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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

Helena Jelacic^a, Deborah L. Bobek^a, Erin Phelps^a, Richard M. Lerner^a and Jacqueline V. Lerner^b

Theories of positive youth development (PYD) regard such development as bases of both community contributions and lessened likelihood of risk/problem behaviors. Using data from the 4-H Study of PYD, we tested these expectations by examining if PYD in Grade 5 predicted both youth contributions and risk behaviors and depression in Grade 6. Results of random effects regression and SEM models indicated that, as expected, PYD in Grade 5 predicted higher youth contributions and lower risk behaviors and depression at Grade 6. There were significant sex differences for contribution (girls had higher scores) and for risk behaviors (boys had higher scores), but not for depression. In turn, the structural model fit was equivalent for boys and girls. Results are discussed in regard to promoting PYD to enhance successful development, or thriving, and to reduce problem behaviors.

Keywords: contribution; early adolescence; longitudinal research; positive youth development; problem behaviors; thriving

Developmental systems theories of human development emphasize that the bases of positive, healthy trajectories across life lie in mutually beneficial relations between the developing person and the resources in his or her context that support and promote healthy growth (e.g., Baltes, Lindenberger, & Staudinger, 2006; Brandtstädter, 2006; Lerner, 2004). Brandtstädter (1998, 1999, 2006) terms these individual ↔ context relations “adaptive developmental regulations” (see too Heckhausen, 1999) and, in the context of different developmental systems models (see Lerner, 2002, 2006), these relations between developing people and their multi-level context have been used in theory and research about successful mid-life development (Brim, Ryff, & Kessler, 2004), successful aging (Baltes et al., 2006), and most recently, positive adolescence (Lerner, 2004).

In adolescence, these theoretical models have been used to frame what has been termed the “positive youth development” (PYD) perspective (e.g., Benson, Scales, Hamilton, & Sesma, 2006; Damon, 2004; Lerner, 2005; Silbereisen & Lerner, in press), a model of this age period that stands in contrast to traditional deficit perspectives about young people (e.g., Erikson, 1968; Freud, 1969; Hall, 1904). The new vision and vocabulary associated with the positive youth development perspective emerged in the early 1990s as an instance of the age-specific use of developmental systems theories. One instantiation of the focus on plasticity within such theories was an interest in assessing the potential for positive change at diverse points across ontogeny, ones spanning from infancy through the 10th and 11th decades of life (Baltes et al., 2006). Adolescence was regarded as a prime sample case for such use

of developmental systems ideas about the potential for positive change deriving from the enhancement of adaptive developmental regulations among multiple individual and contextual levels; this focus on adolescence occurred because of the several biological, psychological, behavioral, and social changes within this period.

Moreover, interest in understanding the basis of, and promoting positive development in, adolescence was propelled by the increasingly more collaborative contributions of researchers focused on the second decade of life (e.g., Benson et al., 2006; Damon, 2004; Lerner, 2004), practitioners in the field of youth development (e.g., Floyd & McKenna, 2003; Little, 1993; Wheeler, 2003), and policy makers concerned with improving the life chances of diverse youth and their families (e.g., Cummings, 2003; Gore, 2003). These interests converged in the formulation of a set of ideas that enabled youth to be viewed as resources to be developed, and not as problems to be managed (Roth & Brooks-Gunn, 2003a, 2003b).

Based on both the experiences of practitioners and on reviews of the adolescent development literature (Eccles & Gootman, 2002; Lerner, 2004; Roth & Brooks-Gunn, 2003b), “Five Cs” – Competence, Confidence, Connection, Character, and Caring – were hypothesized as a way of conceptualizing PYD (and of integrating all the separate indicators of it, such as academic achievement or self esteem). These five Cs were linked to the positive outcomes of youth development programs reported by Roth and Brooks-Gunn (2003a). In addition, these “Cs” are prominent terms used by practitioners, adolescents involved in youth development programs, and the parents of these adolescents in describing the characteristics of a “thriving youth” (King et al., 2005).

A key idea associated with the PYD perspective is that, given

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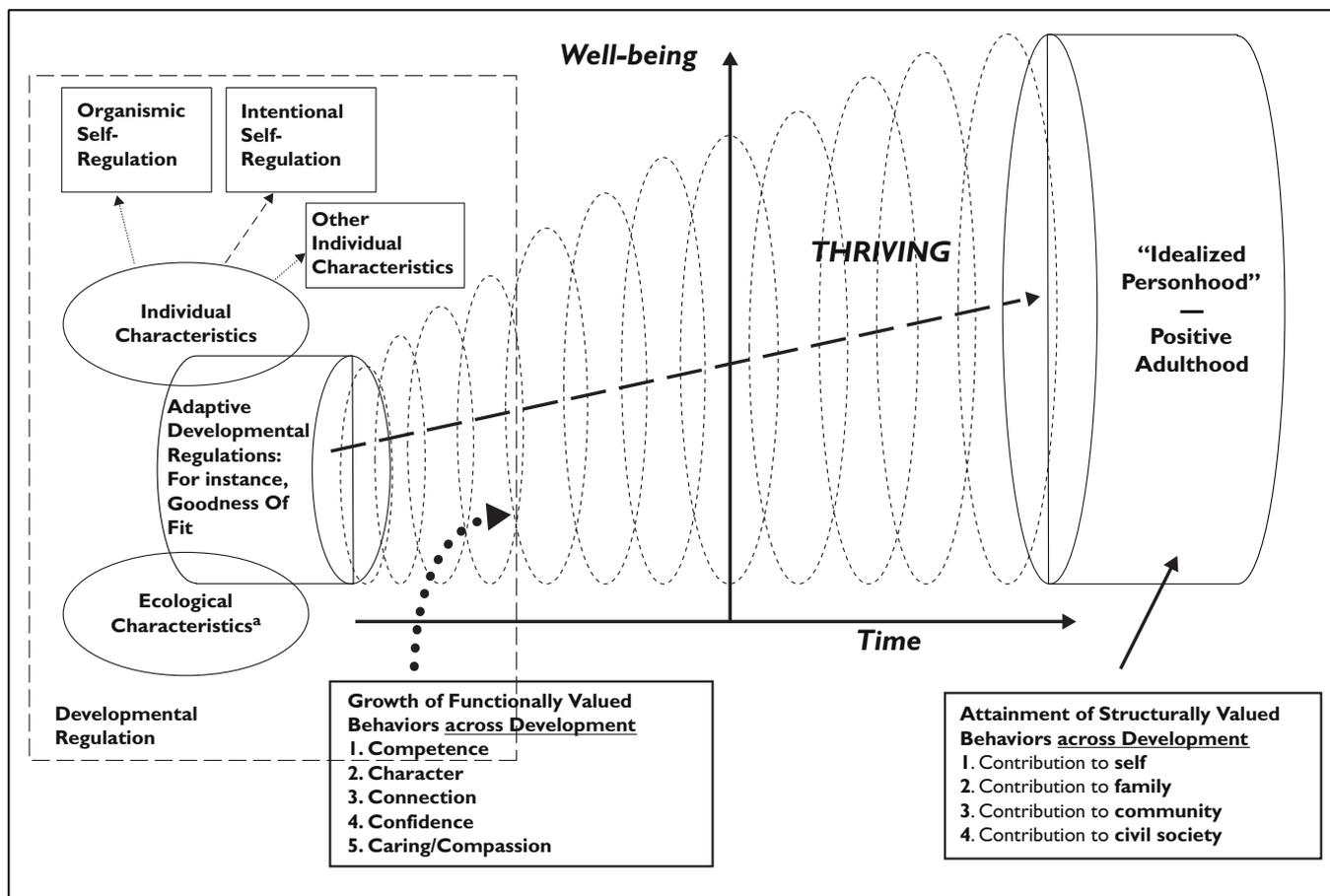
mutually beneficial individual ↔ context relations, PYD should have benefits for both the individual and his or her context. For instance, Lerner (2004) hypothesized that the enhancement of PYD should lead a young person to make multifaceted contributions – to self, family, community, and civil society – and, as well, that growth in PYD should diminish the likelihood of the emergence of risk/problem behaviors (e.g., of both internalizing and externalizing problems). Figure 1 presents the theoretical perspective of the thriving process or, in other words, the development of PYD across adolescence; this figure illustrates how adaptive individual ↔ context relations propel a person along a healthy developmental trajectory across life (and that at any one point in time enable a person to be in a state of well-being). The model specifies that when there is an alignment between individual strengths and ecological assets that promote healthy development, the Five Cs will evolve over the course of an individual’s development. This development of the Five Cs will result in the multifaceted contributions of individuals to their selves and their contexts that maintain and perpetuate adaptive individual ↔ context relations.

Confirming the presence of these ontogenetic relationships between the development of PYD and trajectories both of positive youth contributions to self and context and of negative or unhealthy behavioral characteristics would both support the theoretical foundations of the PYD perspective and inform applications of developmental science to policies and programs

(e.g., Benson et al., 2006). The strength-based orientation of the PYD perspective would be relevant to the design of youth-serving programs predicated on the ideas that the positive development of all young people could be promoted and that such promotion would also serve to diminish the need to invest in efforts aimed at risk/problem behavior reduction.

However, prior to the launching of the 4-H Study of Positive Youth Development (PYD) (Lerner et al., 2005, 2006), there were no measures of PYD, which had been suggested in the literature to be comprised of Five Cs. As a consequence, there was no way to test whether these Cs (e.g., assessed as latent constructs) or PYD itself (e.g., represented as a second-order latent construct) covaried across time and in expected directions with youth contributions and risk/problem behaviors. Launched in 2002, the 4-H Study, as a cohort sequential longitudinal study that began by studying a group of approximately 1,700 fifth grade youth from 13 states across the United States, enables both PYD to be measured and the above-noted ideas about links between PYD, contribution, and risk to be tested.

Lerner et al. (2005) reported data from the first wave (Grade 5) of the 4-H Study that provided cross-sectional information indicating the usefulness of measures of the “Five Cs” as a means to operationalize PYD. Table 1 presents the definitions of the Cs and of the superordinate PYD construct found in Lerner et al. (2005). Cross-sectional evidence was presented also that PYD correlated positively within the fifth grade with



^a Human resources; physical/institutional resources; collective activity; and accessibility in families, schools, and community (Theokas & Lerner, 2006).

Figure 1. A development theory of PYD.

Table 1
 “Working definitions” of the 5Cs of positive youth development

C	Definition
Competence	Positive view of one’s actions in domain specific areas including social, academic, cognitive, and vocational. Social competence pertains to interpersonal skills (e.g., conflict resolution). Cognitive competence pertains to cognitive abilities (e.g., decision making). School grades, attendance, and test scores are part of academic competence. Vocational competence involves work habits and career choice explorations.
Confidence	An internal sense of overall positive self-worth and self-efficacy; one’s global self-regard, as opposed to domain specific beliefs.
Connection	Positive bonds with people and institutions that are reflected in bidirectional exchanges between the individual and peers, family, school, and community in which both parties contribute to the relationship.
Character	Respect for societal and cultural rules, possession of standards for correct behaviors, a sense of right and wrong (morality), and integrity.
Caring or Compassion	A sense of sympathy and empathy for others.

Note. Derived from Roth and Brooks-Gunn (2003a, 2003b).

a measure of youth contribution (Lerner, 2004) and negatively with indices of risk and problems behaviors (Lerner et al., 2005).

Given the evidence of the empirical reality of PYD, a means exists for testing the idea that such development serves as a benefit to both self and context. Accordingly, using measures of community contribution and of risk behaviors and depression derived from longitudinal participants in the 4-H Study when they were in Grade 6, the present study assessed whether fifth grade scores on PYD covaried across time in theoretically expected ways with these constructs. Specifically, and based on the developmental systems theoretical model of PYD, we predicted that Grade 5 scores for PYD should be positively related to scores for youth community contributions and should be inversely related to scores for risk behaviors and depression (as indicators on externalizing and internalizing problems, respectively). Moreover, because Lerner et al. (2005) reported that girls in Grade 5 had higher PYD scores than boys, the presence of sex differences was assessed in all analyses.

Method

This paper presents longitudinal data from the student questionnaire for Waves 1 and 2 of the 4-H Study of Positive Youth Development. Additional information about the method can be found in Lerner et al. (2005).

Sample

At Wave 1, participants came from sites located in 13 states that provided regional, rural–urban, racial/ethnic, and religious diversity. Schools were chosen as the main method for collecting the sample. Assessment was conducted in 57 schools and in four after-school programs. Participants were 1,720 fifth grade adolescents (48% males; mean age = 11.0 years, SD = .46 years; 52% females, mean age = 10.92 years, SD = .52 years) and 1,139 of their parents.

In sixth grade, youth who were in the fifth grade during Wave 1 were retested. In addition, in order to control for the influence of prior testing on the findings, an additional sample of previously unassessed sixth graders was tested. A total of 1,973 youth (46% males; mean age = 12.17 years, SD = .72 years; 54% females, mean age = 12.17 years, SD = .67 years) and 1,239 of their parents participated in Wave 2 data collection,

sampled from 53 schools and 5 after-school programs in 20 states across the nation. The sample varied in race, ethnicity, socioeconomic status, family structure, rural–urban location, geographic region, and program participation experiences.

The sample reported here contains the 982 participants in the longitudinal sample (46% males; mean age in Grade 6 = 12.1 years, SD = .63 years; 54% females, mean age in grade 6 = 12.0 years, SD = .53 years) from 13 states. The sample was racially diverse, 54.9% European American, 15.2% Latino/a, 4.7% African American, with the remaining reporting ethnicities of Native American (2.4%), Asian American (4.2%), multiethnic/multiracial (2.3%), or other (.1%). In addition, 12% of the youth reported their race/ethnicity inconsistently from wave 1 to wave 2.

Attrition in the 4-H sample is not randomly distributed across schools. In Wave 2, some principals withdrew consent for their schools to participate, and thus these students “dropped out” without our having had the opportunity to ask them if they wanted to remain in the study. For example, in one state we were unable to collect data in Wave 2, resulting in the loss of over 250 participants. Overall, we lost 561 participants in Wave 2 because of the absence of principal or superintendent permission to continue. In turn, however, attrition from Wave 1 to Wave 2 for students who *were* allowed to be asked to remain in the study was only 10%.

The two groups of Wave 1 youth – those who continued into Wave 2 and those who did not – were compared on several background and outcome variables. The longitudinal youth were slightly more advantaged as indexed by mothers’ education (mean = 14.2 years) and family per capita income (mean = \$14,350.4) than was the case for the attrition sample (means = 13.5 years and \$12,613.1, respectively; $p < .01$ in both cases). In addition, there were small differences in the race/ethnic distribution of the two samples; while the participation rates for Asian American, American Indian, Latino American, Multiracial American, and other classifications did not differ across the two groups, there were more European American and fewer African American participants within the longitudinal samples (60.6% and 5.6%, respectively) than was the case within the attrition sample (i.e., 51.7% and 11.6%, respectively; $p < .01$ in both cases). When considering outcome variables measured in Wave 1, the longitudinal sample had slightly higher contribution scores (i.e., mean = 4.3) and slightly lower scores on depression and risk behavior measures (i.e., means = 13.6 and 0.9, respectively) than did the attrition

sample (i.e., means = 4.1, 15.0, and 1.2, respectively; $p < .05$ for Contribution and $p < .01$ for the remaining two variables).

Procedure

For both Waves 1 and 2 of data collection, teachers or program staff gave each child an envelope to take home to their parent or guardian, containing a letter explaining the study, consent form, a parent questionnaire, and a self-addressed envelope for returning the parent questionnaire and consent form. For those youth who received parental consent, data collection was conducted either in the school or program by trained study staff or hired assistants for remote locations. The procedure began with reading the instructions for the student questionnaire (SQ) to the youth. Participants were instructed that they could skip any questions they did not wish to answer. Data collection took approximately two hours, which included one or two short breaks. During Wave 2, students who were unable to be surveyed at their school or 4-H site, in that they were either absent during the day of testing or the school superintendent did not allow testing to occur in the school, received a survey in the mail.

Measures

All of the measures employed in this article come from the Student Questionnaire (SQ), although not all measures on the SQ are used in these analyses.

Wave 1 items. The Five Cs and PYD are measured at Wave 1 using items from four measures: the Profiles of Student Life-Attitudes and Behaviors Survey (PSL-AB; Benson, Leffert, Scales, & Blyth, 1998), the Self-Perception Profile for Children (SPPC; Harter, 1983), the Peer Support Scale (Armsden & Greenberger, 1987) from the Teen Assessment Project Survey Question Bank (Small & Rodgers, 1995), and the Eisenberg Sympathy Scale (Eisenberg et al., 1996). PYD is constructed as the mean of the Five Cs. Table 2 lists the measures of the Five Cs (including the Cronbach alpha coefficients). Detailed information regarding the measurement of each of the Cs is presented below.

Confidence. Confidence is constructed as the weighted mean of 12 items on the student questionnaire. Six of the items measure positive identity (Theokas et al., 2005) and come from the Search Institute's Profile of Student Life – Attitudes and Behaviors Survey (PSL-AB; Benson et al., 1998). The response format for these six items ranged from 1 = *strongly agree* to 5 = *strongly disagree*. An example of an item used to measure positive identity is "On the whole I like myself."

The remaining six items used to construct the confidence indicator are the items that form the self-worth scale from the Self-Perception Profile for Children (SPCC; Harter, 1983). Harter (1982) developed a structured alternative response format to assess perceived competence in a domain. Participants are asked to choose between two types of people. Once they have selected which person they are most like, they are

Table 2

Measurement model of the five Cs and PYD (adapted from Lerner et al., 2005)

	<i>Cronbach alpha coefficients 5th Grade (Wave 1)</i>
Confidence	
Positive identity (Benson et al., 1998; Theokas et al., 2005)	.70
Self-worth (Harter, 1983)	.69
Competence	
Academic competence (Harter, 1983)	.65
Grades ^a (self-reported) (Benson et al., 1998; Theokas et al., 2005)	-
School engagement (Benson et al., 1998; Theokas et al., 2005)	.56
Social competence (Harter, 1983)	.62
Character	
Personal values (Benson et al., 1998; Theokas et al., 2005)	.89
Social conscience (Benson et al., 1998; Theokas et al., 2005)	.92
Values diversity ^a (Benson et al., 1998; Theokas et al., 2005)	-
Interpersonal values and skills (Benson et al., 1998; Theokas et al., 2005)	.68
Caring	.87
Sympathy: Disadvantaged (Eisenberg et al., 1996)	
Sympathy: Loneliness (Eisenberg et al., 1996)	
Sympathy: Unfortunate (Eisenberg et al., 1996)	
Sympathy: Pain (Eisenberg et al., 1996)	
Sympathy: Rejection (Eisenberg et al., 1996)	
Connection	
Family (Benson et al., 1998; Theokas et al., 2005)	.79
School (Benson et al., 1998; Theokas et al., 2005)	.78
Community (Benson et al., 1998; Theokas et al., 2005)	.87
Peer support (Armsden & Greenberger, 1987)	.89

^a Some of the measures are comprised of a single item; we do not therefore report alphas for these measures.

asked to decide if it is “really true for me” or “sort of true for me.” The items are counterbalanced so that half begin with a positive sentence, reflecting high competence, while half begin with a negative sentence, reflecting low competence. Each item is scored from 1–4, with 4 reflecting higher perceived competence. An example of an item used to assess self worth is “Some kids don’t like the way they are leading their lives BUT other kids do like the way they are leading their lives.”

Competence. Competence is constructed as the weighted mean of 17 items on the student questionnaire. Twelve of the items used to measure competence come from the Self-Perception Profile for Children (Harter, 1983). Six of the items form the academic competence scale and six of the items form the social competence scale. As mentioned above, the SPPC uses a structured alternative response format. An example of an item from the academic competence scale is “Some kids feel like they are *just as smart* as other kids their *age* but other kids aren’t so sure and *wonder* if they are as smart.” An example of an item from the social competence scale is “Some kids have *a lot* of friends but other kids *don’t* have very many friends.”

The remaining five items used to index competence come from the Search Institute’s Profile of Student Life – Attitudes and Behaviors Survey (PSL-AB; Benson et al., 1998). Four of these items measure school engagement. Three of these items have a forced choice response to ascertain how often a respondent does something. The response format for these items ranged from 1 = *Usually* to 3 = *Never*. An example of an item measuring school engagement using this response format is “How often do you feel bored at school?” The fourth school engagement item “At school I try as hard as I can to do my best work” used a response format ranging from 1 = *strongly agree* to 5 = *strongly disagree*. The final item measuring competence, “What grades do you earn in school?” had a forced choice response format that ranged from 1 = *Mostly A’s* to 8 = *Mostly below D’s*.

Character. Eighteen items from the Search Institute’s Profile of Student Life – Attitudes and Behaviors Survey are used to measure character (PSL-AB; Benson et al., 1998). These items measure interpersonal skills, valuing of diversity, personal values, and social conscience. The five items that measure personal values and the six items that measure social conscience use a forced choice response format and ask participants to rate how important each item is in their life. Response formats range from 1 = *not important* to 5 = *extremely important*. An example of an item measuring personal values is “Telling the truth, even when it’s not easy,” while an example of an item measuring social conscience is “Helping other people.”

One of the items used to measure valuing of diversity “Getting to know people who are of a different race than I am” uses the same response format as above for measuring importance. The remaining three items used to measure valuing of diversity and the three items used to measure interpersonal skills ask participants to think about the people who know them well and how they think they would rate them on each of the items. The response format is forced choice and ranges from 1 = *not at all like me* to 5 = *very much like me*. An example of an item measuring valuing of diversity that uses this

response format is “Knowing a lot about people of other races.” An example of an item used to measure interpersonal skills is “Caring about other people’s feelings.”

Caring

Five items from the Eisenberg Sympathy Scale (ESS; Eisenberg et al., 1996) are used to measure caring. The items measure the degree to which participants feel sorry for the distress of others. The response format for these items ranged from 1 = *really like you* through 3 = *not like you*. High scores indicate low levels of sympathy. An example of an item from the ESS is “I feel sorry for people who don’t have the things I have.”

Connection

To index connection, 22 of the items from the student questionnaire are used. These items measure connection to family (six items), school (seven items), peers (four items), and community (five items). All of the items measuring connection to family, connection to school, and connection to community come from the PSL-AB. Five of the items measuring connection to family, six of the items used to measure connection to school, and all of the items used to measure connection to community use the forced choice response format ranging from 1 = *strongly agree* to 5 = *strongly disagree*. An example of an item measuring connection to family is “My parents give me help and support when I need it.” An example of an item measuring connection to school is “I get a lot of encouragement at my school.” An example of an item measuring connection to community is “Adults in my city or town make me feel important.”

The sixth item measuring connection to family “If you had an important concern about drugs, alcohol, or sex, or some other serious issue, would you talk to your parent(s) about it?” uses a forced choice response format ranging from 1 = *yes* to 5 = *no*. The seventh item measuring connection to school “How often do you feel bored at school?” uses a forced choice response format ranging from 1 = *usually* to 3 = *never*.

The items used to measure connection to peers come from the Teen Assessment Project Survey Question Bank (TAP; Small & Rodgers, 1995). These items, in which participants must decide how true a statement is for them, measure peer support (Armsden & Greenberger, 1987) and use a forced choice response format that ranges from 1 = *always true* to 5 = *almost never true or never true*. An example of an item is “My friends care about me.”

Wave 2 items. The Five Cs and PYD measured at Wave 1 are used to predict three outcomes at Wave 2: Depression, substance use and delinquency, and contribution. Each of these outcome measures is discussed below.

Depression

At Wave 2, depression is measured by the 20-item Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977). Using a forced choice response format ranging from 0 = *rarely or none of the time (less than 1 day)* to 3 = *most or all of the time (5–7 days)*, participants report how often they felt a particular way during the past week. An example of an item is “I was bothered by things that usually don’t bother me.” Higher scores indicate higher levels of depressive symptoms.

Risk behaviors. Risk behaviors are measured through scales of substance use and delinquency derived for this study from the PSL-AB and from the Monitoring the Future (2000) questionnaire. The six items used to measure substance use or abuse ask participants to indicate during the last 12 months whether they have done any of the following. The questions use a forced choice response format ranging from 1 = *never* to 4 = *regularly*. An example of an item is "Have you ever sniffed glues, sprays, or gases?" The four items used to measure delinquency ask respondents how many times during the last 12 months they have done something. There is a forced choice response format ranging from 1 = *never* to 5 = *five or more times*. An example of an item is "How many times have you hit or beat up someone?"

Contribution. Contribution at Wave 2 is measured as a composite score of twelve items that are divided into four subsets. The first subset, called Leadership, is an item from the PSL-AB "During the last 12 months, how many times have you been a leader in a group or organization?" that uses a forced choice response format ranging from 1 = *never* to 5 = *five or more times*. The second subset, called Service, is derived by adding the responses of three items created for the study. For each item, participants are asked to indicate whether participation in a particular activity applies to them. An example of an item is "volunteer work." The third subset, called Helping, is a measure of the average of two items from the PSL-AB in which participants respond about the average amount of time they spend doing certain activities during an average week. The response choices range from 0 = *zero* to 5 = *11 or more hours*. One of the items is "Helping friends or neighbors."

Finally, a fourth subset is called Ideology, which is a scale that measures contribution ideology with four items from the Teen Assessment Project Survey Question Bank (TAP) and two items that were created for this study. The items from TAP use a forced choice response scale ranging from 1 = *strongly agree* to 5 = *strongly disagree*. An example of an item is "It is important to me to contribute to my community and society." The two items that measure contribution ideology that were created for this study ask participants to think about their future and to assess their chances for doing certain things. The response format ranges from 1 = *very low* to 5 = *very high*. An example of an item is "be involved in community service."

Results

Analyses of the data from Waves 1 and 2 were done to determine whether or not there is empirical evidence that a latent measure of PYD in fifth graders can predict a positive outcome, youth contribution, a year later in sixth grade. This is a key prediction of the theory – that PYD as operationalized through the five Cs, promotes a sixth C of contribution. In addition, the relationship between PYD and the negative outcomes of depression and engagement in risk behaviors is assessed. Finally, using structural equation modeling, a theoretical model of the relationships among contribution, depression, and risk behaviors as predicted by PYD is tested. In all of these analyses, sex differences are also evaluated.

Missing data

Ideally every participant would answer every question every year and we would have complete data. Since this is not the case in our large, multi-site sample for our over 350 item Grade 5 and Grade 6 questionnaires, we have developed strategies for estimating missing data, based on current statistical thinking and assumptions we make about the responses. This approach is currently considered preferable to deleting cases with missing data, which can yield a biased sample. This is done at two levels in this report: item non-response in measures and missing measures or variables. A third type of missing data, participant non-response for a wave due to attrition or absence, has been accounted for by including only youth with data at both grades 5 and 6 in the analyses reported here.

Item non-response refers to the situation where some of the items for a measure were not completed. In general we assume that the items used to measure a given construct are sampled from a universe of possible items related to this construct. Second, we assume that responses to any one of the items are related to the construct in the same way that responses to any of the other items are. Based on these assumptions, we believe that the items and the responses both reflect only a subset of possible items and responses that are all functionally equivalent and we typically assign scale scores to participants who have complete data on at least 50% of the items that compose a given scale. For the analyses here, we have relaxed this requirement even further in order to permit inclusion of all participants in the analyses. Here, measures are constructed if they have three or more individual items with valid data. This decision was based on the assumptions described above, high alphas for the measures (.705 to .932), and one additional assumption – that we should base an individual participant's values on the data they provided to us, rather than imputing it from other variables or data from other participants.

Missing data for youth with measures completely missing were imputed using the EM imputation procedure provided in LISREL 8.7 (du Toit & Mehls, 2002; Jöreskog & Sörbom, 2003). In addition, all analyses were conducted using more conservative estimates of measures and listwise deletion. The patterns of results we obtained were identical to those obtained with imputed data, to be reported below. Of course, the exact effect estimates obtained vary somewhat, but the significance levels were maintained at identical levels.

Positive youth development in Grade 5 and contribution, risk behaviors, and depression in Grade 6

Descriptive analyses were conducted to determine the mean level of PYD in Grade 5 and mean levels of contribution, risk behaviors, and depression in Grade 6 among adolescents. Table 3 presents means and standard deviations with possible scale ranges for each of these variables. The results show that in the longitudinal sample of the 4-H study, the 5th grade students had high levels of positive youth development. One year later, in grade 6, youth had low levels of risk behaviors (i.e., substance use and delinquent behaviors) as well as low levels of depression. In addition, sixth graders had moderate levels of contribution (measured as active engagement in, and ideology of, and contribution to the family, community, and society).

Table 3

Means, standard deviations, and scale range for PYD at Grade 5, and contribution, risk behaviors, and depression at Grade 6 (n = 982)

Variable	Means	SD	Possible scale range
PYD in Grade 5	7.30	1.257	0–10
Contribution in Grade 6	4.42	1.264	0–10
Risk behaviors in Grade 6	1.26	2.368	0–30
Depression in Grade 6	12.57	9.090	0–60

In order to test positive and negative outcomes of PYD in Grade 5, separate random effects regression models that described the relationship between PYD and sex in Grade 5 and either youth contribution, risk behaviors, or depression in Grade 6, were computed. Since students were nested within schools, random effects models were used to account for the natural groupings of students within schools in our sample (Raudenbush & Bryk, 2002). A summary of the results is presented in Table 4.

For youth contribution, when controlling for sex, the results showed that PYD in Grade 5 predicted contribution in Grade 6; in particular higher PYD scores predicted significantly greater contribution. In addition, girls had significantly higher contribution scores than boys. The interaction between sex and PYD was also tested and found to be not significant.

For the negative outcomes of depression and engaging in risk behaviors, the regression models demonstrate that higher PYD significantly predicts lower depression and lower engagement in risk behavior, when participant sex is controlled for. Further, these models showed that boys had significantly higher levels of risk behaviors than girls. The sex difference for depression was not significant, nor were the PYD by sex interactions significant for either negative outcome.

In order to obtain a measure of effect size for these random effects regression models, the pseudo- R^2 described by Singer & Willett (2003) was used. This is a measure of the reduction in the residual variation when other predictor variables are added to a model, hence a measure of the improvement in fit. This strategy was used to compute an effect size for PYD on

Table 4

Parameter estimates, significance tests, approximate p-values, and effect sizes for fitted random effects regression models that describe the relationship between positive youth development (PYD) in Grade 5 and either contribution, risk behaviors, or depression in Grade 6, when controlling for sex (n = 982)

	Outcome variables		
	Contribution	Risk behaviors	Depression
Intercept	2.10***	3.90***	25.09***
Sex (F = 1, M = 0)	0.19**	-0.37**	1.12
PYD	0.31***	-0.39***	-1.81***
σ_{μ}^2	0.06*	0.20*	3.36*
σ_{ϵ}^2	1.36***	5.10***	73.73***
-2LL	3119.055	4412.917	7039.407
Pseudo R^2	.163	.050	.132

Note. * $p < .05$; ** $p < .01$; *** $p < .001$.

the outcome measures, when sex and school effects were controlled for. Table 4 shows that the proportions of the within-person variance accounted for by PYD on Contribution, Risk Behaviors, and Depression are .163, .050, and .132, respectively. Although these are statistically significant, they are small effects, especially that for Risk Behaviors.

In sum, these results showed that when controlling for within school effects, PYD scores in Grade 5 predicted contribution in Grade 6 as well as risk behaviors and depression in Grade 6. There were gender differences in contribution and risk behaviors. Girls had significantly higher contribution scores and lower levels of risk behaviors than boys. In general, adolescents who had higher scores on PYD in Grade 5, had higher levels of contribution and lower levels of risk behaviors and depression in Grade 6. When evaluating the effect of PYD on risk behaviors, which is very small, it is important to remember that in Grade 5, the incidence of risk behaviors is very low.

A structural model of Grade 5 PYD and contribution, risk behaviors, and depression in Grade 6

In order to evaluate the theoretical model of PYD and its relationship with negative and positive outcomes, and the relationships among these outcomes themselves, a structural model was constructed and tested to evaluate the relationships simultaneously. LISREL 8.7 (Jöreskog & Sörbom, 2003) was used for computing the effects estimates and testing the goodness-of-fit of the model using the following indexes: the chi-square test, the comparative fit index (CFI), the non-normed fit index (NNFI), and the root mean square error of approximation (RMSEA). Path coefficients were assessed for statistical significance at $p < .05$. Model fit indices are shown in Table 5.

For this model, depression was conceived as a latent construct, rather than using the overall depression score. This was done to improve the estimation characteristics of the structural model and the reliability of the depression variable. Four “packets” of five CES-D items each were created and the mean packet values were used in the SEM models. In addition, for this model contribution was defined as a latent construct of its four subsets (i.e. ideology, helping, leadership, and service), and risk behaviors was defined as a latent construct of substance use and delinquency.

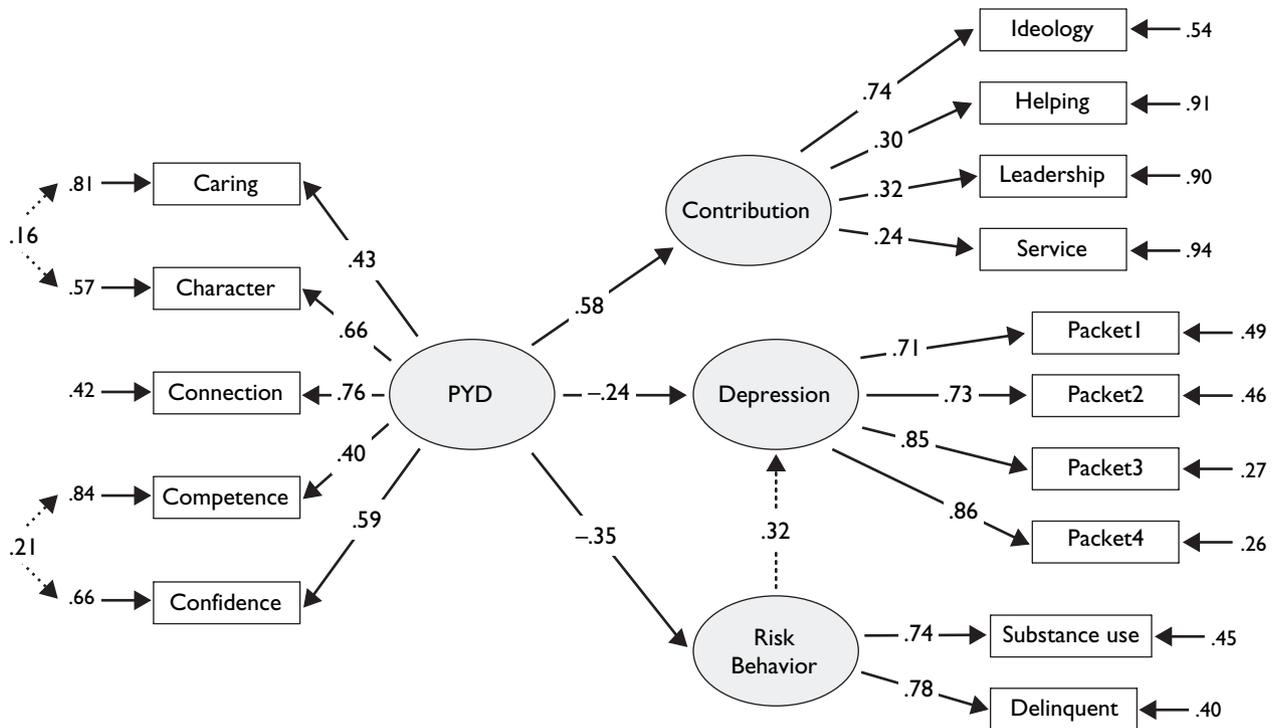
The initial model tested (Model 1) assumed the theoretical model that the five Cs are conceptually and empirically separate constructs, and simultaneously tested whether or not the three outcomes (contribution, depression, and risk behaviors) are unrelated to each other and predicted by PYD. This model is shown in Figure 2 with solid lines indicating the hypothesized relationships. The results of the initial model did not provide acceptable levels of goodness-of-fit.

In order to increase fit, the residual terms of Competence and Confidence, and of Character and Caring, were allowed to covary in Model 2. As Lerner et al. (2005) reported, the 5 Cs are theoretically distinct characteristics, but in fifth graders, they are not well differentiated empirically. In addition, the negative outcomes were also allowed to covary in Model 2 since there is evidence in the literature that depression and other negative outcomes are correlated. Hallfors et al. (2004), reported that depression increases with increasing involvement in risk behavior. The fit indices for Model 2 in Table 5 demonstrate a good fit for this model. In addition, the

Table 5
Fit indices from structural equation models of Grade 5 PYD predicting Grade 6 contribution, depression, and risk behaviors (n = 980)

Model	Significance tests		Fit measures			
	$\chi^2(df)$	$\Delta\chi^2(df)$	RMSEA	CI(RMSEA)	NNFI	GFI
M1	552.74(86)***		.074		.92	.93
M2	296.57(84)***	256.17(2)***	.051	.045(.057)	.96	.96
M3	414.5(168)***		.055	.048(.062)	.95	.96
M4	416.59(171)***	2.09(3)	.054	.048(.061)	.95	.96

Note. * $p < .05$; ** $p < .01$; *** $p < .001$.



$\chi^2 = 296.52$, $df = 84$, p -value $< .001$, RMSEA = 0.051.

Figure 2. Structural model of the relationship between Grade 5 PYD and Grade 6 positive and negative outcomes with standardized FIML estimates (all significant at the 0.05 level).

significant change in χ^2 from Model 1 to Model 2 indicates that the changes in the model resulted in a significant improvement in fit. Figure 2 illustrates Model 2, with dotted paths indicating the additions, and standardized parameter estimates for Model 2. The structural regression coefficients for predicting Wave 2 contribution, depression, and risk behaviors are all statistically significant ($p < .05$) and the standardized effect estimates are all greater than 0.30.

Given the significant sex differences found in the univariate random effects regression models reported earlier, Model 2 was tested further by using a stacked structural model with equality constraints for males and females on the three structural regression coefficients that predict Wave 2 positive and negative outcomes from Wave 1 PYD. Model 3 in Table 5 shows the results for the stacked model without constraints and Model 4 shows the results with equality constraints imposed. The change in χ^2 between Models 3 and 4 is not significant

($\chi^2 = 2.09$, $df = 3$); thus imposing equality constraints does not improve the model fit and the hypothesis of no sex differences in model fit cannot be rejected, that is, the structural model tested in Model 2 fits boys and girls equally well and there is no need to differentiate them.

Notice that there is no relationship posited for the relationship between the positive outcome of contribution and the negative outcomes, and that the model fits well without this path. In this model, the increase in a positive outcome is not merely a function of a decrease in the negative outcomes, but a conceptually and empirically distinct construct.

Discussion

Researchers, practitioners, and policy makers have used the Five Cs as one way to define the positive development of

children and youth (Benson, 2003; Eccles & Gootman, 2002). The 4-H Study provided the first empirical evidence for the 5 Cs and a second order construct, Positive Youth Development (PYD) (Lerner et al., 2005). In addition, PYD was hypothesized to predict lower levels of negative outcomes and higher levels of positive outcomes over time. This current analysis is the first longitudinal confirmation of these hypothesized relationships. In addition, the model reported here is an empirical demonstration that positive youth outcomes are not the lack or diminution of negative behaviors or outcomes, but are, rather, specifiable and desirable attitudes and behaviors that can be described, defined and, importantly, measured.

The contribution construct used in this report is one possible example of a positive outcome of great theoretical and applied importance. Indeed, this importance arises both in the United States, where the 4-H Study is being conducted, and internationally (Silbereisen & Lerner, in press). Youth contributions to society and to self (e.g., to maintaining their health and fitness, and thus to not being a physical burden to others and to enabling effective interactions with their social world) are regarded as vital for positive civic engagement and for maintaining and perpetuating civil society (e.g., Lerner, 2004; Sherrod, Flanagan, & Kassimir, 2006; Sherrod, Flanagan, & Youniss, 2002). Accordingly, the finding in this study, that indices of PYD at one point in adolescence predict scores for youth contribution at a subsequent ontogenetic point, suggests that the substantial theoretical burden of the PYD perspective (see Lerner, 2005) – to provide a frame for understanding advances in individual thriving and the connection between such development and societal well-being, that is, to advance understanding of adaptive developmental regulations (Brandtstädter, 1998, 1999, 2006) – finds some empirical support.¹

In addition, the present findings allow a more nuanced, empirical understanding of some of the “mantras” associated with policy discussions of the PYD perspective, e.g., “prevention is not promotion,” “problem free is not prepared [to contribute],” and “prepared is not engaged” (e.g., Pittman, 1996). These statements suggest that an either/or situation exists between prevention and promotion, possession of problems and the capacity to contribute, or the capacity to contribute and actual civic actions. However, the present findings – albeit initial longitudinal data from only two years at the beginning of the adolescent period – suggest that

indicators of PYD and of contribution develop along trajectories that are not “mirror images,” or inverses, of those associated with risk/problem behaviors. Therefore, while PYD predicted both higher levels of contribution and lower levels of risk/problem behaviors, the early adolescent participants in this study showed some evidence that both positive and negative indicators of youth development were present in the reported repertoires of the participants.

We should emphasize here that, as noted in the Results section, the relation between PYD and the outcome measures involves relatively small proportions of variance. These effect sizes resemble what is known from meta-analysis of the effect sizes of programs that seek to influence adolescent problem behaviors, e.g., through enhancing generic intrapersonal (self-regulatory) and interpersonal (social relational) skills (e.g., Eccles & Gootman, 2002; Roth & Brooks-Gunn, 2003b). The effect sizes between PYD and the positive and problematic “outcome” variables assessed in the present investigation suggest, then, that positive development processes are only one of the sets of influences on the development of problem behaviors. In other words, there are many sources of problem behaviors – and of positive behaviors, such as youth contribution – and the PYD construct, although important, is not the only source of this variation. For example, ecological assets, such as parental or community mentor behaviors (e.g., Benson et al., 2006; Bornstein, 2006; Theokas & Lerner, 2006), are also important sources of this variation.²

If these findings are extended as the 4-H Study youth enter into subsequent portions of the adolescent years, when risk/problem behaviors are expected to increase (Dryfoos, 1990; Perkins & Borden, 2003), and if as well the present findings are cross-validated in other data sets (using different groups of youth, communities, and measures than those associated with the present research), then there will be important implications for theory and application in developmental science. Theoretically, we will have to determine how adaptive developmental regulations co-develop with regulations linked to the development of behaviors that do not benefit either self and/or context and, in addition, we will need to understand what “tipping points” exist in individuals or settings to enable the former types of regulations to outweigh the latter types and to result in overall health and well-being.

Such knowledge will also have substantial significance for practice and policy. Youth programs, and their public and private funders, will need to establish guidelines for determining (1) when in ontogeny; for (2) what youth; (3) living in what settings; and (4) manifesting what sets of positive and negative characteristics, is it more efficacious to (a) focus on prevention, promotion, or combinations of the two; (b) when is it more prudent to act to reduce problems, to prepare youth for contributions to self and to society, or to pursue both objectives simultaneously; and (c) what conditions need to exist to engage youth to use their skills for contribution? Clearly, cross-national and cross-cultural scholarship will be vital for providing the diversity of youth and settings requisite for addressing adequately these complex questions.

Other facets of diversity will be important to include as well as foci of future research. The present research found significant sex differences in the outcome measures. These results

¹ As noted by one of the anonymous reviewers of this manuscript, there has been relatively little interest within the academic community in adolescents' opportunities to engage in positive behaviors – particularly those that would fall under the “leadership” and “service” component of the Contribution measure. Of course, if such opportunities differ significantly between individuals and/or between groups, it would be appropriate to control for such differences or, at least, to acknowledge the problem that such differences may pose for interpretations of results of research about such behavior. However, at this point in the development of the study of PYD and contribution, at least in either large-scale longitudinal investigations such as the 4-H Study or in national surveys of youth PYD and developmental assets, such as those conducted by Search Institute (e.g., see Benson et al., 2006, for a review), there is no evidence that there is such group or individual variance in opportunity structures. For example, both urban and rural schools offer youth chances to be class or school leaders, and the communities surrounding these schools also afford comparable availability of community opportunities for volunteerism or service (Theokas & Lerner, 2006). Despite the comparability of opportunities, youth nevertheless differ in their engagement in such positive behaviors. Identifying the reason for such variation is of course one of the fundamental goals of the present 4-H project and, as well, of much of the field of youth development (Benson et al., 2006; Damon, 2004; Eccles & Gootman, 2002). We are grateful that the reviewer pointed to this important issue.

² We are grateful to an anonymous reviewer of the manuscript for pointing to the issues noted in this paragraph.

were consistent with the literature on helping and risk-taking behaviors (e.g., Eisenberg, Fabes, & Spinard, 2006), even when we controlled for PYD. At the same time, there were no significant sex differences for depression in the sixth graders for this sample. Future analyses of the 4-H Study data set will be used to assess how different subgroups of youth vary in the organization of the 5 Cs (e.g., are there differences across SES, race/ethnicity, rural/urban settings, and family structure groups?) and whether the differences are consistent over time. Again, broadly contextualized research, involving cross-national and cross-cultural comparisons, will be especially useful, particularly when they enable assessment of the generalizability of both the structural and measurement models involved in the 4-H Study. Such cross-validation will be vital if the theoretical and empirical facets of the developmental systems approach to studying PYD are to themselves develop positively (Lerner, 2005).

In sum, the present study provides initial longitudinal evidence about the use of the developmental systems model of PYD in understanding the structure of the several "Cs" of positive adolescent development, and the links among PYD, contribution, and negative outcomes or behaviors (Lerner, 2004, in press; Silbereisen & Lerner, in press). As such, this research contributes to the understanding of development as a person ↔ context relational process, and may both enhance our own laboratory's and others' research about the developmental regulations in PYD. In addition, we believe the present findings may impact the design of programs and policies that serve youth and their social worlds.

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