

# UC Santa Barbara

## UC Santa Barbara Previously Published Works

### Title

The configuration protective model: Factors associated with adolescent behavioral and emotional problems

### Permalink

<https://escholarship.org/uc/item/4bg277p9>

### Authors

Lenzi, Michela  
Dougherty, Danielle  
Furlong, Michael J  
[et al.](#)

### Publication Date

2015-05-01

### DOI

10.1016/j.appdev.2015.03.003

Peer reviewed



## The configuration protective model: Factors associated with adolescent behavioral and emotional problems



Michela Lenzi<sup>\*</sup>, Danielle Dougherty, Michael J. Furlong, Jill Sharkey, Erin Dowdy

Department of Counseling, Clinical, and School Psychology, University of California Santa Barbara, United States

### ARTICLE INFO

#### Article history:

Received 18 September 2014

Received in revised form 10 February 2015

Accepted 7 March 2015

#### Keywords:

Substance use

Emotional problems

Developmental assets

Social Emotional Health Survey

California Healthy Kids Survey

### ABSTRACT

The current study examined the association between quantity, variety, and configuration of developmental assets with risk behaviors (tobacco and alcohol use) and developing emotional problems (depressive feelings and suicidal thoughts). A sample of 12,040 high school students completed surveys investigating youth health and risk behaviors, and developmental assets. Independent one-step logistic regression analyses showed that adolescents reporting a higher quantity of assets, and possessing them in multiple domains, tended to have a lower likelihood of experiencing behavioral and emotional problems. The negative association between developmental assets and negative outcomes was more consistent when quantity and variety were taken into account simultaneously, thus supporting the *configuration protective model*. A sufficient amount of strengths, in an adequate number of different domains, seems to provide the strongest protection against negative developmental outcomes. The research and clinical implications of findings are discussed.

© 2015 Elsevier Inc. All rights reserved.

According to developmental system theories, positive human development emerges from mutually beneficial interactions between individuals and their personal environmental resources that nurture healthy trajectories across the lifespan (Baltes, Lindenberger, & Staudinger, 2006). Using this theoretical perspective as a basis, researchers have begun to focus on positive development in adolescence (e.g., Furlong, Gilman, & Huebner, 2014; Knoop, 2011; Masten, Cutuli, Herbers, & Reed, 2009). This increased attention to positive youth mental health has resulted in several subfields of research, including positive youth development (e.g., Larson, 2000), positive psychology (e.g., Kirschman, Johnson, Bender, & Roberts, 2009), and strength-based approaches to intervention (e.g., Proctor, 2014). These frameworks were formulated in contrast to the traditional deficit perspective and include a set of principles defining youth as resources to be developed instead of as problems to be resolved (Roth & Brooks-Gunn, 2003).

A key assumption of theoretical perspectives on positive development in adolescence is that while the absence of risk factors does not assure high levels of well-being, youths possessing positive assets have a greater likelihood of reaching positive outcomes (e.g., physical and psychological well-being) and a lesser likelihood of experiencing risk and problem behaviors (e.g., of both internalizing and externalizing problems; Lerner, 2004). This assumption has both theoretical and practical

implications – instead of eliminating the risk factors associated with negative outcomes, as deficit-based approaches suggest, research and practice could alternatively focus on identifying and promoting positive assets. To date, scholars have not reached a strong consensus on which specific assets promote positive development in adolescence (Larson & Tran, 2014), and few studies have evaluated whether there are general configurations of assets that are particularly effective in preventing risk behaviors and emotional problems in youth. The current study aimed to advance the literature on adolescent development by examining how different configurations of psychological and social assets are associated with protective effects of lower levels of youth involvement in risk behaviors (tobacco and alcohol use) and the development of emotional problems (depressive feelings and suicidal thoughts).

### Factors protecting adolescents from risk behaviors and emotional problems: Toward a protective configuration model

The specific external and internal assets involved in positive youth development have been debated for more than two decades. To date, there is no conclusive definition or single way to operationalize and measure positive development in adolescence (Larson & Tran, 2014). Researchers have not demonstrated conclusively that a specific asset or constellation of characteristics is associated with a decrease in adverse outcomes (Corbin, 2005). The multiple and complex reciprocal influences between an adolescent and the environment hinder the identification of a direct pathway to risk and problem behaviors. Rather, adolescents experience a wide range of potential environmental and personal events that create circumstances that tilt the odds toward

<sup>\*</sup> Corresponding author at: The Gevirtz Graduate School of Education, University of California Santa Barbara, Santa Barbara, CA 93106-9490, United States. Tel.: +1 805 893 8000.

E-mail addresses: michela.lenzi@unipd.it, michela.lenzi@gmail.com (M. Lenzi), danielle.marie.dougherty@gmail.com (D. Dougherty), mfurlong@education.ucsb.edu (M.J. Furlong), jsharkey@education.ucsb.edu (J. Sharkey), edowdy@education.ucsb.edu (E. Dowdy).

either positive or negative outcomes (Dent & Cameron, 2003; Kail & Cavanaugh, 2000).

Although there is no decisive determination of which assets are implicated in positive development, there is a general consensus that a healthy developmental trajectory in adolescence entails multiple dimensions, such as cognitive, social, emotional, and civic (Eccles & Gootman, 2002; Lerner, Phelps, Forman, & Bowers, 2009). Within these domains, the study of positive development in adolescence is replete with assets – both internal and external – that have been identified and studied across the various subfields. Some of the most influential and comprehensive research on developmental assets comes from the work of Benson and colleagues who used the Search Institute's *Profiles of Student Life: Attitudes and Behaviors* survey to develop a model of 40 key developmental assets across both internal and external domains (e.g., Benson, 1996). The 40 assets identified include assets in the categories of support, empowerment, boundaries and expectations, positive values, social competencies, and commitment to learning, among others (e.g., Benson, 1996; Leffert et al., 1998; Scales & Leffert, 1998). Other subfields have narrowed in on specific internal and external assets. For example, the realm of positive youth development research often focuses on the “Five Cs” – Competence, Confidence, Connection, Character, and Caring (e.g., Jellic, Bobek, Phelps, Lerner, & Lerner, 2007; Lerner, Bowers, Geldhof, Gestottir, & DeSouza, 2012). In positive psychology, a wide range of assets has been recognized, with some of the most prominent being hope, optimism, life satisfaction, and gratitude (e.g., Furlong, Gilman, et al., 2014; Kirschman et al., 2009). Similarly, the field of resiliency has highlighted a number of protective factors, comprising both internal assets, such as problem-solving skills and self-regulation, and external assets, including authoritative parenting, socioeconomic advantages, and close relationships with adults in a caring community (e.g., Masten et al., 2009).

The sheer number of assets that have been implicated in the positive development of adolescents precludes a comprehensive review of every factor. Assets tend to have complex relations with each other and various developmental outcomes. The literature is filled with examples of multifinality, in which the same variable can result in multiple different outcomes, and equifinality, in which the same outcome can be derived from multiple developmental trajectories. Moreover, a variable can be related to positive development in one domain but negative outcomes in another. For example, adolescent participation in sports can serve as a protective factor for tobacco use (Guo, Reeder, McGee, & Darling, 2011), depression, and suicidal ideation (Babiss & Gangwisch, 2009), but it has also been implicated as a risk factor for alcohol use (Sonderlund et al., 2014).

To further complicate an understanding of positive youth development, research has a tendency to yield contradictory results. For instance, whereas researchers generally find that higher academic achievement is associated with reduced alcohol use (Kostelecky, 2005), tobacco use (Scal, Ireland, & Borowsky, 2003), and general substance use (Thai, Connell, & Tebes, 2010), this is not always the case (Fang, Barnes-Ceeny, & Schinke, 2011; Meyers, 2013). Similarly, research generally supports the notion that self-esteem and self-efficacy are protective against suicidal ideation (Babiss & Gangwisch, 2009; Kidd & Shahar, 2008; Sharaf, Thompson, & Walsh, 2009); however, Roberts, Roberts, and Xing (2010) failed to find this association. Perhaps the clearest example of inconsistency in the literature on protective benefits of youths' assets exists between social support and suicidality. Numerous researchers have found that social support reduces the risk of suicidal ideation and behaviors (e.g., Babiss & Gangwisch, 2009; Beautrais, 2003), yet others discover no association (Armstrong & Manion, 2006; Roberts et al., 2010), and one study even found that peer relationships increased the risk for suicidality in some students (Wong & Maffini, 2011).

Even when the relation between assets and outcomes is relatively straightforward, there is generally a plethora of protective factors that have been linked to any given developmental outcome. For example,

assets that protect against depression include individual, peer, family, school, and community factors. These assets include everything from optimism (e.g., Piko, Kovacs, & Fitzpatrick, 2009) to connectedness to family, peers, and school (e.g., Costello, Swednsen, Rose, & Dierker, 2008) to community engagement (e.g., Van Vorhees et al., 2008). Although identifying all of the assets that might protect youth from negative developmental outcomes is of interest, it is simply not feasible to assess for and intervene with all of these factors. The impracticality of this approach becomes all the more evident when taking into account that interventionists do not want to solely prevent depression but also prevent a host of other internalizing and externalizing problems. The field of positive youth development requires a consensus regarding which assets are most strongly associated with an extensive range of developmental outcomes; however, as of yet, researchers are not in agreement regarding what assets are integral across outcomes (Larson & Tran, 2014).

The lack of a strong consensus on the array of assets that protect youth from engaging in risk behaviors or experiencing emotional problems partially derives from the tendency to view assets in isolation or as independent constructs (Author, removed for blind review, 2014) instead of considering how these assets combine in general configurations. Building on the cumulative-risk framework (Esbensen, Peterson, Taylor, & Freng, 2009), positing that youths exposed to multiple risk factors in different domains (individual and social) are at greater risk of internalizing and externalizing problems (Esbensen et al., 2009), scholars developed the cumulative-assets framework. This perspective has been adopted to evaluate how the accumulation of internal (e.g., self-efficacy and emotional competence) and external (e.g., supportive teachers and peers) assets protects adolescents against risk behaviors and emotional problems (Scales, Benson, Roehlkepartain, Sems, & Van Dulmen, 2006).

Recently, scholars are questioning whether the quantity of assets possessed by an adolescent is enough to reflect the complexity of the assets needed to face developmental challenges in the contemporary society. For instance, Larson and Tran (2014) pointed out that adolescent development is not a linear concept, but stems from complex sets of skills and dispositions. According to Larson and Tran, these skills and dispositions allow youth to understand and cope with the developmental challenges typical of complex societies, such as adapting to contradictions and incongruities and learning the different rules and values characterizing different contexts. This recent conceptualization of positive development argues that instead of single protective assets, there might be sets of skills that allow youth to navigate complex life challenges, thus protecting youth against the development of risk behaviors and emotional problems (and promoting their well-being).

The covitality index proposed by Furlong, You, Renshaw, Smith, and O'Malley (2014) offers a framework that can be used to organize assets across domains, allowing researchers to examine not only how many assets adolescents possess but also the number of domains in which they have assets. This model consists of four first-order core positive mental health domains: belief in self, belief in others, emotional competence, and engaged living (Renshaw et al., 2014). The first domain, *belief in self*, is comprised of self-efficacy, self-awareness, and persistence and is derived primarily from social-emotional learning (SEL) literature (e.g., Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011). The second domain, *belief in others*, is drawn largely from the positive youth development and resiliency literature and consists of school support, peer support, and family coherence (e.g., Masten, 2001). *Emotional competence*, the third domain, includes emotional regulation, empathy, and behavioral regulation; this domain was also derived mostly from the SEL literature (e.g., Zins, Bloodworth, Weissberg, & Walberg, 2007). The final domain, originating from the positive youth psychology literature, is *engaged living*, which is comprised of gratitude, zest, and optimism (e.g., Gilman, Huebner, & Furlong, 2009). Together, these domains combine to form the second-order covitality index, which has been conceptualized as “the synergistic effect of positive mental health

resulting from the interplay among multiple positive-psychological building blocks” (Furlong, You, et al., 2014, p. 119). Covitality has been associated with a number of developmental outcomes, including academic achievement, substance use, and depressive symptoms (Furlong, You, et al., 2014; You, Furlong, Felix, & O'Malley, 2015); however, additional research is needed to understand how the configuration of the components of covitality relates to positive and negative developmental outcomes.

### Study aims and hypotheses

To date, studies on developmental assets have predominately focused on evaluating the effects of either single assets (e.g., Crews et al., 2007) or multiple, distinct indicators (e.g., Shekhtmeyster, Sharkey, & You, 2011) instead of considering how single assets combine in different configurations (Author, 2014). Moreover, although previous research identifies a wide range of internal and external assets that protect adolescents from risk behaviors and emotional problems, there is a need to identify possible “tipping points” associated with decreases in the likelihood of developing these negative outcomes once a certain number of assets are present (Jelicic et al., 2007).

In order to fill these gaps in the literature, the current study evaluated the association between a parsimonious combination of social and psychological assets and adolescent risk behaviors and emotional problems. More specifically, the current study aimed to evaluate a theoretical framework linking different configurations of social-emotional assets to the likelihood of adolescent tobacco use, alcohol use, depressive symptoms, and suicidal thoughts.

The *configuration protective model* posits that adolescents who possess balanced combinations of quantity and variety of assets have a lower likelihood of experiencing risk behaviors and emotional problems. According to the model, a balance between quantity and variety provides the ideal configurations of protective assets; more specifically, having a higher amount of strengths in a higher number of domains (in a balanced combination between quantity and variety) provides the strongest protection against negative developmental outcomes. The hypothesized optimal configuration represents an attempt to generate theory and find empirical support for Larson and Tran's (2014) perspective about the complex array of assets needed by youths as they face the challenges of contemporary society. More specifically, our aim was to operationalize the simultaneous importance of quantity and variety of assets, in order to reflect the complexity of different combinations of strengths in different domains. Our goal was to examine general and flexible categorizations that represent balanced combinations of quantity and variety of assets. Within each group, adolescents may vary in the specific configuration of assets, but they have some basic features in common that are unique to that category: they have a number of assets and a number of domains within a range (i.e., 0–3, 4–6, 7–9, 10–12 for assets; and 0–3; 2–4; 3–4; 4 for domains). Moreover, as the number of assets increases across tipping points, their variety also increases, thus keeping a balance between the quantity of domains and the quantity of specific assets (i.e., between quantity and variety).

Similar to the “tipping points” identified for risk factors (Esbensen et al., 2009), we hypothesized “tipping points” for protective assets, whereby the configuration (combinations of both quantity and variety) of psychological and social assets across domains is associated with decreased odds of experiencing adolescent risk behaviors and emotional problems. Using the covitality model (Furlong, You, et al., 2014), we evaluate how 12 individual psychological and social assets across four domains are associated with adolescent risk behaviors and emotional problems. The four domains (belief in self, belief in others, emotional competence, and engaged living) are comprised of three assets each; hence, we hypothesized the following tipping points: (a) from three to four individual assets and assets in at least two of the four domains, (b) from six to seven individual assets and assets in at least three of the four domains, and (c) from 9 to 10 assets and assets in all four

domains. These tipping points created the following categories: (a) quantity of assets between 0 and 3, number of domains between 0 and 3 (no guarantee that the youth has a strength in more than one domain); (b) quantity of assets between 4 and 6, number of domains between 2 and 4 (this guaranteed that the youth has strengths in at least two domains); (c) quantity of assets between 7 and 9, number of domains between 3 and 4 (this guaranteed that the youth had strengths in at least three domains); and (d) quantity of assets between 10 and 12 and in 4 domains (this guaranteed that the youth had strengths in four domains). Across categories, quantity and variety increased together, with a higher number of assets corresponding to a higher number of domains.

In order to test the study hypotheses, the association between protective assets and adolescent negative outcomes (tobacco use, alcohol use, depressive symptoms, and suicidal thoughts) was tested in three different ways:

1. by considering only the *quantity* (from 0 to 12) of individual protective assets an adolescent possesses;
2. by computing the *variety* (from 0 to 4) of assets across domains; and
3. by simultaneously considering the *quantity* of individual protective assets *and variety* of domains (configuration protective model), through categories derived from the hypothesized tipping points.

### Method

#### Participants

The participants in the current study attended one of 17 high schools located in eight urban and suburban California school districts (with a total enrollment of 22,703 students). All students were eligible to participate in the surveys, with 12,040 (53.0% of the total potential sample) providing usable responses for the variables included in the present study. The sample was balanced across gender (51.4% females) and grades (27.8% ninth, 24.9% tenth, 24.7% eleventh, and 22.6% twelfth). The students were all between the ages of 14 and 18 years old ( $M = 15.9$ ,  $SD = 1.2$ ). Students were asked their preferred sociocultural group self-identification and self-identified as Latino/a (57.5%), White (21.2%), Blended (two or more groups; 31.6%), Black (9.0%), Asian (7.4%), Native Hawaiian/Pacific Islander (2.0%), Alaskan/Native American (2.2%), and no response (26.5%). This sample is generally representative of California's high school students, although it slightly overrepresented the Latino/a students (who make up 50.7% of the statewide student population) and underrepresented White students (26.8%; California Department of Education [CDE], 2013). The percentage of English learners at each school ranged from 7% to 68% ( $Md = 23\%$ ), and 38% to 92% ( $Md = 51\%$ ) of the students were listed as coming from economically disadvantaged families (parents without a high school diploma and/or eligibility for the free or reduced-price lunch program).

#### Measures

The California Healthy Kids Survey (CHKS) includes a set of assessment modules evaluating youth strengths, risks, and well-being that is administered by the California Department of Education (CDE) and WestEd (available from <http://chks.wested.org/administer>). Risk behaviors (tobacco and alcohol use) and emotional problems (depressive symptoms and suicidal thoughts) were measured through single items that were adopted from the Youth Risk Behavior Surveillance System (YRBS), a national risk survey administered in the United States since 1992 (Eaton et al., 2012).

#### Tobacco and alcohol use

Students' tobacco use was measured with the item “During the past 30 days, on how many days did you use cigarettes?” and alcohol use was assessed through the item: “During the past 30 days, on how many days

did you use one drink of alcohol?” Students responded on a 6-point scale: 0 days, 1 day, 2 days, 3–9 days, 10–19 days, and 20–30 days. Responses were dichotomized as *never* and *at least one day*.

#### Depressive symptoms and suicidal thoughts

Depressive symptoms and suicidal thoughts were assessed with the following items: “During the past 12 months, did you ever feel so sad or hopeless almost every day for two weeks or more that you stopped doing some usual activities?” and “During the past 12 months, did you ever seriously consider attempting suicide?” Students responded yes or no (Bauman, Toomey, & Walker, 2013; May & Klonsky, 2011).

#### Protective assets

The protective assets and domains were measured using the Social and Emotional Health Survey – Secondary (SEHS-S; Furlong, You, et al., 2014), which is an extension of the Resilience Youth Development Module (RYDM; Furlong, Ritchey, & O’Brennan, 2009). Each of the 12 individual assets (e.g., self-efficacy) includes three items, for a total of 36 items (nine items for each of the four domains). Participants responded using a four-point scale (1 = *not at all true* to 4 = *very much true*) with the exception of the gratitude and zest assets, which used a five-point response scale (1 = *not at all* to 5 = *extremely*). The SEHS-S subscales measuring the 12 social–emotional protective assets have good internal reliability (with alphas ranging from .76 in *persistence* and *self-control* to .94 in *gratitude*), and the alpha coefficient of the combined, overall covitality index being .93–.95 across three samples (Furlong, You, et al., 2014; You et al., 2014, 2015). This was confirmed in the current sample ( $\alpha = .95$ ).

Based on the literature on risk factors (Esbensen et al., 2009; Farrington & Loeber, 2000), each of the 12 individual assets was scored as a continuous variable and students were classified as having a “high-level asset” if they scored in the top 25% of all respondents on that particular measure. This choice allowed us to contrast the top quarter of youths with the remainder, thus identifying a “thriving” minority in each of the examined assets. Our choice was also based on the fact that dichotomization allows equating the sensitivity of measurement across all variables, thus making it possible to compare the predictive strengths of the different configurations of assets. Finally, since we are testing a new theoretical model, we chose this approach because it allows the use of odds ratio (a more interpretable and realistic measure of strength of association with respect to, e.g., the percentage of variance explained), thus simplifying the presentation of results and making findings easier to understand by a wide audience.

Three different measures were created to test our hypotheses:

- 1) *Quantity* of individual covitality high-level assets (range 0–12) was computed by summing the 12 dichotomous variables measuring the different assets and creating 12 dummy variables. Based on a positive development perspective, youth having different numbers of high-level assets were then compared to youth having zero high-level assets.
- 2) *Variety* of covitality domains (range 0–4) was computed by creating dichotomous variables differentiating between youth having at least one individual high-level asset within the four different domains (belief-in-self, belief-in-others, emotional competence, and engaged living) and youth having zero high-level assets in that particular domain. These variables were then summed and four dummy variables were computed. Students having at least one high-level asset in one to four domains were compared to those not having high-level assets in any of the domains.
- 3) *Configuration* of covitality assets (taking into account both quantity [individual assets] and variety [domains]) was measured by grouping students having high-level assets in at least two domains (i.e., from four to six individual assets), those having high-level assets in at least three domains (i.e., from seven to nine individual assets), and youth having high-level assets in each of the four domains (i.e., from

10 to 12 individual assets). Dummy variables were created representing each of the three categories, which were compared with youth possessing 0–3 assets (i.e., for whom there was no guarantee to have strengths in more than one domain).

#### Procedures

The CHKS and the SEHS-S were administered to students at participating schools during regular schools hours during spring of 2013. The 17 participating schools were among 58 schools that were participating in the U.S. Office of Education’s Safe and Supportive Schools initiative (<http://www2.ed.gov/programs/safesupportiveschools/index.html>). The administrators at the school volunteered to participate in this study. The procedures to obtain informed consent and to administer the surveys adhered to standard CHKS protocol (see [chks.wested.org/administer/instructions](http://chks.wested.org/administer/instructions)). Eleven of the schools administered the SEHS-S using an online, anonymous survey portal created by WestEd and six used paper surveys with an accompanying Scantron® response sheet. The student participation rates at schools that completed the online (64.7%) and paper (60.3%) formats were comparable. All responses were processed by WestEd and combined into a SPSS file. Each student’s responses were evaluated against seven checks for response consistency and extreme responding (see Furlong et al., 2009). The resulting sample was reduced through these procedures to the overall 53% participation rate. Data were made available to the researchers after they completed a data sharing agreement required by the CDE (providing confidentiality and data security assurances).

#### Analytic approach

Prevalence of risk behaviors (tobacco use and alcohol use), emotional problems (depressive symptoms and suicidal thoughts), and protective assets were estimated and compared by gender using chi-square tests. Since data were nested, with adolescents having been sampled within schools, we used the multilevel regression technique of hierarchical linear modeling (HLM; Raudenbush & Bryk, 2002) to evaluate the association between protective assets and adolescent risk behaviors and emotional problems (controlling for students’ gender and age). Since we did not have hypotheses regarding school-level variables, a random-coefficient model (without predictors at the school-level) was tested; this way, the random effects  $u_{0j}$  (i.e., the unique effect of school  $j$  on average outcome) were taken into account in the model. More specifically, three different models were estimated by including the three different indicators of protective assets as predictors: quantity, variety, and configuration. These three models were independently evaluated and compared using the four different indicators of adolescent negative outcomes as dependent variables (tobacco use, alcohol use, depressive symptoms, and suicidal thoughts).

## Results

### Preliminary analyses

#### Substance use and emotional problems

Descriptive statistics for the variables included in the study are shown in Tables 1 and 2. In relation to substance use, alcohol was a common experience, with one-fourth of the adolescents involved in the study having had at least one drink in the month preceding the survey (25.6%), whereas the percentage of students using tobacco was lower (7.2%). Alcohol use was more prevalent among females compared to males (27.7% vs. 24.4%, respectively,  $\chi^2 [1, N = 12,040] = 17.574, p < .001$ ); conversely, tobacco use was more common among males (8.6% vs. 6.1%, respectively,  $\chi^2 [1, N = 12,040] = 27.890, p < .001$ ). The use of both substances tended to increase with age and varied across ethnic groups, with the highest percentage of smoking cigarettes reported by White and American Indian youths compared with other sociocultural

**Table 1**  
Descriptive statistics for the outcome variables included in the study by gender, age and ethnicity.

	Tobacco use (%)	Alcohol use (%)	Depressive symptoms (%)	Suicidal thoughts (%)
Total sample	7.2	25.6	31.4	16.5
Gender				
Males	8.6	24.4	22.5	11.6
Females	6.1	27.7	41.1	21.7
$\chi^2$	27.890***	17.574***	470.134***	215.131***
$\phi$	.05***	.04***	.20***	.13***
Age groups				
14	3.9	19.3	29.5	16.3
15	5.5	22.5	33.3	17.8
16	7.3	26.3	33.1	18.5
17	8.7	30.8	31.8	15.3
18	12.1	31.7	30.9	15.1
$\chi^2$	95.223***	113.972***	n.s.	16.281**
$\phi$	.09***	.10***	n.s.	.04**
Ethnicity				
White	9.5	28.3	32.6	19.7
American Indian	9.8	31.8	32.5	23.2
Asian	4.8	13.4	28.7	15.9
Black	3.2	17.6	26.8	11.1
Pacific Islander	4.7	20.5	29.0	20.1
Mixed	8.6	24.3	34.0	21.9
Hispanic	7.4	28.5	32.8	16.1
$\chi^2$	50.968***	135.464***	21.541**	59.128***
$\phi$	.07***	.11***	.04**	.07***

\*\* $p < .01$ . \*\*\* $p < .001$ .

groups. White, American Indian, and Hispanic youths had higher percentages reporting that they drink alcohol than other sociocultural groups. However, the differences for gender, age, and ethnic groups were small in magnitude (as shown by the Cramer's V,  $\phi$ ). Regarding emotional problems, almost one-third of the students (31.4%) reported having experienced feelings of sadness and hopelessness, and about one-sixth (16.5%) disclosed having considered attempting suicide in the 12 months preceding the survey. Both kinds of emotional problems were twice as common for females as males: 41.1% vs. 22.5%, respectively,  $\chi^2 [1, N = 12,040] = 470.13, p < .001$ , for depressive symptoms and 21.7% vs. 11.6%, respectively,  $\chi^2 [1, N = 12,040] = 215.13, p < .001$ , for suicidal thoughts. Although there is no clear pattern across age groups,

both emotional problems tended to be more common among 16 year-olds than other age groups. A higher percentage of White, American Indian, Hispanic and youths of mixed ethnic backgrounds reported having experienced depressive symptoms. Suicidal thoughts were more common among American Indian, Pacific Islander youths, and adolescents of a mixed ethnic background than for other youths. Except for gender differences in depressive symptoms ( $\phi = .20$ ), gender, age, and ethnic differences in emotional problems were modest in magnitude.

*Protective asset patterns*

Table 2 shows the quantity, variety, and the configuration of the protective assets and domains characterizing the participants. Examining quantity, 18.9% of the students were classified as not having high levels of any of the 12 individual assets (i.e., were not rated in the top quartile on any of the 12 assets). Then, a gradual decreasing trend was detected in the percentage of students having one of the high-level assets to students reporting having all 12 of the individual high-level assets (from 17.5% to 1.5%). Males were more likely to either have zero high-level assets or to have a lot of them as compared to females (although the difference was more pronounced for the lack of high-level assets). Related to the variety of domains, an equal distribution of students reported having at least one high-level asset in one to four domains or no assets were detected (varying from 18.0% of students having at least one asset in three domains to 22.1% having at least one asset in one domain).

Regarding the configuration of protective assets, our findings showed that a majority of participants reported 0–3 high-level assets (62.1%). For the rest of the participants, a decreasing pattern was detected: 21.3% of the students reported high-level assets in at least two domains, 10.4% reported high-level assets in at least three domains, and only 6.2% reported high-level assets in all four covitality domains. Gender differences in the configuration of assets were small, and a clear pattern was not found (e.g., more males reported assets in at least two domains but more females reported assets in all the four covitality domains).

*Association between assets, risk behaviors and emotional problems*

To evaluate the study hypotheses, three independent multilevel random-coefficient models were run with tobacco use, alcohol use,

**Table 2**  
Descriptive statistics for the predictors included in the study by gender.

	Total % (N = 12,040)	Males % (n = 5846)	Females % (n = 6194)	$\chi^2$	$\phi$
Number of covitality assets: quantity					
0 assets	18.9	21.3	16.5	44.32***	.06***
1 asset	17.5	17.4	17.5	0.01	.00
2 assets	14.2	12.4	15.8	29.81***	.05***
3 assets	11.6	11.5	11.8	0.28	.00
4 assets	8.5	7.7	9.3	9.25**	.03**
5 assets	7.4	7.0	7.7	2.73	.01
6 assets	5.4	5.0	5.8	3.47	.02
7 assets	4.1	3.9	4.3	1.61	.01
8 assets	3.5	3.6	3.3	0.81	.01
9 assets	2.8	2.8	2.8	0.004	.00
10 assets	2.4	2.6	2.3	0.73	.01
11 assets	2.3	3.0	1.6	27.75***	.05***
12 assets	1.5	1.8	1.1	10.18**	.03**
Number of covitality domains: variety					
0 domains	18.9	21.3	16.5	44.32***	.06***
1 domain	22.1	22.0	22.3	0.11	.00
2 domains	21.2	19.4	22.9	22.82***	.04***
3 domains	18.0	17.4	18.6	2.87	.01
4 domains	19.8	19.9	19.7	0.12	.00
Covitality asset configuration: quantity and variety					
0–3 assets (1 domain)	62.1	62.6	61.6	1.07	.01
4–6 assets (at least 2 domains)	21.3	19.7	22.8	17.29***	.04***
7–9 assets (at least 3 domains)	10.4	10.3	10.5	0.10	.00
10–12 assets (all 4 domains)	6.2	7.4	5.0	29.14***	.05***

\*\* $p < .01$ . \*\*\* $p < .001$ .

**Table 3**  
Multilevel random-coefficient model showing the association between quantity, variety and configuration of building blocks and substance use ( $N = 12,040$ ).

	Tobacco use	Alcohol use
	OR [95% CI]	OR [95% CI]
<i>Model A: quantity</i>		
Gender		
Male	1.00	1.00
Female	0.69 [0.60, 0.80]***	1.21 [1.11, 1.32]***
Age group	1.32 [1.24, 1.41]***	1.21 [1.17, 1.25]***
Ethnicity		
White	1.00	1.00
American Indian	1.03 [0.46, 2.31]	1.29 [0.79, 2.11]
Asian	0.55 [0.38, 0.79]**	0.41 [0.32, 0.52]***
Black	0.36 [0.24, 0.55]***	0.61 [0.39, 0.45]***
Pacific Islander	0.50 [0.24, 1.02]	0.77 [0.53, 1.12]
Mixed	0.93 [0.70, 1.25]	0.84 [0.70, 1.02]
Hispanic	0.75 [0.61, 0.92]**	1.02 [0.89, 1.17]
Number of covitality assets		
0 assets	1.00	1.00
1 asset	0.72 [0.57, 0.91]**	0.92 [0.80, 1.05]
2 assets	0.76 [0.60, 0.97]*	0.91 [0.78, 1.05]
3 assets	0.69 [0.53, 0.90]**	0.82 [0.70, 0.96]*
4 assets	0.66 [0.49, 0.89]***	0.75 [0.61, 0.87]**
5 assets	0.52 [0.37, 0.73]***	0.65 [0.53, 0.78]***
6 assets	0.71 [0.51, 1.01]	0.81 [0.65, 0.99]*
7 assets	0.65 [0.44, 0.96]*	0.72 [0.57, 0.91]**
8 assets	0.62 [0.40, 0.95]*	0.60 [0.46, 0.78]***
9 assets	0.45 [0.26, 0.77]**	0.68 [0.51, 0.90]**
10 assets	0.47 [0.27, 0.83]**	0.55 [0.40, 0.76]***
11 assets	0.40 [0.21, 0.74]**	0.59 [0.42, 0.82]**
12 assets	0.05 [0.01, 0.38]**	0.46 [0.30, 0.71]**
<i>Model B: variety</i>		
Gender		
Males	1.00	1.00
Females	0.70 [0.60, 0.81]***	1.22 [1.12, 1.33]***
Age group	1.32 [1.24, 1.41]***	1.21 [1.15, 1.25]***
Ethnicity		
White	1.00	1.00
American Indian	1.01 [0.45, 2.25]	1.28 [0.78, 2.09]
Asian	0.55 [0.38, 0.80]**	0.41 [0.32, 0.53]***
Black	0.36 [0.24, 0.54]***	0.61 [0.49, 0.75]***
Pacific Islander	0.48 [0.23, 1.00]*	0.77 [0.53, 1.12]
Mixed	0.94 [0.70, 1.25]	0.85 [0.70, 1.03]
Hispanic	0.74 [0.60, 0.92]**	1.03 [0.90, 1.18]
Number of covitality domains		
0 domains	1.00	1.00
1 domain	0.73 [0.59, 0.90]**	0.90 [0.79, 1.03]
2 domains	0.75 [0.61, 0.90]**	0.87 [0.76, 1.00]*
3 domains	0.58 [0.46, 0.74]***	0.66 [0.57, 0.76]***
4 domains	0.51 [0.41, 0.65]***	0.69 [0.59, 0.79]***
<i>Model C: configuration (quantity and variety)</i>		
Gender		
Males	1.00	1.00
Females	0.69 [0.59, 0.80]***	1.20 [1.10, 1.31]***
Age group	1.32 [1.24, 1.41]***	1.21 [1.15, 1.25]***
Ethnicity		
White	1.00	1.00
American Indian	1.01 [0.45, 2.26]	1.29 [0.79, 2.11]
Asian	0.55 [0.38, 0.80]**	0.41 [0.32, 0.52]***
Black	0.36 [0.24, 0.54]***	0.61 [0.49, 0.75]***
Pacific Islander	0.50 [0.24, 1.03]	0.77 [0.53, 1.13]
Mixed	0.93 [0.70, 1.25]	0.84 [0.70, 1.02]
Hispanic	0.75 [0.61, 0.93]**	1.02 [0.89, 1.17]
Covitality asset configuration		
0–3 assets	1.00	1.00
4–6 assets (at least 2 domains)	0.77 [0.64, 0.93]**	0.78 [0.70, 0.87]***
7–9 assets (at least 3 domains)	0.73 [0.56, 0.94]*	0.72 [0.62, 0.84]***
10–12 assets (4 domains)	0.43 [0.29, 0.64]***	0.59 [0.48, 0.72]***

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

depressive symptoms, and suicidal thoughts as dependent variables. In the first model (Model A), the quantity of high-level assets was included as a predictor. In the second model (Model B), the variety of covitality

domains constituted the predictor. In the third model (Model C), the configuration of students' high-level assets (including both quantity and variety) was examined as a predictor. In all the models, adolescents' gender, age, and ethnicity were included as control variables.

#### Quantity of assets

Tables 3 and 4 show the results of the three regression models for substance use (tobacco and alcohol use) and emotional problems (depressive symptoms and suicidal thoughts), respectively. Model A presents the association between the quantity of high-level assets and the likelihood of experiencing negative outcomes (all participants with 1–12 assets were compared to those having no high-level assets). For all dependent variables, we found a general decrease in the odds ratios (ORs) of experiencing risk behaviors or emotional problems when the students reported more high-level assets (with a general progression from less high-level assets/high risk to more high-level assets/low risk and the strength of association progressing from small to medium to large); however, for tobacco use, alcohol use, and suicidal thoughts the pattern was not always consistent, with more high-level assets corresponding to a greater likelihood of negative outcomes in some cases (e.g., participants possessing 6 vs. 5 high-level assets for smoking and drinking). Having all 12 high-level assets was associated with a particularly pronounced decrease in the risk of negative outcomes in relation to tobacco use (with participants having all 12 high-level assets being 20 times less<sup>1</sup> likely to have smoked in the last 30 days than students with zero high-level assets).

#### Variety of assets

Model B shows the results of the association between the variety of high-level assets (in terms of domains) and adolescent negative outcomes (participants reporting high-level assets in zero domains were compared with those reporting high-level assets in one to four domains). Overall, we detected a general decreasing pattern in the ORs of risk behaviors and emotional problems when youth reported assets in more domains. The strength of the association gradually went from small to medium as the number of domains increased. The pattern is particularly clear in relation to tobacco use where each increase in the variety of domains (from 1 to 4) was associated with a lower likelihood of using tobacco (as compared to adolescents not reporting high-level assets in any of the domains). However, the risk of smoking was similar for participants with high-level assets in one or two (ORs = 0.73 and 0.75, respectively) and three or four domains (ORs = 0.58 and 0.51, respectively). In order to have a decrease in the likelihood of having had suicidal thoughts and drinking alcohol, the results show that an adolescent should have high-level assets in at least two different domains; then, the risk of suicidal thoughts decreases regularly with each one-domain increase (with students having at least one high-level asset in every domain experiencing a 2.5 times lower likelihood of having suicidal thoughts) while the risk of drinking alcohol decreases for youths having assets in three domains and remains stable for the ones having assets in all four domains (OR = 0.66 and 0.69, respectively). Regarding depressive symptoms, findings show that at least three domains were needed in order to detect a lower likelihood of negative outcomes. The highest variety of assets (having high-level assets in at least four domains) was associated with a lower risk of depressive symptoms compared to a lower variety (three domains; ORs = 0.49 and 0.77, respectively).

<sup>1</sup> When the results are reported in terms of percent difference in likelihood, they have been obtained by subtracting the ORs from 1.0. When they are reported in terms of "n times less likely," they have been obtained by the following calculation:  $1.0/\text{OR}$ . We chose to alternate these two ways of reporting results because by studying protective factors our findings are mostly composed of ORs lower than 1.0, which are generally less interpretable and intuitive in quantifying the strength of the associations than ORs above 1.0.

**Table 4**  
Multilevel random-coefficient model showing the association between quantity, variety and configuration of building blocks and emotional problems ( $N = 12,040$ ).

	Depressive symptoms	Suicidal thoughts
	OR [95% CI]	OR [95% CI]
<i>Model A: quantity</i>		
Gender		
Male	1.00	1.00
Female	2.40 [2.20, 2.60]***	2.12 [1.91, 2.35]***
Age group	1.02 [0.99, 1.06]	0.98 [0.94, 1.02]
Ethnicity		
White	1.00	1.00
American Indian	1.01 [0.61, 1.66]	1.21 [0.69, 2.15]
Asian	0.78 [0.64, 0.95]*	0.92 [0.72, 1.17]
Black	0.74 [0.61, 0.89]**	0.60 [0.47, 0.77]***
Pacific Islander	0.87 [0.61, 1.23]	1.15 [0.77, 1.72]
Mixed	1.01 [0.85, 1.20]	1.19 [0.97, 1.46]
Hispanic	0.90 [0.79, 1.03]	0.81 [0.69, 0.95]**
Number of covitality assets		
0 assets	1.00	1.00
1 asset	1.07 [0.93, 1.22]	0.88 [0.75, 1.03]
2 assets	1.08 [0.94, 1.25]	0.82 [0.70, 0.97]
3 assets	0.99 [0.85, 1.15]	0.77 [0.64, 0.92]*
4 assets	0.86 [0.72, 1.01]	0.73 [0.60, 0.89]**
5 assets	0.73 [0.61, 0.87]**	0.60 [0.48, 0.75]***
6 assets	0.60 [0.48, 0.73]***	0.50 [0.38, 0.65]***
7 assets	0.57 [0.45, 0.72]***	0.43 [0.31, 0.59]***
8 assets	0.48 [0.37, 0.62]***	0.35 [0.24, 0.50]***
9 assets	0.52 [0.39, 0.69]***	0.51 [0.36, 0.70]***
10 assets	0.35 [0.26, 0.50]***	0.23 [0.14, 0.38]***
11 assets	0.26 [0.18, 0.39]***	0.34 [0.22, 0.55]***
12 assets	0.32 [0.20, 0.50]***	0.17 [0.08, 0.36]***
<i>Model B: variety</i>		
Gender		
Males	1.00	1.00
Females	2.43 [2.24, 2.65]***	2.15 [1.93, 2.38]***
Age group	1.02 [0.99, 1.05]	0.98 [0.94, 1.02]
Ethnicity		
White	1.00 [0.61, 1.64]	1.21 [0.69, 2.13]
American Indian	0.79 [0.65, 0.96]*	0.93 [0.73, 1.18]
Asian	0.74 [0.61, 0.89]**	0.60 [0.47, 0.77]***
Black	0.87 [0.61, 1.23]	1.15 [0.77, 1.71]
Pacific Islander	1.01 [0.86, 1.22]	1.21 [0.98, 1.48]
Mixed	0.90 [0.80, 1.03]	0.81 [0.69, 0.95]*
Hispanic	1.00	1.00
Number of covitality domains		
0 domains	1.00	1.00
1 domain	1.08 [0.95, 1.23]	0.88 [0.76, 1.02]
2 domains	0.99 [0.87, 1.12]	0.75 [0.65, 0.87]***
3 domains	0.77 [0.67, 0.88]***	0.65 [0.55, 0.76]***
4 domains	0.49 [0.42, 0.56]***	0.40 [0.34, 0.48]***
<i>Model C: configuration (quantity and variety)</i>		
Gender		
Males	1.00	1.00
Females	2.41 [2.21, 2.62]***	2.09 [1.89, 2.33]***
Age group	1.02 [0.99, 1.06]	0.98 [0.94, 1.02]
Ethnicity		
White	1.00	1.00
American Indian	1.01 [0.61, 1.67]	1.21 [0.69, 2.14]
Asian	0.78 [0.64, 0.95]*	0.92 [0.73, 1.17]
Black	0.74 [0.61, 0.89]**	0.60 [0.47, 0.77]***
Pacific Islander	0.87 [0.61, 1.23]	1.16 [0.78, 1.73]
Mixed	1.01 [0.85, 1.20]	1.20 [0.98, 1.47]
Hispanic	0.90 [0.80, 1.03]	0.81 [0.69, 0.95]*
Covitality asset configuration		
0–3 assets	1.00	1.00
4–6 assets (at least 2 domains)	0.71 [0.64, 0.79]***	0.71 [0.63, 0.81]***
7–9 assets (at least 3 domains)	0.51 [0.44, 0.59]***	0.48 [0.40, 0.59]***
10–12 assets (4 domains)	0.30 [0.24, 0.38]***	0.29 [0.21, 0.39]***

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

### Configuration of assets

In Model C, the association between the configuration of assets (taking into account both quantity and variety) and the different risk behaviors and emotional problems was evaluated. In this model, participants having high-level assets in at least two domains (and from four to six total high-level assets), three domains (and from seven to nine total high-level assets), and four domains (and from 10 to 12 total high-level assets) were compared to youth having between 0 and 3 high-level assets. This category was chosen as a reference in order to obtain the same “tipping point” across categories (while the absence of high-level assets was adequate for the other categories, for the configuration model the 0–3 high-level asset group allowed the creation of more homogeneous categories, with the 4–6 being the first category with a hypothesized good balance between quantity and variety). As shown in Fig. 1, being classified as having assets in at least two to four domains (i.e., having at least 4, 7, or 10 high-level assets) was always associated with a lower risk of experiencing the different negative outcomes examined as compared to participants possessing three high-level assets or less (with ORs ranging from 0.29 to 0.78). In relation to tobacco use, the most pronounced decrease in the risk of having smoked occurred when adolescents had high-level assets in each domain (and between 10 and 12 high-level assets): whereas students having high-level assets in at least 2 to 3 domains experienced a similar reduction in the risk of smoking (1.3 to 1.4 less likely, respectively), the configuration of assets characterized by the highest quantity and variety of assets was associated with a 2.3 times lower likelihood of smoking tobacco. For the other negative outcomes examined, there appears to be a regular decrease in the likelihood of experiencing risk behaviors and emotional problems (with a lower risk in each hypothesized tipping point). The decreasing pattern was particularly pronounced for depressive symptoms and suicidal thoughts: every increase in the quantity–variety configuration was associated with a 1.4, 2.0, and 3.3 times lower likelihood of depressive symptoms and a 1.4, 2.1, and 3.4 times lower likelihood of suicidal thoughts.

In general, the configuration of quantity–variety of assets was most consistently associated with a reduced likelihood of adolescent risk behaviors and emotional problems. Moreover, for emotional problems, at each tipping point the strength of the association between assets and outcomes went from small to medium to large (thus providing empirical support to the hypothesized tipping points). For substance use, the strength of the association became stronger (from small to medium) passing from the first to the third category (although the change in the strength of the association was less pronounced for smoking).

### Discussion

The present study focused on the association between different configurations of psychological and social assets and adolescent risk behaviors and emotional problems (tobacco use, alcohol use, depressive symptoms, and suicidal thoughts). More specifically, the protective role of these assets against multiple negative outcomes in adolescence was examined by considering their quantity, variety, and configuration. Overall, the findings showed that adolescents reporting a higher number of assets and having assets in a variety of domains also had a lower risk of experiencing risk behaviors and emotional problems, thus supporting the main hypotheses of the study. In addition, different configurations of quantity/variety of assets were associated with a different likelihood of experiencing negative outcomes, whereby a higher number of assets combined with a greater variety of domains were associated with a reduced risk of behavioral and emotional problems.

All the assets included in the covitality model, considered in isolation, might represent protective factors against tobacco and alcohol use, depressive symptoms, and suicidal thoughts in adolescence. For example, previous studies showed that optimism (e.g., Piko et al., 2009), family coherence (e.g., Costello et al., 2008), self-awareness (e.g., Tandon & Solomon, 2009), and emotion regulation (e.g., Van



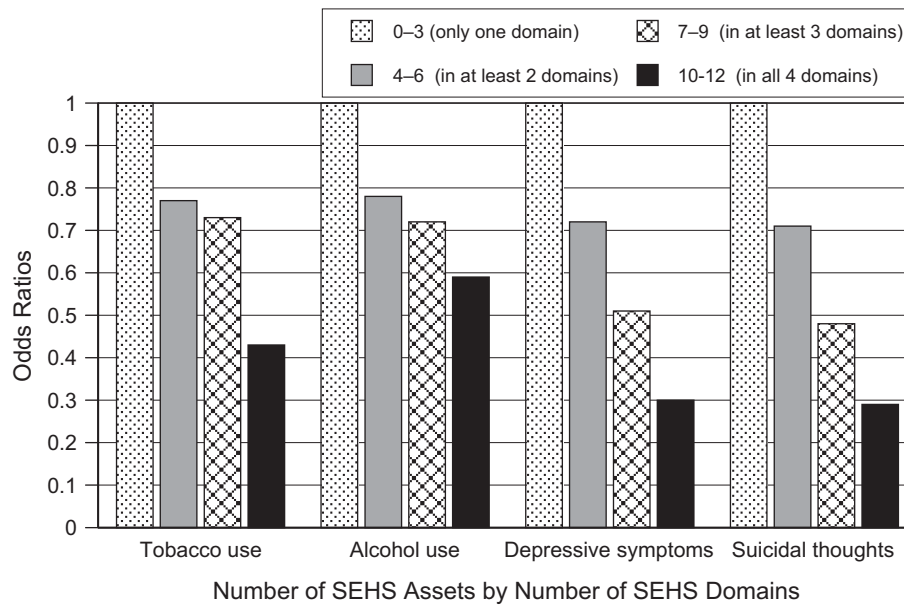


Fig. 1. Risk of behavioral and emotional problems (ORs) for youth having different configurations of covitality assets ( $N = 12,040$ ).

Vorhees et al., 2008) are associated with a lower likelihood of developing depressive symptoms. Similarly, research generally supports the protective influence of peer support (e.g., Babiss & Gangwisch, 2009) and self-efficacy (Beautrais, 2003) on suicidal thoughts. However, instead of focusing on the association between specific assets or domains and risk behaviors/emotional problems, we aimed to give a broader contribution to the theoretical frameworks on positive development in adolescence (e.g., Furlong, You, et al., 2014; Jimerson, Sharkey, Nyborg, & Furlong, 2004; Kirschman et al., 2009; Knoop, 2011; Larson, 2000; Masten et al., 2009) by examining how general configurations of psychological and social assets protect youth from multiple risk behaviors (tobacco and alcohol use) and emotional problems (depressive feelings and suicidal thoughts). The examination of the quantity, variety across domains, and configuration of assets supported and further developed the cumulative-assets framework assumptions (Scales et al., 2006), by identifying the general configurations of assets (deriving from balanced combinations of quantity and variety) that were most effective in protecting adolescents from a variety of risk behaviors and emotional problems.

Before testing our hypotheses, we tested for associations between demographic variables and risk outcomes. The results of the multilevel random-coefficient models showed that being a female constituted a risk factor for all the outcomes under investigation, with the exception of smoking cigarettes, which was more common among boys. Older adolescents were more at risk for substance use, whereas no age differences were found for emotional problems. Compared to White youths, Asian, Black, and Hispanic adolescents had a lower likelihood of experiencing emotional and behavioral problems. We included school, gender, age, and racial background as control variables to understand the independent associations of assets with adolescent behavioral and emotional problems.

#### Quantity of assets

The findings related to the quantity of assets gave partial support to the first hypothesis of the study: when compared with adolescents having no high-level assets (i.e., not included in the top quartile in any of the 12 assets), adolescents reporting more numerous high-level psychological and social assets generally had a lower risk of smoking tobacco, drinking alcohol, experiencing depressive symptoms, and having suicidal thoughts. However, there were some variations across

outcomes and some exceptions that are worth noting. The findings showed that, while one high-level asset seemed to be already protective against tobacco use (1.4 times less likely to smoke compared to adolescents without any high-level assets), at least three high-level assets were needed to experience a reduction in the risk of alcohol use and suicidal thoughts (1.2 and 1.3 times less likely, respectively) and at least five high-level assets were needed to protect against depressive symptoms (1.4 times less likely). Reported possession of all 12 high-level assets was associated with a reduction in the likelihood of experiencing all the behavioral and emotional problems considered; however, the decrease was particularly pronounced for smoking tobacco, with adolescents having all 12 high-level assets being 20 times less likely to smoke.

Although it is possible to observe a general trend in which more assets correspond to a lower risk of experiencing behavioral and emotional problems, there were some exceptions that were not easy to interpret. The decrease in the likelihood of depressive symptoms corresponding to higher numbers of high-level assets follows a rather regular pattern (starting from possessing 5 high-level assets), with almost every increase in the quantity of high-level assets corresponding to a decrease in the risk of depressive symptoms; however, the reduction in the risk of experiencing other negative outcomes was less consistent. In some cases, a higher number of assets were associated with slightly greater risk of behavioral and emotional problems (for example, the risk of smoking and drinking alcohol was higher for adolescents reporting six high-level assets compared to youth reporting five high-level assets). Overall, the findings on the association between quantity of assets and adolescent negative outcomes partially supported the assumption of the cumulative-assets framework that a higher number of external and internal assets constitute a protective factor in adolescence (Scales et al., 2006). However, there were some exceptions in this association, and the tipping points were not clearly identifiable and varied across different outcomes.

#### Variety of assets

Based on recent perspectives in positive youth development defining adolescent development as deriving from sets of skills allowing youth to face complex developmental challenges (Larson & Tran, 2014), we tested whether the variety of assets was protective against negative outcomes. The findings showed that, similar to what was found in relation to the quantity of assets, there was a general

decreasing pattern in the risk of negative outcomes corresponding to an increase in the variety of high-level assets reported by adolescents (i.e., having at least one high-level asset in a higher number of different domains).

In relation to tobacco use, every increase in the variety of assets corresponded to a reduced likelihood of smoking (as compared to adolescents classified as not possessing any high-level assets). However, only two tipping points were clearly identifiable: moving from zero to one/two domains was associated with a reduced risk of smoking (27 and 25% less likely), and having assets in three/four domains was associated with a greater reduction in the likelihood of smoking (42 and 49% less likely).

The role of variety of assets is more evident in relation to suicidal thoughts and drinking. Reporting high-level assets in only one domain was not associated with a lower likelihood of suicidal ideation, thus suggesting that high-level assets in at least two different domains are needed in order to protect adolescents from suicidal thoughts. More specifically, adolescents reporting at least one high-level asset in two different domains were 25% less likely to have experienced suicidal ideation. Then, each increase in the variety of assets corresponded to a further reduction in the risk of suicidal thoughts – 35% less likely with high-level assets in three domains and 60% less likely with four domains. Similarly, high-level assets in at least two different domains were needed in order to protect adolescents from drinking (13% less likely), while having high-level assets in three or all the domains was associated with a similar decrease in the likelihood of drinking (34% and 31% less likely, respectively).

In relation to depressive symptoms, variety seems to be an even more critical protective factor. Having high-level assets in at least three domains were needed in order to detect a significantly lower likelihood of depressive symptoms. Then, a further increase in the variety of high-level assets to four domains seems to be associated with a greater decrease of experiencing these symptoms (23% less likely with assets in three domains, 51% less likely with four domains).

In general, these findings gave support to the idea that youths need to develop multiple sets of skills in order to be prepared to face the challenges associated with adolescence. Overall, a set of high-level assets encompassing at least three different domains was protective for all negative outcomes examined. However, the tipping points and the reduction of risk associated with them were different across domains, and a common pattern was not identified.

#### *Configuration of assets*

In an attempt to integrate the assumptions of the cumulative-assets framework (Esbensen et al., 2009; Scales et al., 2006) and the recent perspectives in positive youth development (Larson & Tran, 2014), we tested different configurations of psychological and social assets derived from a combination of quantity and variety of assets: more specifically, the *configuration protective model* was evaluated. According to the model, youth possessing higher quantity and variety of assets in balanced combinations have a lower risk of developing behavioral and emotional problems.

Consistent with the third hypothesis of the study, when simultaneously taking into account the quantity (across domains) and variety of protective assets, the negative association between high-level assets and all the negative outcomes examined (tobacco use, alcohol use, depressive symptoms, suicidal thoughts) followed a more consistent pattern as compared to the analyses considering quantity and variety separately. Indeed, at each hypothesized “tipping point,” corresponding to an increase in the number of high-level assets and domains, the risk of experiencing negative outcomes was significantly lower as compared to adolescents having less than four high-level assets (i.e., not having a sufficient number of high-level assets assuring that they possess high-level assets in at least two domains). In relation to tobacco use, there was a more pronounced decrease in the risk of smoking at the highest

level of quantity and variety of assets (10 and 12 high-level assets, assuring 4 domains). In relation to the other outcomes examined, the negative association between different configurations of assets and negative outcomes was gradually stronger at each increase in the quantity–variety of assets. This pattern of associations was particularly strong for depressive symptoms and suicidal thoughts, where every hypothesized “tipping point” was associated with a greater reduction in the risk of experiencing emotional problems (a 29%, 49%, and 70% reduction of risk for depressive symptoms and a 29%, 52%, and 71% reduction for suicidal thoughts). Moreover, for emotional problems, at each tipping point the strength of the association between assets and outcomes went from small to medium to large (thus providing empirical support to the hypothesized tipping points).

Overall, findings of the current study show that quantity, variety, and quantity/variety configurations of psychological and social assets were associated with different likelihoods of experiencing negative outcomes. Although the association between numbers of assets and domains and negative outcomes was not always consistent, taking quantity and variety into account simultaneously allowed us to identify tipping points where the risk of smoking tobacco, drinking alcohol, having depressive symptoms, and experiencing suicidal thoughts was significantly lower. The evaluation of the *configuration protective model* underlined that a wider and more varied sets of assets were associated with a lower likelihood of experiencing all the behavioral and emotional problems examined in the study (when quantity and variety were balanced). More specifically, our findings showed that having high levels of psychological and social assets in at least two domains and a certain amount of single high-level assets (four to six) was the first “tipping point” associated with a significantly lower risk of negative outcomes. On average, adolescents reporting they possess four to six high-level assets (the quantity assuring at least two domains) had a 1.35 times lower likelihood of experiencing behavioral and emotional problems. Thus, this configuration appears to be the one characterized by a sufficient amount of high-level assets in a sufficient number of domains (with an adequate balance between quantity and variety of assets) to protect youth from a wide range of negative outcomes.

#### *Limitations*

The current study has some limitations that need to be addressed. First of all, this study was cross-sectional, so it is impossible to draw conclusions on the direction of the effects. Future longitudinal studies that examine how different asset configurations predict later behavioral and emotional problems are needed. In addition, since data for the study relied on self-report measures alone, there is a greater risk for a social desirability bias. Self-reported data for both the outcomes and the predictors may also generate a spurious association between the variables deriving from the common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Multi-informant research studies should be conducted that collect data on youth negative outcomes and protective factors from different sources. Additionally, we focused on general configurations of assets without taking into account specific strengths or domains (e.g., Evans, Marsh, & Weigel, 2010). Different configurations of quantity and variety of assets (e.g., having both internal and external assets) might have a different impact on behavioral and emotional problems based on the specific combinations of assets.

#### **Conclusions**

These limitations notwithstanding, the current study has important theoretical, empirical and practical implications. The study contributes to theory generation in the field of positive youth development (e.g., Larson, 2000), positive psychology (e.g., Kirschman et al., 2009) and strength-based approaches (e.g., Jimerson et al., 2004). The proposed *configuration protective model* allows for a deeper understanding on how internal and external assets in adolescence combine in different

configurations that might be more or less effective in protecting against different behavioral and emotional problems (Esbensen et al., 2009; Scales et al., 2006). By giving support to the idea that higher quantity and variety of assets in balanced combinations represent a protective factor against behavioral and emotional problems, our findings underline the importance of possessing multiple sets of high-level assets during adolescence. Moreover, our results confirm the recent perspectives of positive youth development, defining adolescent development as the result of organized sets of skills and dispositions (Larson & Tran, 2014). Having multiple skills in several domains might be particularly important in modern societies where a high degree of flexibility is required in order to interact with people with different backgrounds, learn the norms characterizing different environments, and adapt to constantly changing settings and tasks. Future studies should examine in greater depth the “ideal” configurations of specific assets; for instance, by testing whether a configuration including social (e.g., peer support) and individual (e.g., self-efficacy) assets is more effective than configurations only encompassing individual assets. Moreover, future research should examine if particular configurations of assets are more effective in protecting youth from behavioral and emotional problems during different developmental stages (e.g., family support and persistence could be more relevant in early adolescence).

Findings of the current study also have important implications for practice by providing general guidelines on how to develop an effective youth development program by promoting different configurations of assets instead of targeting specific assets with the aim of preventing specific behavioral or emotional problems. It is critical to have empirical evidence to select a parsimonious number of goals when planning and implementing prevention programs, especially in the school setting. While implementing an intervention targeting 12 different assets is almost never feasible, our findings show that interventions aimed at promoting four different assets from at least two different domains (e.g., family and peer support, assets included in the *belief in others* domain; self-awareness and self-efficacy, assets included in the *belief in self* domain) might be effective in protecting adolescents from a wide range of negative developmental outcomes. This configuration would promote a number of different assets and a variety of skills that, according to our results, would achieve the first tipping point to protect youths from a range of emotional and behavioral problems.

Our findings support the need to plan and implement universal school-based programs to promote students' social and emotional learning (SEL; Durlak et al., 2011; Zins & Elias, 2006). SEL researchers and practitioners build from Waters and Sroufe's (1983) definition of competent individuals as those who are able “to generate and coordinate flexible, adaptive responses to demands and to generate and capitalize on opportunities in the environment” (p. 80). A recent meta-analysis confirmed that SEL programs effectively promote students' social-emotional competencies such as prosocial skills and reduce conduct and internalizing problems, especially when the programs are well designed, well implemented, use interactive methods (e.g., role playing), and support youths in achieving specific goals (DuBois, Holloway, Valentine, & Cooper, 2002; Durlak et al., 2011). As Waters and Sroufe point out, there are few studies that examine the impact of specific social/emotional skills on youths' development; thus, there is a need to examine how effective teaching specific assets, or combinations of assets, can be to prevent negative developmental outcomes.

Since it is plausible that the “best combination” of sets of assets is not universal but varies based on the characteristics of adolescents and their environments, the aim of our study was to examine general combinations that might be translated into practical guidelines to plan and conduct effective interventions. According to our results, an effective intervention would balance promoting all the assets in a single domain with targeting skills that pertain to every domain. Ideally, the general goal of such interventions would be to promote development that has its cornerstone in at least one single domain (where youths possess 2–3 assets) but is complemented by abilities that pertain to other domains.

Following the Communities That Care prevention approach (Hawkins et al., 2008), however, the choice of the specific combination of assets to promote should be based on a complete assessment of resources and needs at the school/community level.

The intervention strategy supported by our findings might be particularly effective when implementing interventions in highly disadvantaged schools or neighborhoods, where multiple behavioral and emotional problems are often diffused and adolescents come from a wide variety of social, economic, and ethnic backgrounds (Leventhal & Brooks-Gunn, 2000; Leventhal, Dupéré, & Brooks-Gunn, 2009). Interventions aimed at developing multiple sets of assets might be able to prevent multiple negative outcomes for adolescents with very different characteristics. Finally, these general guidelines for intervention would give schools and communities more flexibility to choose the specific goals of their interventions based on the available resources and the specific characteristics of the setting where the interventions are being implemented.

## References

- Armstrong, L. L., & Manion, I. G. (2006, April). Suicidal ideation in young males living in rural communities: Distance from school as a risk factor, youth engagement as a protective factor. *Vulnerable Children and Youth Studies*, 1(1), 102–113. <http://dx.doi.org/10.1080/17450120600659010>.
- Author. (2014).
- Babiss, L. A., & Gangwisch, J. E. (2009). Sports participation as a protective factor against depression and suicidal ideation in adolescents as mediated by self-esteem and social support. *Journal of Developmental and Behavioral Pediatrics*, 30, 376–384. <http://dx.doi.org/10.1097/DBP.0b013e3181b33659>.
- Baltes, P. B., Lindenberger, U., & Staudinger, U. M. (2006). *Lifespan theory in developmental psychology*. In W. Damon, R. M. Lerner, & R. M. Lerner (Eds.), *Theoretical models of human development (6th ed.)*. *Handbook of child psychology*, Vol. 1. (pp. 569–664). Hoboken, NJ: Wiley (Vol. Ed.).
- Bauman, S., Toomey, R. B., & Walker, J. L. (2013). Associations among bullying, cyberbullying, and suicide in high school students. *Journal of Adolescence*, 36, 341–350. <http://dx.doi.org/10.1016/j.adolescence.2012.12.001>.
- Beautrais, A. L. (2003). Life course factors associated with suicidal behaviors in young people. *American Behavioral Scientist*, 46, 1137–1156. <http://dx.doi.org/10.1177/0002764202250657>.
- Benson, P. L. (1996). *Uniting communities for youth*. Minneapolis, MN: Search Institute.
- California Department of Education (2013). Enrollment by ethnicity for 2012–13. Retrieved from <http://dq.cde.ca.gov/dataquest/Enrollment/EthnicGrade.aspx?Choice=StEnrAll&Year=2012-13&Level=State&Topic=Enrollment&MyTimeFrame=S&Type=ALL&Gender=B>
- Corbin, J. N. (2005). Increasing opportunities for school social work practice resulting from Comprehensive School Reform. *Children and Schools*, 27, 239–246. <http://dx.doi.org/10.1093/cs/27.4.239>.
- Costello, D. M., Swednsen, J., Rose, J. S., & Dierker, L. C. (2008). Risk and protective factors associated with trajectories of depressed mood from adolescence to early adulthood. *Journal of Consulting and Clinical Psychology*, 76, 173–183. <http://dx.doi.org/10.1037/0022-006X.76.2.173>.
- Crews, S. D., Bender, H., Vanderwood, M., Cook, C. R., Gresham, F., & Kern, L. (2007). Risk and protective factors of emotional and/or behavioral disorders in children and adolescents: A mega-analytic synthesis. *Behavioral Disorders*, 32(2), 64–77.
- Dent, R. J., & Cameron, R. J. (2003). Developing resilience in children who are in public care: The educational psychology perspective. *Educational Psychology in Practice*, 19, 3–17. <http://dx.doi.org/10.1080/0266736032000061170>.
- DuBois, D. L., Holloway, B. E., Valentine, J. C., & Cooper, H. (2002). Effectiveness of mentoring programs for youth: A meta-analytic review. *American Journal of Community Psychology*, 30, 157–198. <http://dx.doi.org/10.1023/A:1014628810714>.
- Durlak, J. A., Weissberg, R. P., Dymnicki, A. B., Taylor, R. D., & Schellinger, K. B. (2011). The impact of enhancing students' social and emotional learning: A meta-analysis of school-based universal interventions. *Child Development*, 82, 405–432. <http://dx.doi.org/10.1111/j.1467-8624.2010.01564.x>.
- Eaton, D. A., Kann, L., Kinchen, S., Shanklin, S., Flint, K. H., ..., Hawkins, J., et al. (2012). Youth risk behavior surveillance—United States, 2011. *MMWR, Morbidity and Mortality Weekly Report*, 61(4), .
- Eccles, J. S., & Gootman, J. (Eds.). (2002). *Community programs to promote youth development*. Washington, DC: National Academy Press.
- Esbensen, F. A., Peterson, D., Taylor, T. J., & Freng, A. (2009). Similarities and differences in risk factors for violent offending and gang membership. *Australian and New Zealand Journal of Criminology*, 42, 310–355. <http://dx.doi.org/10.1375/acri.42.3.310>.
- Evans, W. P., Marsh, S. C., & Weigel, D. J. (2010). Promoting adolescent sense of coherence: Testing models of risk, protection, and resiliency. *Journal of Community and Applied Social Psychology*, 20, 30–43. <http://dx.doi.org/10.1002/casp.1002>.
- Fang, L., Barnes-Ceeny, K., & Schinke, S. P. (2011). Substance use behavior among early-adolescent Asian American girls: The impact of psychological and family factors. *Women and Health*, 51, 623–642. <http://dx.doi.org/10.1080/03630242.2011.616575>.
- Farrington, D. P., & Loeber, R. (2000). Some benefits of dichotomization in psychiatric and criminological research. *Criminal Behaviour & Mental Health*, 10, 100–122.

- Furlong, M. J., Gilman, R., & Huebner, E. S. (Eds.). (2014). *Handbook of positive psychology in schools* (2nd ed.). New York, NY: Routledge.
- Furlong, M. J., Ritchey, K. M., & O'Brennan, L. M. (2009). Developing norms for the California Resilience Youth Development Module: Internal assets and school resources subscales. *California School Psychologist*, 14, 35–46. <http://dx.doi.org/10.1007/BF03340949>.
- Furlong, M. J., You, S., Renshaw, T. L., Smith, D. C., & O'Malley, M. D. (2014). Preliminary development and validation of the Social and Emotional Health Survey for secondary students. *Social Indicators Research*, 117, 1011–1032. <http://dx.doi.org/10.1007/s11205-013-0373-0>.
- Gilman, R., Huebner, E. S., & Furlong, M. J. (Eds.). (2009). *Handbook of positive psychology in schools*. New York, NY: Routledge.
- Guo, H., Reeder, A. L., McGee, R., & Darling, H. (2011). Adolescents' leisure activities, parental monitoring and cigarette smoking—A cross-sectional study. *Substance Abuse Treatment, Prevention, and Policy*, 6, 12–20. <http://dx.doi.org/10.1186/1747-597X-6-12>.
- Hawkins, J. D., Catalano, R. F., Arthur, M. V., Egan, E., Brown, E. C., Abbott, R. D., et al. (2008). Testing communities that care: The rationale, design and behavioral baseline equivalence of the Community Youth Development Study. *Prevention Science*, 9, 178–190. <http://dx.doi.org/10.1007/s11211-008-0092-y>.
- Jelicic, H., Bobek, D. L., Phelps, E., Lerner, R. M., & Lerner, J. V. (2007). Using positive youth development to predict contribution and risk behaviors in early adolescence: Findings from the first two waves of the 4-H Study of Positive Youth Development. *International Journal of Behavioral Development*, 31, 263–273. <http://dx.doi.org/10.1177/0165025407076439>.
- Jimerson, S. R., Sharkey, J. D., Nyborg, V., & Furlong, M. J. (2004). Strength-based assessment and school psychology: A summary and synthesis. *The California School Psychologist*, 9, 9–19. <http://dx.doi.org/10.1007/BF03340903>.
- Kail, R. V., & Cavanaugh, J. C. (2000). *Human development: A lifespan view* (2nd ed.). Belmont, CA: Wadsworth.
- Kidd, S., & Shahar, G. (2008). Resilience in homeless youth: The key role of self-esteem. *American Journal of Orthopsychiatry*, 78, 163–172. <http://dx.doi.org/10.1037/0002-9432.78.2.163>.
- Kirschman, K. J. B., Johnson, R. J., Bender, J. A., & Roberts, M. C. (2009). Positive psychology for children and adolescents: Development, prevention, and promotion. In S. J. Lopez, & C. R. Snyder (Eds.), *The Oxford handbook of positive psychology* (pp. 133–148) (2nd ed.). New York, NY: Oxford University Press.
- Knoop, H. H. (2011). Education in 2025: How positive psychology can revitalize education. In S. I. Donaldson, M. Csikszentmihalyi, & J. Nakamura (Eds.), *Applied positive psychology: Improving everyday life, health, schools, work, and society* (pp. 97–116). New York, NY: Routledge.
- Kostecky, K. L. (2005). Parental attachment, academic achievement, life events and their relationship to alcohol and drug use during adolescence. *Journal of Adolescence*, 28, 665–669. <http://dx.doi.org/10.1016/j.jadolescence.2004.12.006>.
- Larson, R. W. (2000). Toward a psychology of positive youth development. *American Psychologist*, 55, 170–183. <http://dx.doi.org/10.1037/0003-066X.55.1.170>.
- Larson, R. W., & Tran, S. P. (2014). Invited commentary: Positive youth development and human complexity. *Journal of Youth and Adolescence*, 43, 1012–1017. <http://dx.doi.org/10.1007/s10964-014-0124-9>.
- Leffert, N., Benson, P. L., Scales, P. C., Sharma, A. R., Drake, D. R., & Blyth, D. A. (1998). Developmental assets: Measurement and prediction of risk behaviors among adolescents. *Applied Developmental Science*, 2, 209–230. [http://dx.doi.org/10.1207/s1532480xads0204\\_4](http://dx.doi.org/10.1207/s1532480xads0204_4).
- Lerner, R. M. (2004). *Liberty: Thriving and civic engagement among American youth*. Thousand Oaks, CA: Sage.
- Lerner, R. M., Bowers, E. P., Geldhof, G. J., Geststottir, S., & DeSouza, L. (2012). Promoting positive youth development in the face of contextual changes and challenges: The roles of individual strengths and ecological assets. *New Directions for Youth Development*, 135, 119–128. <http://dx.doi.org/10.1002/yn.20034>.
- Lerner, J. V., Phelps, E., Forman, Y., & Bowers, E. (2009). Positive youth development. In R. M. Lerner, & L. Steinberg (Eds.), *Handbook of adolescent psychology* (3rd ed.) Vol. 1. (pp. 524–558). Hoboken, NJ: Wiley.
- Leventhal, T., & Brooks-Gunn, J. (2000). The neighborhoods they live in: The effects of neighborhood residence on child and adolescent outcomes. *Psychological Bulletin*, 126, 309–337. <http://dx.doi.org/10.1037/a0036424>.
- Leventhal, T., Dupéré, V., & Brooks-Gunn, J. (2009). Neighborhood influences on adolescent development. In R. M. Lerner, & L. Steinberg (Eds.), *Handbook of adolescent psychology* (pp. 411–443) (3rd ed.). Hoboken, NJ: Wiley.
- Masten, A. S. (2001). Ordinary magic: Resilience processes in development. *American Psychologist*, 56, 227–238. <http://dx.doi.org/10.1037/0003-066X.56.3.227>.
- Masten, A. S., Cuttuli, J. J., Herbers, J. E., & Reed, M. J. (2009). Resilience in development. In C. R. Snyder, & S. J. Lopez (Eds.), *Oxford handbook of positive psychology* (pp. 117–132). New York, NY: Oxford University Press.
- May, A., & Klonsky, E. D. (2011). Validity of suicidality items from the Youth Risk Behavior Survey in a high school sample. *Assessment*, 18, 379–381. <http://dx.doi.org/10.1177/1073191110374285>.
- Meyers, L. I. (2013). Substance use among rural African American adolescents: Identifying risk and protective factors. *Child and Adolescent Social Work Journal*, 30, 79–93. <http://dx.doi.org/10.1007/s10560-012-0280-2>.
- Piko, B. F., Kovacs, E., & Fitzpatrick, K. M. (2009). What makes a difference? Understanding the role of protective factors in Hungarian adolescents' depressive symptomatology. *European Child and Adolescent Psychiatry*, 18, 617–624. <http://dx.doi.org/10.1007/s00787-009-0022-y>.
- Podsakoff, P. M., MacKenzie, S. B., Lee, J., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88, 879–903. <http://dx.doi.org/10.1037/0021-9010.88.5.879>.
- Proctor, C. (2014). Enhancing well-being in youth: Positive psychology interventions for education in Britain. In M. J. Furlong, R. Gilman, & E. S. Huebner (Eds.), *Handbook of positive psychology in schools* (pp. 416–432) (2nd ed.). New York, NY: Routledge.
- Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models* (2nd ed.). London: Sage.
- Renshaw, T. L., Furlong, M. J., Dowdy, E., Rebelez, J., Smith, D. C., & O'Malley, M. D. (2014). Covitality: A synergistic conceptualization of adolescents' mental health. In M. J. Furlong, R. Gilman, & E. S. Huebner (Eds.), *Handbook of positive psychology in the schools* (pp. 12–32) (2nd ed.). New York, NY: Routledge.
- Roberts, R. E., Roberts, C. R., & Xing, Y. (2010). One-year incidence of suicide attempts and associated risk and protective factors among adolescents. *Archives of Suicide Research*, 14, 66–78. <http://dx.doi.org/10.1080/13811110903479078>.
- Roth, J. L., & Brooks-Gunn, J. (2003). What exactly is a youth development program? Answers from research and practice. *Applied Developmental Science*, 7, 94–111. [http://dx.doi.org/10.1207/S1532480XADS0702\\_6](http://dx.doi.org/10.1207/S1532480XADS0702_6).
- Scal, P., Ireland, M., & Borowsky, I. W. (2003). Smoking among American adolescents: A risk and protective factor analysis. *Journal of Community Health*, 28(2), 79–87. <http://dx.doi.org/10.1023/A:1022691212793>.
- Scales, P. C., Benson, P. L., Roehlkepartain, E. C., Sempa, A., & Van Dulmen, M. (2006). The role of developmental assets in predicting academic achievement: A longitudinal study. *Journal of Adolescence*, 29, 691–708. <http://dx.doi.org/10.1016/j.jadolescence.2005.09.001>.
- Scales, P. C., & Leffert, N. (1998). *Developmental assets: A synthesis of the scientific research on adolescent development*. Minneapolis, MN: Search Institute.
- Sharaf, A. Y., Thompson, E. A., & Walsh, E. (2009). Protective effects of self-esteem and family support on suicide risk behaviors among at-risk adolescents. *Journal of Child and Adolescent Psychiatric Nursing*, 22, 160–168. <http://dx.doi.org/10.1111/j.1744-6171.2009.00194.x>.
- Shekhtmeyster, Z., Sharkey, J. D., & You, S. (2011). The influence of multiple ecological assets on substance use patterns of diverse adolescents. *School Psychology Review*, 40, 386–404.
- Sonderlund, A. L., O'Brien, K., Kremer, R., Rowland, B., De Groot, F., Straiger, P., et al. (2014). The association between sports participation, alcohol use and aggression and violence: A systematic review. *Journal of Science and Medicine in Sport*, 17, 2–7. <http://dx.doi.org/10.1016/j.jsams.2013.03.011>.
- Tandon, D. S., & Solomon, B. S. (2009). Risk and protective factors for depressive symptoms in urban African American adolescents. *Youth Society*, 41, 80–99. <http://dx.doi.org/10.1177/0044118X08327520>.
- Thai, N. D., Connell, C. M., & Tebes, J. K. (2010). Substance use among Asian American adolescents: Influence of race, ethnicity, and acculturation in the context of key risk and protective factors. *Asian American Journal of Psychology*, 1, 261–274. <http://dx.doi.org/10.1037/a0021703>.
- Van Vorhees, B. W., Paunesku, D., Kuwabara, S. A., Basu, A., Gollan, J., Hankin, B. L., et al. (2008). Protective and vulnerability factors predicting new-onset depressive episode in a representative of U.S. adolescents. *Journal of Adolescent Health*, 42, 605–616. <http://dx.doi.org/10.1016/j.jadohealth.2007.11.135>.
- Waters, E., & Sroufe, L. A. (1983). Social competence as a developmental construct. *Developmental Review*, 3, 79–97. [http://dx.doi.org/10.1016/0273-2297\(83\)90010-2](http://dx.doi.org/10.1016/0273-2297(83)90010-2).
- Wong, Y. J., & Maffini, C. S. (2011). Predictors of Asian American adolescents' suicide attempts: A latent class regression analysis. *Journal of Youth and Adolescence*, 40, 1453–1464. <http://dx.doi.org/10.1007/s10964-011-9701-3>.
- You, S., Furlong, M. J., Dowdy, E., Renshaw, T. L., Smith, D. C., & O'Malley, M. D. (2014). Further validation of the Social and Emotional Health Survey for high school students. *Applied Research in Quality of Life*, 9, 997–1015. <http://dx.doi.org/10.1007/s11482-013-9282-2>.
- You, S., Furlong, M. J., Felix, E. D., & O'Malley, M. D. (2015). Validation of the Social and Emotional Health Survey for five sociocultural groups: Multigroup invariance and latent mean analyses. *Psychology in the Schools*. <http://dx.doi.org/10.1002/pits> (Advanced online publication).
- Zins, J. E., Bloodworth, M. R., Weissberg, R. P., & Walberg, H. J. (2007). The scientific base linking social and emotional learning to school success. *Journal of Educational and Psychological Consultation*, 17, 191–210. <http://dx.doi.org/10.1080/10474410701413145>.
- Zins, J. E., & Elias, M. J. (2006). Social and emotional learning. In G. G. Bear, & K. M. Minke (Eds.), *Children's needs III: Development, prevention, and intervention* (pp. 1–13). Bethesda, MD: National Association of School Psychologists.