

## Observed Ecological Assets in Families, Schools, and Neighborhoods: Conceptualization, Measurement, and Relations With Positive and Negative Developmental Outcomes

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*The relations among observed ecological assets in youth's families, schools, and neighborhoods with positive and negative developmental outcomes were assessed with a sample of 646 fifth-grade youth. The majority of participants were Latino (37.5%) or European American (35.5%) and lived in 2-parent families. Ecological asset indicators were categorized into 4 dimensions: human, physical or institutional, collective activity, and accessibility and were measured equivalently across the three contexts. Different dimensions of the family, school, and neighborhood settings had the most comprehensive impact on the different developmental outcomes, specifically collective activity in the family, accessibility in school, and human resources in the neighborhood. This research establishes a baseline for the empirical inquiry into the impact of observed resources present within families, school, and neighborhoods.*

Contemporary developmental science recognizes that human development is a bidirectional, individual ↔ context relational process (Lerner, 2006). Just as there are multiple levels of organization within the individual (e.g., genes, motivation, and cognitive abilities) that influence one's developmental course, so too are there different levels of organization within the social ecology (e.g., families, schools, and neighborhoods) that contribute to development. In this article, we focus on the multilevel social context. We propose a framework for conceptualizing and measuring different, observed aspects of the social ecology that can be simultaneously applied to multiple settings to examine the unique and combined effects of the ecology on positive and negative developmental outcomes.

### Common Features of Positive Developmental Settings

Recent research has begun to specify the critical elements of social contexts important for positive youth development (PYD; Barber & Olsen, 1997; Benson, 2003; Eccles & Gootman, 2002; Gambone & Connell, 2004). These ideas have emerged from a long history of research on families and schools and,

more recently, on neighborhoods. This research shares the assumption that young people are more likely to thrive when their developmental needs are matched with resources in the environment and when there is synergy between multiple settings. A key hypothesis of this work is that the more exposure a youth has to these resources and experiences, the more likely he or she will develop positively.

For instance, Barber and Olsen (1997) and Eccles, Early, Frasier, Belansky, and McCarthy (1997) proposed three basic experiences (i.e., connection, regulation, and autonomy) to define youth's main associations with their environment that can be measured across multiple settings (neighborhoods, schools, families, siblings, and peer groups). Findings across both studies indicated that if youth reported positive experiences in one setting (e.g., families), they were likely to also report positive experiences in the other contexts (e.g., peer groups). Furthermore, if youth reported positive interactions in regard to one socialization dimension (e.g., regulation), they were likely to also have positive interactions on the other two constructs (connection and autonomy). Positive experiences across the four settings added linearly and independently to the prediction of positive adolescent outcomes, with few statistical interactions noted (see also, Cook, Herman, Phillips, & Settersten, 2002).

Benson (2003) and colleagues at Search Institute (Benson, Leffert, Scales, & Blyth, 1998; Leffert et al., 1998; Scales et al., 2000) proposed slightly different ideal social experiences for youth. Their model includes four categories of what they term external assets: support, boundaries and expectations, empower-

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This article is based on a dissertation submitted by Christina Theokas to Tufts University in partial fulfillment of the requirements for the Ph.D. degree. The research was supported in part by a grant from the National 4-H Council.

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ment, and constructive use of time. Although their research does not examine the impact of specific contexts or distinguish the predictive power of categories of assets, their empirical findings test and support the notion that additive increases in the total number of self-reported, perceived ecological resources is positively related to higher levels of thriving behaviors and lower levels of risk behaviors.

Finally, two additional frameworks have been proposed. Eccles and Gootman (2002) articulated a provisional list of eight essential elements of positive developmental settings. They hypothesized that young people will develop positive personal and social assets in settings that have these eight features: physical and psychological safety; clear and consistent structure and appropriate supervision; supportive relationships; opportunities to belong; positive social norms; support for efficacy and mattering; opportunities for skill building; and integration of family, school, and community efforts. Similarly, Gambone and Connell (2004) specified five supports and opportunities that are critical in all settings for providing the building blocks of successful development. They include adequate nutrition, health, and shelter; multiple supportive relationships with adults and peers; challenging and engaging activities and learning experiences; meaningful opportunities for involvement and membership; and physical and emotional safety.

The work on optimal contexts of development advances research by focusing on youths' developmental needs, supports, and resources and considers multiple social contexts. Common indicators have been proposed for all social contexts (e.g., safety and supportive relationships). Moreover, there is agreement across multiple proposed frameworks. Empirical research has examined youths' perceived experiences within contexts and linked these experiences with key indicators of youth development. However, these models also all specify documentation of norms, resources for skill building, and engagement and integration of key contexts as essential components of positive developmental settings. For example, the availability of youth programs for skill building and group membership has not been measured and examined, although there is agreement that these actual resources are necessary for positive development and are often the targets of community organizing and policy intervention.

This research focuses on documenting these types of resources present in youth's families, schools, and neighborhoods. Structural and descriptive features of settings necessarily precede youth experiences (e.g., autonomy) in a setting. Without the availability of opportunities, no attempts can be made by youth to develop new skills or build meaningful and supportive relationships with caring adults. For example, without athletic fields or access to computers and books, youth cannot learn to play a sport, to use the Internet, or to

read and learn about things of interest. This data, when combined with individual reports of their perceived experiences within social settings, will expand current knowledge about the impact of the ecology on PYD.

### **A Framework to Specify Features of the Actual Ecology**

We attempt to define the dimensions into which resources in the actual ecology can be categorized. Past research has examined discrete aspects of families (e.g., family size), schools (e.g., type), and communities (e.g., percentage unemployed); the goal of this research is to propose major categories of observed ecological resources that are applicable to all settings and to assess the impact of those dimensions across multiple ecologies, much like connection, regulation, and autonomy are examined across contexts (e.g., Eccles et al., 1997).

The theoretical basis for the proposed asset categories emerges from community action models (e.g., Kretzmann & McNight, 1993), the neighborhood effects models specified by Leventhal and Brooks-Gunn (2000), forms of capital (Bourdieu, 1983; Coleman, 1988), and models of optimal contexts for youth development (e.g., Eccles & Gootman, 2002). Each of these sources specifies the mechanisms or necessary conditions for positive development and for the promotion of positive social experiences. In particular, they converge in specifying that assets can be conceived of within individuals, in the physical space, and emerging in the dynamic between the two. Thus, four categories of observed ecological assets—human, physical or institutional, collective activity, and accessibility—are proposed to organize the actual resources and opportunities in the environments of youth. The asset categories are intended to represent broad areas of potential inputs and connectivity between youth and resources for positive developmental outcomes. As well, the indicators, within the dimensions, are measured separate from youth perceptions of social settings, which has been the focus of past research. Although individuals may report the status of an indicator (e.g., number of nights family has dinner together), it could also be externally observed and should not vary in relation to reporter characteristics.

The first key dimension of observed measures of ecological assets involves the individuals in the environment. Human resources are defined as the strengths, skills, talents, and abilities of people and as instantiated by the roles they have (Coleman, 1988; Kretzmann & McNight, 1993). For example, individuals can model conventional behaviors, standards, and expectations (e.g., high school graduation) or can reflect maladaptive, unengaged citizenship (e.g., involvement with drug dealing). The characteristics, activities, and

behaviors of individuals provide a manifestation of the social norms of a particular context.

The second dimension of actual ecological assets is the physical and institutional resources present in the social environment. These assets are intended to document opportunities for learning, recreation, and engagement with individuals and the physical world around oneself and, as well, for providing routines and structure for youth. For example, when families have medical and dental insurance, children and youth are regularly seen by physicians who monitor their physical health and well-being. These experiences become routine for children and youth and part of how they think about themselves and of how they view the procedures needed to address their (in this case physical) needs. Thus, the presence of these resources regulates experiences and opportunities for youth. One assumption is that proximity to resources (or presence of resources within the family) increases awareness, opportunity, and the likelihood of involvement. For example, at the neighborhood level, presence of libraries, community centers, and cultural experiences that are within walking distance, are drop off points on school bus routes, or are readily available through public transportation may increase their use and thus their potential benefits.

The third dimension of assets is collective activity. This asset dimension is intended to document mutual engagement between community members, parents, youth, school personnel, and institutions of society. These organizations, groups, or mutual activities represent the combined efforts and actions of different sets of individuals. In some cases, these coalitions symbolize group efforts for advocacy (e.g., a Parent Advisory Committee) or civic leadership (e.g., a neighborhood watch); in others they denote shared activity (e.g., family dinners). Documenting these relationships provides an understanding of the social ties and connections among community members. The primary bases for this component of the model derives from Coleman's (1988) notion of social capital and Sampson's (2001) ideas regarding collective efficacy. Social capital is the resource potential of social networks, and collective efficacy represents the activation of these networks for specific outcomes. Significant research has established a connection between social capital and youth outcomes (e.g., Sampson, Raudenbush, & Earls, 1997). Documenting ties and network is one way of establishing instances of a community's associational life and the climate of the key contexts of development.

The final dimension is accessibility. Similar to the dimension of collective activity, this category attempts to capture the dynamic between individuals and contexts. As such, this category is intended to document the ability of residents to partake of human resources and resource opportunities in the context. Accessibility can be conceptualized and operationalized in multiple

ways. First, accessibility can refer to the transportation capacity and hours of operation of local businesses, infrastructure, or cultural institutions in a local community. This is a first level and documents physical ease of access. Second, accessibility can refer to the potential of youth to interact with the adults in the setting. For example, what is the ratio of adults to children in a given neighborhood or how long has a family lived in a neighborhood, so that local youth and adults can get to know one another? In this case, accessibility is ease of access of the human resources. Finally, accessibility can be conceived of in terms of the safety of the physical environment. It is perhaps the case that businesses and adults are accessible to youth; however, the physical environment must also be safe and free of dangers (e.g., crime) and promote the care and maintenance of the ecology (e.g., provision of rules in a family or community policing).

### **This Study**

The data examined in this article are derived from the first wave (school year 2002–2003) of the 4-H Study of Positive Youth Development (Lerner et al., 2005). This study reports on a selected subsample of participants from the larger national study to pilot test the conceptual model of observed ecological assets. The sample was chosen to include various community types (e.g., urban, suburban, and rural) with diverse individual demographic characteristics to have a broad basis from which to test the proposed model. A full or ideal instantiation of the conceptual framework was not possible given that only certain indicators were available to be collected retrospectively. In particular, indicators at the family level were either reported by the youth or parent and were limited to those items included in the Wave 1 questionnaires. Indicators for school and neighborhood are collected from other reporters and governmental data sources (e.g., the U.S. Census). Nonetheless, each indicator matches the proposed definitions and is supported by previous research and practitioner wisdom about essential features of the social ecology.

The ecological asset indicators are summed to form composites representing the four dimensions of the model for each setting (families, schools, and neighborhoods) and examined in relation to both positive and negative developmental outcomes. Both types of outcomes are included to assess whether similar or different features of the ecology influence their development. A youth development framework supposes that investing in healthy development, by aligning resources in the ecology with developmental needs will lead to both a reduction in negative, risky behaviors, as well as the growth of functional, thriving behaviors; however this assumption has not been tested empiri-

cally. This manuscript includes two newly developed measures, specifically a PYD composite score and a measure of youth contribution (see Lerner et al., 2005), as well as two traditional indicators of problem behaviors, depression, and a combined measure of delinquency and substance use, for use as dependent variables.

Three key hypotheses are being tested in relation to the proposed conceptual dimensions: (a) All dimensions within settings are expected to have a positive impact on the outcomes, (b) more proximal settings are expected to account for greater amounts of variance, and (c) each dimension will add linearly and independently to the prediction of adolescent outcomes, as has been previously found (Eccles et al., 1997). No statistical interactions will be tested, as there is no literature guiding these decisions, and the focus of this article is to test the utility of the proposed model.

## Method

### Schools

Six school districts with their participating public schools ( $N = 17$ ), youth ( $N = 646$ ), and parents ( $N = 372$ ) were chosen for inclusion in this study. These six districts were chosen from the larger study to represent different regions of the country (Northeast, Northwest, Southeast, Southwest) with unique demographic, population density, and land area characteristics that may vary in number and type of observed ecological resources. The total number of youth sampled in each school varied (average participation rate = 41%, range = 6% to 85%). Active consent was required for participation. All 5th graders were eligible if they returned consent prior to data collection and were English speaking. Table 1 presents key school characteristics and the percentage of participants in each category. All schools were public, coeducational schools, which varied in size, grades served, socioeconomic characteristics, and locale designation. All demographic data were collected from the National Center for Educational Statistics 2002–2003 school profiles. Participants were more likely to attend midsized, K–5 schools, but they were distributed throughout urban, suburban, and rural locations.

### Participants

Youth participants were a diverse group of 646 fifth graders ( $M$  age = 11.06,  $SD = .51$ , 51% women, average mother's education = 13.3 years, average household income = \$43,347). The majority of participants were Latino (37.5%) or European American (35.5%; African American, 7.6%; Asian American, 3.6%, Mul-

**Table 1.** School Characteristics

	N	%	% Participants
School size			
Less than 400 students	3	18	14.2
401 to 800 students	8	47	48.5
More than 800 students	6	35	37.3
Grades served			
PK through 5	11	65	65.3
PK through 6	5	29	28.8
PK through 8	1	6	5.9
Non-European American			
0 to 25%	3	18	18.4
26 to 50%	2	12	9.8
51 to 75%	4	24	34.4
76 to 100%	8	47	37.5
Free and reduced lunch			
0 to 25%	3	18	24.3
26 to 50%	3	18	26.6
51 to 75%	1	6	12.2
76 to 100%	10	59	36.9
Locale			
Urban	7	41	38.2
Suburban	5	29	30.2
Rural	5	29	31.6

tiethnic, 5.2%; and other, 6%). The majority of youth came from two-parent families (70.7%).

### Data Collection

#### Youth and Parents

At all school sites, a 2-hr block of time was allotted for data collection during which the students were asked to complete a student questionnaire (SQ) developed for use in the 4-H Study of PYD (described in detail in Lerner et al., 2005). The SQ includes well-validated scales assessing psychological constructs, as well as items assessing youth activity engagement, behavioral choices, and expectations for the future. Guardians were sent a questionnaire with the consent documentation, which included items about the family and neighborhood, and were asked to send it back to the research staff in a self-addressed, postage-paid envelope.

#### Schools

Principals or a designated representative (e.g., other school administrators) completed a "School Survey" that included questions about the academic climate of the school, and as well the resources available at the school (e.g., playgrounds, academic tutors). Data were also collected from state departments of education online databases regarding mandated reporting items (e.g., years of experience of teachers).

## Neighborhoods

This study defined the neighborhood unit of analysis as census tract. Participant's addresses were inputted into the American Fact Finder on the U.S. Census Web site ([www.census.gov](http://www.census.gov)) to identify the census tract within which he or she lived. Number of participants per census tract varied widely from 1 to 50 depending on participants' proximity to their neighborhood school, land area characteristics, and population distribution. This division provided neighborhood asset scores at the individual level and focused on the immediate proximity of resources for the promotion of positive youth outcomes.

Documentation of resources followed multiple steps to determine their exact location and census tract. First, the 2000 Census reports were used to document key characteristics of the tract in which each student lived that were relevant to ecological assets. Second, city Web sites (e.g., [www.ci.cityname.stateinitial.us/](http://www.ci.cityname.stateinitial.us/)), county Web sites, as well as online directories (e.g., [www.superpages.com/](http://www.superpages.com/)) were searched to document the presence of ecological assets within youths' neighborhoods. After resources were located with the various search engines, their addresses were input into the American Fact Finder and the exact census tract location identified.

## Measures

### Youth Outcomes

**Positive developmental characteristics.** Two variables are utilized as indicators of positive development. The first is a PYD composite score. Lerner et al. (2005) described in detail the specification and confirmation in LISREL of the latent factor measurement model of the "Five Cs" of competence, confidence, character, caring, and connection and of their convergence on a second order factor representing the PYD construct. The variable is a standard score, comprised of 17 well-validated scales assessing positive adolescent characteristics ( $M = -.12$ ,  $SD = .97$ ). The second composite is a measure of contribution. The construction of contribution followed a different methodology. The definition of contribution introduced by Lerner et al. suggested that there is both an ideological and a behavioral component to contribution. The ideology of contribution was obtained by coding responses to three open-ended questions assessing youths' definitions of a thriving individual. Responses that reflected a desire for or commitment to giving back to the world around them were coded as 0 (*absent*) or 1 (*present*). The behavioral component of contribution quantifies youth active participation—0 (*no involvement*) or 1 (*involvement*) more than once a month—in five different service oriented activities (being a leader in a group, being a peer mentor, helping friends and neighbors, partici-

pating in school government, and volunteering in the community). The eight items used to measure contribution were considered a variable set, and a sum score was computed ( $M = 2.67$ ,  $SD = 1.4$ ).

**Negative developmental characteristics.** Two measures that represent internalizing (depression) and externalizing (delinquency and substance use) problems were included as negative developmental indicators. Indicators of externalizing behavior were measured with a set of questions developed for this study. The questions were modified from items included in Profiles of Student Life: Attitudes and Behaviors Scale (Leffert et al., 1998) and the Monitoring the Future Questionnaire (Bachman, Johnston, & O'Malley, 2001). Five items assess the frequency of substance use (e.g., cigarettes, alcohol) in the last year. The response format ranges from 0 (*never*) to 3 (*regularly*). Four items assess the frequency of delinquent behaviors (e.g., trouble with the police). The response format ranges from 0 (*never*) to 4 (*5 or more times*). The nine items were standardized on a 12-point scale (Cronbach  $\alpha = .73$ ) and a sum score was calculated for each youth measuring total engagement in risk behaviors ( $M = 4.23$ ,  $SD = 8.28$ , range = 0 to 94). The incidence of risk behaviors is low in the sample, with the majority of youth not engaging in any (52%).

The Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977) was used to assess depressive symptomatology. In this data set, the Cronbach alpha for this measure is .82. Youth responded to 20 items and reported how often they felt that way during the past week (e.g., sad). The response format ranged from 0 (*rarely/none of the time*) to 3 (*most/all of the time*). Items are summed for a total score ( $M = 15.77$ ,  $SD = 8.9$ , range = 0 to 54).

### Ecological Assets

Indicators were chosen for each dimension and setting in accordance with the definition proposed in this article. Some indicators are dichotomous, indicating the presence or absence of the resource; other indicators are measured on interval scales indicating the amount of the variable present.

**Family variables.** Documentation of family assets comes from the student and parent questionnaires. Although self-report, they are reports of data with an observable referent, as opposed to representing youths' perceptions of something that may vary due to perceiver characteristics. A single indicator was available for each domain of assets. Family assets present in the dataset include mother's years of school as an indicator of the human assets in the family ( $M = 13.3$ ,  $SD = 2.2$ ). In prior research, mother's education has proven to be a robust predictor of a child's status attainment in adulthood

(Featherman & Hauser, 1978). Household income is utilized as an indicator of the physical resource potential of a family ( $M = \$43,347$ ,  $SD = \$27,239$ ). As is the case with mother's education, research has documented the power of financial resources for a family, and numerous policies and programs (e.g., Welfare to Work) have been implemented to support the financial development of a family. Number of nights a family eats dinner together document collective activity of family members ( $M = 4.75$ ,  $SD = 2.3$ ). Number of adults in the home is used as the indicator of the accessibility of adults for youth ( $M = 2.0$ ,  $SD = .80$ ).

**School variables.** Multiple indicators were available for each dimension (see Table 2). As such, a composite is created for each dimension by standardizing (when necessary) and summing the individual indicators. Human assets are measured through the educational attainment and experience of the teachers (two indicators standardized and summed;  $M = .35$ ,  $SD = 1.7$ ). Physical or institutional resources are categorized into three areas, recreational (gym and outdoor fields), academic (tutors, enrichment programs, peer mentors), and extended day programs that may include opportunities for academic, sports, or dramatic arts programs. These resources represent opportunities for learning and engagement across different aspects of development, including academic, athletic, and artistic. Nine

possible resources were identified and summed ( $M = 4.9$ ,  $SD = 2.1$ ). Collective activity documents the bidirectional interactions between schools and parents, that is, do schools prepare a newsletter to communicate with families ( $0 = no$ ,  $1 = yes$ ) and the frequency of parental attendance at school events. The two indicators are standardized and summed ( $M = .34$ ,  $SD = 1.4$ ). Accessibility is measured through student-teacher ratio and overall school size, representing the potential of youth to develop relations with adults. The two indicators are standardized and summed ( $M = 0$ ,  $SD = 1.7$ ).

**Neighborhood variables.** Table 3 provides descriptive information for all indicators. Human assets are documented by educational attainment (percentage college educated residents), work status of adults (percentage employed adult men), and the presence of mentors in the youth's life. The three indicators were standardized and summed to form the human asset composite ( $M = 0$ ,  $SD = 1.9$ ). Physical or institutional resources fall into the same general categories as school resources, educational, recreational, and after-school time use. A total of seven institutional resources were summed ( $M = 2.0$ ,  $SD = 1.1$ ). Collective activity includes indicators of community organizing, with the presence (1) or absence (0) of a neighborhood group or youth coalition, for the betterment of the residents. The two indicators were summed ( $M = .70$ ,  $SD =$

**Table 2.** *Observed School Ecological Assets*

Indicator	Source of Items	Range	Item	<i>M</i>	<i>SD</i>
Human Resources					
Teacher education	NCLB Report Card	14.90 to 54.00	Percentage of teachers with master's degrees	39.34	9.7
Teacher experience	NCLB Report Card	6.30 to 15.70	Average years of experience of teachers	12.30	3.1
Physical Resources					
Recreation resources	Principal Q	0 to 2	(a) gym (b) outdoor playground or fields	1.67	.54
Academic resources	Principal Q	0 to 3	(a) academic tutors (b) enrichment programs (c) peer mentors	1.88	1.2
Afterschool programs	Principal Q	0 to 4	(a) clubs (b) sports (c) music (d) drama (e) theater	1.37	1.5
Collective Activity					
School communication	Principal Q	0 to 1	Parent newsletter	.86	.35
Parent participation	Principal Q	10 to 95	Average parental participation at school sponsored events	62.28	24.59
Accessibility					
Student teacher ratio	NCES	13.3 to 20.2	Number of full time teachers/total student enrollment	16.61	2.1
School size	NCES	351 to 1150	Total enrollment	667.76	256.7

Note: NCLB = No Child Left Behind; NCES = National Center for Education Statistics; Q = questionnaire.

## OBSERVED ECOLOGICAL ASSETS

**Table 3.** *Observed Neighborhood Ecological Assets*

Indicator	Source of Items	Range	Items	<i>M</i>	<i>SD</i>
Human Resources					
Education level	Census 2000	1 to 68	Percentage of college educated residents	21.61	1 7.6
Employment level	Census 2000	23 to 83	Percentage of employed adult males	65.41	1 4.5
Adult mentor	SQ	0 to 2	Youth has one or more adults to talk to if he or she has a problem	1.08	.58
Physical Resources					
Library	NCES	0 to 1	A local library	.10	.29
Youth facilities	Online	0 to 3	(a) Local youth center (b) Boys & Girls Club (c) YMCA	.59	.66
Recreation opportunities	Online	0 to 3	(a) City/town parks (b) State/national parks (c) Recreation program	1.33	.59
Collective Activity					
Neighborhood group	Online	0 to 1	An organization that represents the needs of the neighborhood	.17	.38
Youth coalition	Online	0 to 1	A local organization devoted to youth development and needs	.53	.49
Accessibility					
Neighborhood stability	Census 2000	21 to 79	Percentage of residents in neighborhood more than 5 years	48.34	1 0.6
Ratio adults to children	Census 2000	1.15 to 12.69		2.93	1.5

Note: SQ = student questionnaire; NCES = National Center for Education Statistics.

.70). Accessibility documents the availability of adults to youth with two indicators from the U.S. Census: neighborhood stability and the ratio of children to adults. The two indicators were standardized and summed to form a composite ( $M = 0$ ,  $SD = 1.4$ ).

## Results

### Correlational Analyses

The zero-order correlation matrix involving the 12 Dimension  $\times$  Setting predictor variables and the positive and negative developmental outcome variables is presented in Table 4. The correlations were examined in multiple ways. First, they were examined for the consistency of access to human, physical or institutional, collective activity, and accessibility across the three key contexts of adolescent development. Across contexts, access to human resources was positive and significant, such that there was some tendency for all youth to experience similar types of human resources across settings. Physical resources were modestly related across settings. Physical resources between the family and school settings were more strongly related than between the family and neighborhood settings.

Collective activity and accessibility across settings was not strongly related.

Next, the correlation matrix was inspected for within-context correlations among the observed ecological asset dimensions. Different relations were noted between the observed ecological asset dimensions within contexts. For example, in the family context, human and physical resources were positively related. This relation was expected as the indicators for these dimensions are educational attainment and household income. No other significant relations were noted in the family context. There were significant positive correlations between human resources and collective activity and accessibility, and between physical resources and collective activity in the school context. However, a strong, significant negative correlation existed between physical resources and accessibility in the school context, suggesting that larger schools have more physical resources in the forms of programs. In the neighborhood setting, accessibility was positively related to human and physical resources, suggesting communities that are more stable and have more adults are relatively more advantaged. Similarly, collective activity in the neighborhood was negatively related to human and physical resources and accessibility, indicating that com-

**Table 4.** *Interitem Correlations Among Predictor and Outcome Variables*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Family: Human resources	—															
2. Family: Physical resources	.581**	—														
3. Family: Collective activity	.047	.052	—													
4. Family: Accessibility	-.050	.015	.027	—												
5. School: Human resources	.162**	.265**	-.007	-.057	—											
6. School: Physical resources	.374**	.334**	-.034	.020	-.036	—										
7. School: Collective activity	.396**	.418**	.102**	-.029	.703**	.267**	—									
8. School: Accessibility	-.349**	-.305	.079*	.022	.288**	.639**	.111**	—								
9. Nei: Human resources	.489**	.659**	.027	-.031	.400**	.306**	.493**	-.225**	—							
10. Nei: Physical resources	-.074	.089*	-.041	.069	-.082*	.063	-.199**	-.030	.010	—						
11. Nei: Collective activity	.089*	-.132**	.077	-.028	-.160**	.080*	.109**	-.110**	-.151**	-.502**	—					
12. Nei: Accessibility	.255**	.400**	-.033	-.077	.504**	.088*	.461**	-.060	.316**	.132**	-.286**	—				
13. Positive youth development	.157**	.186**	.330**	.042	.048	.099*	.175**	.049	.133**	-.044	-.029	.042	—			
14. Contribution	-.041	-.025	.081*	.035	.052	-.159**	.037	.227**	-.036	-.024	.008	-.006	.274**	—		
15. Depression	-.173**	-.234**	-.194**	-.026	-.120*	-.157**	-.217**	.045	-.210**	-.024	.011	-.047	-.481**	-.065	—	
16. Risk behaviors	-.086*	-.101*	-.112**	-.026	-.147**	-.056	-.192**	-.062	-.120**	.079*	.014	-.055	-.380**	-.075	.288**	—

Note: Nei = neighborhood.

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

munity organizations are more likely to proliferate in more needy communities. These varied relations indicate substantial room for compensating (and conflicting) patterns of access to assets across these three contexts for the promotion of positive development.

### Multivariate Analyses

Hierarchical multiple regression was used to assess the relation of human, physical or institutional, collective activity, and accessibility dimensions within the three key settings to the four indicators of adolescent development. The first step included demographic predictors (gender: 1 = *female*; race or ethnicity: 3 separate variables for European American, African American, and Latino; urbanicity: with higher numbers being more rural). Next, the Dimension  $\times$  Setting scores were entered in sets from the most proximal context to the most distal context (i.e., family, school, neighborhood) to assess the amount of variance that was accounted for by each setting, while

controlling for more proximal contexts. Specifically, the four dimension scores for the family were entered at Step two, the four scores for the school entered at Level 3, and the four neighborhood dimension scores entered at Step 4. Neighborhood scores were considered the most distal, due to the age (10- to 11-year-olds) and thus, restricted autonomy of participants. Further, by entering the family variables at Step two, household income and mother's education, which are also proxies for family socioeconomic status and are often key demographic control variables in research on adolescent outcomes, were controlled for when analyzing all other resources. This research attempted to go beyond the assumption that poverty and its correlates are the prime influences on development. Rather, each family, school, and neighborhood has resources that can be capitalized on to support the growth and development of adolescents. Regression analyses were conducted separately for each of the four criterion variables and are presented in Table 5.

**Table 5.** Standardized Parameter Estimates, *P* Values, and Associated Goodness-of-Fit Statistics for OLS-Fitted Regression Models That Describe the Relation Between Observed Ecological Assets and Each of the Outcome Variables, Controlling for Sex, Race and Ethnicity, and Locale

	PYD	Contribution	Depression	Risk Behaviors
Sex (1 = female)	.166***	.207***	-.022	-.205***
European American	.017	-.037	-.109*	-.022
Latino	.024	-.093	-.004	.012
African American	.005	-.009	.127**	.194***
Residential locale (rural)	.005	.076	.026	.054
<i>F</i>	6.19***	6.45***	4.41***	11.57***
<i>df</i>	620	620	620	620
$\Delta R^2$	.05	.05	.03	.09
Family				
Human resources	.052	.047	-.050	-.018
Physical resources	.128**	.003	-.184***	-.080
Collective activity	.334***	.147**	-.190***	-.091**
Accessibility	.031	.022	-.023	-.016
<i>F</i>	16.06***	4.35***	8.83***	7.74***
<i>df</i>	616	616	616	616
$\Delta R^2$	.14	.01	.08	.02
School				
Human resources	-.087	-.011	-.006	-.062
Physical resources	.177***	.056	-.137**	-.081
Collective activity	.024	.047	-.049	-.038
Accessibility	.235***	.222***	-.059	-.140**
<i>F</i>	12.74***	5.61***	6.93***	6.46***
<i>df</i>	612	612	612	612
$\Delta R^2$	.02	.05	.02	.02
Neighborhood				
Human resources	.159***	.097*	-.058	-.030
Physical resources	-.068	.024	-.054	.084
Collective activity	-.078	.069	.044	.046
Accessibility	.030	.039	.110*	.015
<i>F</i>	10.92***	4.60***	5.79***	5.17***
<i>df</i>	608	608	608	608
$\Delta R^2$	.02	.01	.01	.01

Note: OLS = ordinary least squares; PYD = positive youth development.

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

**Control Variables**

The individual demographic control variables accounted for 3% to 9% of the variance in the four regression analyses. The control variables accounted for the most amount of variance in risk behaviors (9%). Gender did not predict depression, but was significantly related to the other criterion variables. With the exception of risk behaviors, girls reported higher scores. Race or ethnicity of youth was a significant predictor for depression and risk behaviors. Specifically, African American ethnicity was positively related to depression and risk, although its effects were attenuated for depression with the inclusion of the additional observed ecological variables. European American ethnicity was negatively related to depression, with all effects attenuated after the inclusion of the observed ecological asset variables. Residential locale was not significant in any of the models.

**PYD**

Each of the stepwise models was significant. Inclusion of more distal contexts accounted for smaller portions of variance with the *R*<sup>2</sup> decreasing with each additional level of the context added. Inclusion of family variables added 14% to the amount of variance explained. Both collective activity and family physical resources were significant predictors. None of the other family variables were significant. Inclusion of the school observed ecological assets added only 2% of variance, but two of the indicators were significant. Accessibility in school was positive related to PYD, as were school physical resources. The four neighborhood predictors added approximately another 2% of variance explained. The only Dimension × Setting score that was significant was the human resource variable.

**Contribution**

Again, each of the models was significant, although the pattern that emerged was different than what was

observed with the PYD composite. In particular, school observed ecological assets accounted for the largest portion of variance (5%), with the family and neighborhood contexts only accounting for 1% each. One indicator within each setting positively predicted contribution: specifically, family collective activity, school accessibility, and neighborhood human resources.

**Depression**

The observed ecological asset scores accounted for an additional 11% of variance, with the family setting accounting for 8% of the 11%. Two indicators, family physical resources and collective activity accounted for this difference. The school ecological asset composites added only 2% variance to the model and it was the physical resource dimension. One neighborhood dimension score, accessibility, was significantly related to depression, although in the opposite direction as expected. The additional amount of variance accounted for was quite small, approximately 1%.

**Risk Behaviors**

Inclusion of the 12 Dimension × Setting scores, over and above the individual demographic variables, accounted for approximately another 5% of variance in the risk behavior composite. This is the only case where the observed ecological asset variables accounted for less variance than the control variables. The two indicators accounting for this were family collective activity and school accessibility. This is the only case where no neighborhood setting composites were significant.

**Summary of Findings**

Table 6 summarizes the findings from the multiple regression analyses regarding the impact of the observed ecological assets on the positive and negative developmental outcome variables. Six of the 12 Dimension × Setting asset composites had a significant

**Table 6.** Summary Matrix for Significant Findings From Multiple Context Regression Analyses

	Human Resources	Physical Resources	Collective Activity	Accessibility
Family		PYD Depression	PYD Contribution Depression Risk behaviors	
School		PYD Depression		PYD Contribution Depression Risk behaviors
Neighborhood	PYD Contribution			Depression (-)

Note: PYD = positive youth development.

impact on at least one outcome variable. The ecological asset composites predicted both positive and negative developmental outcomes. Interestingly, family collective activity and school accessibility predicted all of the outcomes, family and school physical resources predicted both a positive (PYD) and negative outcome (depression), whereas neighborhood human resources only predicted the positive outcomes. The family setting accounted for the largest portion of variance for PYD and depression, whereas the school setting composites accounted for the largest portion of variance for contribution. The three ecological settings added negligible amounts of variance to the prediction of risk behaviors (1% to 2%). It is important to note that this finding may be due to the limited variance in the risk behavior composite.

### Discussion

Shifting the focus from a traditional deficit and prevention approach to a strength building and promotion approach, developmental researchers have turned towards understanding what experiences, resources, and opportunities are critical for youth in their key ecological contexts (Gambone & Connell, 2004; Larson, Eccles, & Gootman, 2004). This work focused on actual ecological assets or positive features of the individuals, physical space of the ecology, and engagement between the two. This research augments the literature on youth's perceived ecological experiences to expand understanding of the potential impact of the contexts of development for the promotion of healthy functioning.

To document resources across the four proposed dimensions—human, physical/institutional, collective activity, and accessibility—in three key contexts of adolescent development—family, school, and neighborhood—indicators of observed ecological assets were collected from multiple sources and added to the 4-H Study of Positive Youth Development existing dataset (Lerner et al., 2005). A full or ideal instantiation of the framework was not possible given that only certain indicators were available to work in conjunction with the 4-H dataset. However, the resources present allow for a discussion of the utility of the proposed dimensions across different contexts and as well of the simultaneous examination of their effects.

Despite the potential shortcomings of the data collection method and diverse circumstances of youth in the sample, several interesting findings emerged. Four major conclusions can be drawn from the results:

1. The proposed categorical dimensions are useful and each dimension, in at least one setting, predicted the developmental outcomes.
2. Different dimensions of the family, school, and neighborhood settings had the most comprehensive

impact on the developmental outcomes, specifically collective activity in the family, accessibility in school, and human resources in the neighborhood.

3. Contrary to Hypothesis 2, it was not the case that more proximal contexts always accounted for larger amounts of variance in the outcomes, although the neighborhood composite scores consistently accounted for the smallest amounts of variance.

4. Observed ecological resources predicted both positive and negative developmental outcomes, providing some support that promoting positive development through the provision of resources is related to fewer negative developmental outcomes.

No specific relation was predicted among the four dimensions of observed ecological assets and the four developmental outcomes. All ecological asset dimensions were hypothesized to have a positive impact. Overall, no clear pattern emerged suggesting that a particular dimension, across settings, is related to a particular adolescent characteristic or that the combined resources of a particular setting were more strongly related to a particular outcome. Interestingly, unique dimensions within each setting were related to the outcomes. The physical resource dimension was the only dimension that was predictive in two settings, specifically families and schools. In these two cases, physical resources predicted both higher levels of PYD and lower levels of depression. Interestingly, availability of neighborhood physical institutional resources is conceptualized as a primary mechanism regarding the influence of neighborhoods on adolescent development, but in this study was not significantly related to the outcome variables (Leventhal & Brooks-Gunn, 2000). The learning, recreational, and social opportunities, along with child care, medical facilities, and employment opportunities provided by programs and community institutions are expected to create experiences that support the development of youth. Little empirical research has documented the actual presence or absence of resources in the community and their resulting impact on development. However field studies and ethnographic descriptions of neighborhoods have provided persuasive accounts of the experiences of individuals in resource restricted settings (Burton, 1990; MacLeod, 1987). Documenting the presence of resources may not be enough to assess their impact, as was done in this study. Perhaps adding youth reports of their engagement to indexes of these services and programs may yield more meaningful findings. Or, alternatively neighborhood physical resources may need to be measured differently.

One finding was in contrast to what was expected, a negative relation was found between neighborhood accessibility and depression. It could be that residential stability and a greater adult–youth ratio, although generally considered positive can also be negative. Spe-

cifically, residential stability can arise from individuals being trapped in economically disadvantaged situations which may have negative consequences on psychological functioning. Similarly, although there may be many adults available to youth, if they are not actively involved with youth or perceive youth negatively, it could have a detrimental effect on adolescent functioning. This counterintuitive finding points to the fact that maybe sometimes what we think in principle is good, is not necessarily always so. In research, it is important to examine these differences so we can understand the multiple pathways to positive development and how certain features of settings may interact with or counterbalance other features, or may only be positive in certain circumstances for specific groups of youth.

As well, although this research did not focus on individual differences, the individual demographic characteristics that were included as control variables yielded interesting finding. The model of thriving on which this research is based (Lerner, 2004) suggests that individual characteristics when aligned with ecological supports or assets promote healthy developmental regulations. Consistent with that idea, gender was significantly related to three of the four outcome variables. The only variable that gender did not impact was depression. In this sample, girls reported higher scores on the positive developmental outcomes and lower scores on delinquency. This finding is consistent with the perceived ecological assets literature (Theokas et al., 2005). Given the strength and consistency of this finding across both literatures, future research should examine findings separately by gender. It may be the case that girls experience their environments in consistently different ways, and indeed this difference may be reflected in different observed ecological asset dimensions and contexts having differential effects with girls and boys.

The race and ethnicity variable was only significant in the final model for delinquency. In this case, African American ethnicity was positively related to delinquency. No other relations were noted. However there may be an interaction between race and ethnicity and location of participants that can further elucidate this relationship. Indeed, future research may want to examine observed ecological assets separately for race and ethnicity and locale type. Prior research has demonstrated that youth in the United States grow up in significantly different cultural and economic circumstances (McLoyd, 1998). As well, delinquent behaviors, in general, are low in this sample. It will be important to monitor changes in these behaviors over time and their relation with ecological assets and as well ecological liabilities.

Finally, although not entered at step one in the hierarchical regression models, family socioeconomic indicators were included in all analyses at Step 2. Mother's

education and household income were proxy indicators for family human and physical resources. Family human resources were not related to any of the outcome variables, whereas family physical resources were related to PYD and depression. The lack of a pervasive impact of these variables is noteworthy. It is perhaps the case that these variables indirectly impact the outcome variables as they are mediated by other process variables, such as parenting style (Conger et al., 1992; Elder, Eccles, Ardel, & Lord, 1995). However, in this research, other observed ecological assets had more of a predictive relation with the various outcome variables (e.g., collective activity in families). A similar relation was noted in an empirical test of the predictive ability of perceived ecological assets for individual thriving behaviors (Theokas et al., 2005). Demographic control variables accounted for only 1% to 2% of the variance in the positive outcome variables (e.g., grades in school, helping others).

### Conclusions and Future Directions

In sum, this research establishes a baseline for the empirical inquiry into the impact of observed resources present within families, schools, and neighborhoods. The hypothesis tested was that resources can be meaningfully categorized into four unique dimensions and that these dimensions can be usefully applied to understand the strengths of multiple contexts of development simultaneously. The findings demonstrate the utility of this model. However, there are key next steps to take to further this line of research. First, it is important to understand the relation between perceived and observed ecological assets both substantively and methodologically. Research has now demonstrated that both are useful and predictive of positive developmental outcomes. Common wisdom also suggests this is the case. Youth need both concrete opportunities for engagement and learning, synergy between key contexts of development, as well as experiences with others that provide support, monitoring, and expectations.

In addition, another key step would be to examine the data longitudinally to be able to model causality in a manner that was not possible with only one wave of data. Does the presence of observed assets predict different developmental trajectories over time? In this data, given the age of the participants, most youth reported feeling positively about themselves and few were engaging in negative behaviors. With both new challenges and opportunities as they move further into adolescence, the presence of assets may lead to different paths for youth. For example, although neighborhood physical resources had no impact in Wave 1, access to educational, recreational, and civic opportunities may become increasingly important as the identities of youth crystallize and they begin to make more choices regarding their interests and future.

Furthermore, the experiences youth have had or witnessed with their peers may have a cumulative impact thereby better preparing youth for new challenges later in adolescence.

Moreover, the set of indicators used in the present research was in part constrained by the characteristics of the method of the 4-H Study. Accordingly, additional indicators of ecological resources for PYD should be added to independently collected datasets in order to cross-validate and to extend examination of the present model.

Last, given the richness and breadth of the dataset, patterns of individual differences could be explored. These findings point towards specifically examining if the impact of observed ecological assets differs by gender and by locale type (rural–urban). By including all locale types in this study, the effects of certain indicators may have been washed away. Locale type may also interact with the economic realities of a particular setting. Similarly, the two sexes may be more or less responsive to particular dimensions of observed ecological assets. To date, research on the role of assets for youth development has assumed a somewhat universal and additive impact of assets for adolescent development (Benson, Scales, Hamilton, & Sesma, 2006). However, the theory guiding this research clearly specifies that there are multiple paths to positive outcomes and it is the imperative for developmental researchers to identify the unique strengths of individuals, families, and communities that can be capitalized on and aligned to promote thriving and healthy development.

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*Received September 15, 2005*

*Final revision received October 19, 2005*

*Accepted October 19, 2005*