličić et al., in press) as to whether the relationships of developmental assets and protective factors both to indices of thriving and to indices of problem behaviors would also emerge over time. Such a question is of critical importance, given that sequentiality, directionality, and causality cannot be established in cross-sectional studies (Kraemer, Yesavage, Taylor, & Kupfer, 2000). Examining the extent to which developmental assets and protective factors overlap with one another, and the extent to which thriving and problematic behavior are mutually exclusive, might best be undertaken in longitudinal studies where correlated changes, long-term trajectories, and directionality of effects can be ascertained. Such longitudinal research can aid considerably in the development of an integrative model of mechanisms and outcomes of psychosocial development in adolescence. Moreover, given that the design of intervention studies is dependent on solid theory-driven evidence regarding how hypothesized mechanisms of change affect ultimate outcomes (Kurtines & Silverman, 1999; Lochman, 2000), mapping the longitudinal relationships of developmental assets and protective factors to thriving and to problem behaviors is a necessary step.

As Lerner and Galambos (1998) have observed, there are many different paths through adolescence. Such heterogeneity of development suggests that thriving and problem behaviors may be mutually exclusive for some adolescents, but not for others. This heterogeneity can be modeled using innovative statistical techniques that extract latent classes based on starting points and change trajectories. Examples of such techniques are latent growth mixture modeling (Muthén & Muthén, 2000) and latent class growth analysis (Nagin, 1999). Take, for example, one class of adolescents who decrease in thriving and increase in behavior problems over time, and a second class of adolescents who increase in both thriving and behavior problems over time. Clearly, the intervention implications for these two groups of adolescents would be markedly different—which further underscores the need for statistical techniques that can differentiate between groups of adolescents with somewhat similar developmental trajectory profiles. It is also important to ascertain the ways in which mechanisms of influence vary with and predict different trajectories of thriving and problem behaviors. Information gleaned from results from such studies can help to develop and refine a model of mechanisms of influence and the ways in which they can influence heterogeneity of development in adolescence.

As an example of such research, studies might be designed to follow young people from early adolescence through adulthood and to chart and relate the developmental trajectories of developmental assets, protective factors, thriving, and behavior problems across this time period. The extent, timing, and sequencing of the effects of developmental assets and protective factors can inform both theory and intervention. The strength of the relationships of specific mechanisms of influence to thriving and behavior problems would provide guidance as to the degree to which a given mechanism could serve as the "active ingredient" in a theoretical perspective or intervention program. The timing and sequencing of the effects observed would suggest the time frame for measuring the mechanisms and outcomes, as well as the specific ages at which specific intervention strategies might best be delivered. Moreover, empirically identified subgroups of adolescents with different starting points and change trajectories for thriving and problem behaviors would be given different combinations of intervention modules (Collins, Murphy, & Bierman, 2004; Pantin et al., 2005).

It is also important to comment on the measurement of positive youth development (thriving) constructs. Bumbarger and Greenberg (2002), for example, argue that measures of thriving should include not only personality traits and strengths such as the five C's, but also social skills and emotion regulation, as well as indicators of developing career goals and life plans. Further, to the extent possible, it may be important to assess the five C's using multiple reporters and multiple assessment methods (e.g., self-report; independent observations; reports from parents, peers, and teachers). Some of the C's, such as confidence, might best be assessed via self-report, but others, such as character and caring, might also be assessed using reports from other sources.

Research on Risk-Protection and Applied Developmental Science Should Consider both Self and Context

The interplay between intrapersonal and ecological developmental assets and protective factors in the promotion of thriving and the prevention of problem behaviors warrants investigation. Both the risk-protection approach (Dodge & Pettit, 2003) and applied developmental science (Scales et al., 2000, 2006; Theokas et al., 2005) approaches are clear that intrapersonal and ecological mechanisms are both important influences on adolescent developmental trajectories (e.g., Jacobs, Vernon, & Eccles, 2004; Lerner et al., 2001; Schwartz, Coatsworth et al., 2006). Consideration of self and context is especially important given theoretical propositions that self and context interact to produce developmental trajectories (Lerner et al., 2001) and that ecological mechanisms exert their effects on developmental trajectories through their effects on intrapersonal mechanisms (Dodge & Pettit, 2003). Indeed, Bronfenbrenner (1979, 1986) argues that the person and her/his context cannot be analyzed separately—suggesting that analyzing only intrapersonal or only contextual variables may provide misleading results. Moreover, in addition to variables such as attitudes, beliefs, and emotion regulation, which are sometimes assessed in prevention studies (e.g., Fraser et al., 2005; Jemmott et al., 1998), it is also important to assess *self-perceptions* (e.g., self-concept, identity) and *agency*, because these are vitally important in determining how the adolescent will transact with the social environment (Côté & Levine, 2002; Lerner et al., 2001; Schwartz, Coatsworth et al., 2006).

The theoretical model presented in Fig. 1, along with other literature, suggests that agency is a vitally important aspect of—and may embody—the selection, optimization, and compensation process (Lerner et al., 2001) and of positive functioning in general (Côté & Levine, 2002; Schwartz, Côté, & Arnett, 2005; Waterman et al., 2003). Because agency has been defined and operationalized in a number of different ways (e.g., Bandura, 1989; Côté & Levine, 2002; Deci & Ryan, 2002; Waterman et al., 2003), it may be important to comment on the measurement of this construct. From a personality-psychology perspective, agency (often referred to as self-determination in personality psychology research) refers to freely chosen engagement in specific activities or to the pursuit of self-chosen goals (Deci & Ryan, 2002; Waterman et al., 2003). From a social psychological perspective, agency refers to a sense of control over and responsibility for one's life course, a sense of life purpose, and resilience in the face of adversity (Côté & Levine, 2002). Lerner et al. (2001) refer to "intentional self-regulation," in which the person purposefully and deliberately interacts with her/his social environment by focusing on specific courses of action, acquiring and refining the skills necessary to achieve a desired endpoint, and making changes to one's approach "in midstream" to maximize the likelihood of successful transactions with the environment. Although these three definitions of agency differ somewhat from

one another, there are clear parallels among them—most notably self-direction, the presence of an "inner compass," and the ability to redirect one's efforts if and when they are thwarted. Any measure of agency used to predict positive and negative developmental outcomes should tap into these three attributes.

Invariance across Gender, Ethnicity, and Cultural Context Should be Examined

As noted above, when designing a model (or a prevention or promotion trial), it is vitally important to evaluate the consistency of the mechanism-outcome relationships between genders and across ethnic and cultural groups. Such consistency would provide an estimate of the degree to which an integrative model would need to take into account variations in gender, ethnicity, or cultural context. An example of research in this direction can be found in Goldstein, Davis-Kean, and Eccles (2005). It is also important to examine the internal structure of the mechanisms and outcomes themselves across groups. Such evaluations can answer the questions of (a) whether thriving and problem behavior—the outcomes of interest that are to be prevented or promoted—have the same or similar meaning across groups or contexts, (b) whether a single integrative model of adolescent psychosocial development would be equally applicable across groups and contexts, and (c) whether the same set of intervention strategies might be applicable to diverse groups of adolescents, or whether different combinations of strategies would need to be developed for specific genders, ethnic groups, socioeconomic backgrounds, or cultural groups. Currently available methods, such as multigroup invariance analyses conducted within a structural equation modeling format, could be used to address these issues (see Vandenberg & Lance, 2000, for an extensive review of methods for testing measurement invariance). For such analyses to be feasible, it is important to include boys and girls from diverse ethnic, socioeconomic, and cultural backgrounds in longitudinal studies of thriving, behavior problems, and the putative mechanisms assumed to produce these outcomes. Invariance analyses could then be conducted across gender, ethnicity, and cultural context (a) on the factor structures of thriving, behavior problems, developmental assets, and protective factors at each timepoint; (b) on the developmental course of each of these constructs; and (c) on the interrelationships of developmental assets and protective factors to thriving and behavior problems over time.

Regarding the structure of the mechanisms and outcomes themselves, significant variation across contexts or groups suggests that the mechanisms or outcomes are construed differently—and that what we are trying to explain may vary considerably—across groups or contexts. Particularly if both the structure and function of constructs (Lerner, 1991) differ across cultural contexts, such findings might temper the development of an integrative model of adolescent psychosocial development—and of a single set of interventions based on such a model.

Instead, a set of smaller models and contextualized interventions might be more appropriate in these cases.

Provided that the structures of the outcomes and mechanisms are consistent across groups, and provided that the outcomes in question have similar meanings and valences across groups, a finding that the relationships of developmental assets and protective factors to youth outcomes are consistent across variations in gender, ethnicity, and cultural context would suggest that a single integrative model can be applied across groups and contexts and that a single set of intervention components, with appropriate cultural modifications to program content, can be universally delivered (Schwartz, Montgomery et al., 2006). In contrast, a finding that the relationships of developmental assets and protective factors and youth outcomes differ significantly across demographic variations would suggest that any model formulated may need to be sensitive to these variations. For example, it is possible that the interplay of contextual and interpersonal mechanisms, vis-à-vis thriving and problem behaviors, operates in a qualitatively different way within "collectivist" cultural contexts than within "individualistic" cultural contexts (cf. Dwairy, 1999, 2002, who argues that self and identity are most salient at the individual level in Western societies but at the group level in non-Western societies). The valence attached to intrapersonal processes would therefore be different across cultural contexts, and as a result, the relationships of these processes to contextual mechanisms and to adolescent outcomes would likely be different across contexts as well.

A model that specifies differences in mechanism-outcome relationships across groups would then suggest the need for "adaptive" interventions (Collins et al., 2004), in which certain components (but not others) of an intervention program are delivered to members of specific groups, or in which the intervention components themselves are developed based on principles operating within a given cultural or community context. That is, groups of adolescents from different contexts or with different developmental asset or risk/protective factor profiles may require different combinations of intervention components (cf. Prado et al., 2006). For example, a given community may be considered relatively safe, but there may be a relative absence of non-familial adult mentors and community supervision of adolescents. These specific developmental assets may then become targets for a neighborhood-level intervention module delivered to this community as a whole. This module might not need to be delivered, for example, to a community with adequate collective supervision of and adult mentoring for adolescents. An example of this can be found in community-level HIV prevention, where local agencies are often recruited to help with service delivery and to engender trust in community residents (e.g., Eke, Mezoff, Duncan, & Sogolow, 2006). A similar principle may apply across cultural contexts: although agency is an important aspect of psychosocial functioning in individualistic Western cultures, developing an agentic sense of self may be a less adaptive goal in collectivist, non-Western societies

(Schwartz, Montgomery et al., 2006). Accordingly, exercises to facilitate agency may be incorporated into interventions in some cultural contexts but not others.

CONCLUSION: BACK TO THE BIG PICTURE

Getting back to the larger points being made here, the objectives of the line of research advocated in this article are to build and refine a model of adolescent psychosocial development and to use this model to guide the development and implementation of intervention programs to prevent problematic outcomes and to promote thriving (cf. Dishion & Patterson, 1999). Because the sets of processes posited within the risk-protection approach and applied developmental science are assumed to occur within the same person, family, community, or cultural context, the potential exists for a broader and/or more integrative model to be built using components from these two approaches. Such a model would be built based on the considerable overlap between contextual protective factors advanced within developmental psychopathology and contextual developmental assets advanced within applied developmental science, as well as on empirical support for a framework conceptualizing the interrelationships among the intrapersonal mechanisms specified within these two approaches. The model would also consider the role of risk in the relationship of developmental assets or protective factors to adolescent developmental trajectories.

It is hoped that the concepts and guidelines reviewed here will stimulate empirical efforts to bring together preventive and promotive approaches to youth development, and therefore to integrate the best of the risk-protection approach and applied developmental science scholarship in the service of nurturing the next generation of young people. It is through such nurturance that problem-free, positive, productive, and responsible citizens can be developed.

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