Youth development program participation and intentional self-regulation skills: Contextual and individual bases of pathways to positive youth development

Megan Kiely Mueller a,*, Erin Phelps a, Edmond P. Bowers a, Jennifer P. Agans a, Jennifer Brown Urban b, Richard M. Lerner a

a Institute for Applied Research in Youth Development, Tufts University, 301 Lincoln Filene Building, Medford, MA 02155, United States
b Montclair State University, New Jersey, USA

Abstract

The present research used data from Grades 8, 9, and 10 of the 4-H Study of Positive Youth Development, a longitudinal study involving U.S. adolescents, in order to better elucidate the process through which the strengths of youth and the ecological resources promoting healthy development (such as out-of-school-time programs) may contribute to thriving. We examined the relationship between adolescents’ self-regulation skills (selection, optimization, and compensation) and their participation in youth development (YD) programs across Grades 8 and 9 in predicting Grade 10 PYD and Contribution. Results indicated that while self-regulation skills alone predicted PYD, self regulation and YD program participation both predicted Contribution. In addition, Grade 8 YD participation positively predicted Grade 9 self regulation, which, in turn, predicted Grade 10 PYD and Contribution. We discuss how the alignment of youth strengths and resources within the environment may promote positive youth development.

© 2011 The Foundation for Professionals in Services for Adolescents. Published by Elsevier Ltd. All rights reserved.

Both theory and research suggest that high quality youth development (YD) programs are a strong contextual asset for promoting positive outcomes in the lives of diverse youth (Eccles & Gootman, 2002; Mahoney, Vandell, Simkins, & Zarrett, 2009). However, given the limited resources available for such programs, it is critical to explore the ways that youth can benefit maximally from such programs. Therefore, the present research aims to explore the links among individual characteristics of adolescents, their use of (or capitalization on) the resources provided by participation across time in a quality YD program, and their positive youth development.

Adolescent development and the positive youth development (PYD) perspective.

Traditionally, adolescence has been considered a time of “storm and stress,” with universal, biologically-based changes inevitably driving adolescents to a period of emotional and physical conflict and stress (e.g., Hall, 1904). This approach to adolescent research was based on a biological reductionism that fostered the view that adolescents were simply “problems to...
be managed” (Roth & Brooks-Gunn, 2003) and that, practically speaking, research should focus on preventing or ameliorating the inevitable biologically (e.g., genetically) predetermined negative consequences of the adolescent period (e.g., Freud, 1969; Freud, 1954).

In turn, however, developmental systems theories provide a useful and optimistic theoretical frame for studying adolescent development in particular. Developmental systems theories indicate that youth should be studied not in isolation but, instead, as the product of the bidirectional relationship between the individual and his or her environment. Much contemporary research in human development is framed by these relational developmental systems models (Overton, 2010), which emphasize that the fundamental process of human development involves mutually-influential relations between the developing individual and the multiple levels of the ecology of human development, represented as individual ↔ context relations. As Overton explains, these relational developmental systems models are actually a family of theoretical ideas – for example the theories of Bronfenbrenner (1989; Bronfenbrenner & Morris, 2006), Lerner (1996, 2009), and Magnusson (1981, 1995) are examples – that are associated with relational metatheory. Relational metatheory uses a holistic and integrative perspective, defining development as a synthesis of variables from all levels of organization within the ecology of human development (ranging from biological through cultural and historical). Any one element is unable to exist without the other. As such, development does not occur as a result of the aggregation or additive interaction of various components but, instead, development arises from the multidirectional, reciprocal, synthesizing relationships among all aspects of the ecological system (Overton, 2010). Therefore, this framework rejects the reductionist notion of genetically predetermined outcomes, and because of its emphasis on plasticity, affords the idea that multiple directions of change (from problematic to positive) could derive from variation in an adolescent’s history of individual ↔ context relations.

Current developmental research has been shaped by the innovations brought about by one such relational developmental systems model, the positive youth development (PYD) perspective (Lerner, Phelps, Forman, & Bowers, 2009; Lerner et al., in press). As such, researchers consider the integrated role of multiple contexts of adolescent development, such as the family, peers, and schools in providing a basis for, and outcome of, the actions of people developing across this period of life (e.g., Lerner et al., 2005; Theokas & Lerner, 2006). The PYD perspective has been derived from a relational developmental systems-based theoretical perspective and, as well, from the work of practitioners interested in developing programs or policies to enhance youth development, as opposed to decreasing the purported deficits in their behavior (Deschenes, McDonald, & McLaughlin, 2004; Lerner, Phelps et al., 2009; Lerner, Lerner et al., 2009). Because of this confluence of research, theory, and practice, there has been increasing attention paid to the role of community-based, youth-serving organizations, and how they may provide resources that promote positive development (Li, Bebiroglu, Phelps, & Lerner, 2009). As designed facets of the ecology, programmatic experiences intended to foster positive development among youth may be a potentially powerful basis of support of PYD.

Youth development programs and PYD

An extensive body of research has shown that high quality, structured out-of-school-time (OST) programs promote a host of positive outcomes including, but not limited to, initiative skills (Larson, 2000), academic achievement (Zaff, Moore, Papillo, & Williams, 2003), civic engagement (Sherrod & Lauckhardt, 2009; Stoneman, 2002), and overall positive youth development (Lerner, Phelps et al., 2009; Lerner, Lerner et al., 2009). Furthermore, adolescence is an important period for identity development and for structuring positive and prosocial peer relations, and activity participation is a context in which this development may be fostered (Barber, Stone, Hunt, & Eccles, 2005; Mahoney et al., 2009). It is clear from the extant research that participation in structured OST activities is a developmental asset vital to promoting PYD (Lerner, 2005; Zarrett et al., 2009).

As the nature and quality of youth OST activity involvement is critical to positive development, it is important to delineate the precise features of programs that serve as crucial developmental assets for youth. Youth development (YD) programs are a subset of OST programs that include structured activities that are deliberately intended to affect positive developmental outcomes (Lerner, 2004). Such programs often contain the “Big Three” (Lerner, 2004) program characteristics shown to promote positive development, that is: 1. positive and sustained (for at least one year; Rhodes, 2002) adult-youth relations, such as mentoring; 2. youth life-skill building activities (for example, learning time management skills); and 3. youth participation in and leadership of valued community activities, such as serving as the leader in organizing a volunteering program (Zaff, Hart, Flanagan, Youniss, & Levine, 2010). YD programs, such as 4-H Clubs and other after-school programs that incorporate the “Big Three” characteristics, provide a structured environment that serves as a developmental asset encouraging youth to take leadership and agency in their development in their community (Eccles & Gootman, 2002; Larson, 2000) and to develop needed and useful life skills (Mahoney, Larson, Eccles, & Lord, 2005). Greater participation in such programs has been linked to indicators of PYD (Balsano, Phelps, Theokas, Lerner, & Lerner, 2009; Mahoney et al., 2009), and to the growth of positive outcomes such as higher grades, school value, self-esteem, and resilient functioning (Fredricks & Eccles, 2005).

However, it is important to note that while research suggests that increased participation in OST activities is linked to positive developmental outcomes (e.g., Mahoney et al., 2009), research by Zarrett et al. (2009) suggests that a more nuanced relationship exists. Zarrett and colleagues found that, in some instances, higher activity participation can lead to higher PYD, but also to higher risk of depression. In addition, patterns of participation may affect developmental outcomes differentially. Zarrett and colleagues found that for middle school youth, the benefits of participating in sports differed depending on the other types of activities in which youth also participated (Zarrett, Peltz, Fay, Li, & Lerner, 2007). This research points to the
complexity in which youth participation in OST activities can have an impact on development, and suggests that a more nuanced approach is necessary, one that establishes how much and what kind of programs are beneficial to youth of particular characteristics.

**Intentional self regulation as an individual strength**

Research on the strengths that youth bring to their interactions with their contexts has increasingly assessed adolescents’ abilities to seek out and acquire the resources possessed by these organizations to promote their development (Mueller, Lewin-Bizan, & Urban, in press). Are there particular characteristics of youth that may be linked to effectively engaging in YD programs in ways that maximize the probability of PYD? Gestsdóttir and colleagues (Gestsdóttir & Lerner, 2007, 2008; Gestsdóttir, Lewin-Bizan, von Eye, Lerner, & Lerner, 2009) have suggested that intentional self-regulation behaviors, involving the selection of goals (which, in the service of promoting PYD, would be positive or developmentally beneficial), acting to optimize the resources needed to make such goals a reality, and possessing the ability to compensate effectively when goals are blocked, are the characteristics that youth need to seek out and maximally use the resources in the environment, such as those represented by (found within) YD programs. These selection (S), optimization (O), and compensation (C) skills (i.e., SOC skills) provide a set of cognitive, emotional, and behavioral attributes that an individual employs to contribute to mutually-beneficial relations with his or her context (Freund & Baltes, 2002; Gestsdóttir & Lerner, 2008; Lerner, Freund, De Stefanis, & Habernas, 2001). The SOC model offers a framework for understanding adolescents’ abilities to influence or select from and use the resources in the context of the YD program that is, in turn, influencing them.

Prior research has indicated that SOC skills are predictive of PYD outcomes (e.g., Gestsdóttir & Lerner, 2007; Zimmerman, Phelps, & Lerner, 2007), with high SOC scores associated with the highest PYD trajectories (Zimmerman, Phelps, & Lerner, 2008). Therefore, it is reasonable to expect that SOC scores, as an index of the presence of the individual’s potential contribution to mutually-beneficial relations with his or her context, when coupled with participation in YD programs, constitutes a relational structure linked to PYD. That is, if YD programs are structured to provide youth with the developmental assets of positive adult relationships, skill building, and leadership opportunities, then, alignment with individual strengths, such as intentional self-regulation, should constitute an ideal relation for promoting the positive individual → context relationships that result in PYD.

**The present research: YD program participation, SOC skills, PYD, and Contribution**

The purpose of the present research, therefore, is to better understand how adolescents’ SOC skills are linked to the assets of YD programs. As well, the purpose is to ascertain the sequence of the development of SOC skills and participation in YD programs. That is, do individuals with high SOC skills self-select into YD programs (presumably in order to obtain the resources that they need to achieve their goals)? Or, alternatively, do YD programs provide youth with the resources that are linked to subsequent development of intentional self-regulation skills?

The fact that YD programs are linked in the extant literature to SOC skills (Lerner, 2004) suggests that greater “dosages” of YD program involvement should co-vary with higher SOC scores. Past research indicates that high quality, structured YD programs containing the “Big Three” (e.g., 4-H Clubs) serve as a source of contextual assets for youth (Theokas & Lerner, 2006). Therefore, under the assumption that high quality YD programs provide resources to youth and that intentional self-regulation skills may afford a means by which youth access the assets of programs, the present research expands upon past findings by directly testing the link between YD program involvement, SOC scores, PYD, and Contribution (an important outcome related to youth contributing to their community, family, etc., and one that YD programs such as 4-H often focus on in particular; National 4-H Council, 2010).

Accordingly, we will capitalize on data from the 4-H Study of PYD, a longitudinal investigation of U.S. adolescents that initially studied a cohort of fifth graders and now includes information through the twelfth grade (Bowers et al., 2010; Lerner et al., 2005; Phelps et al., 2007, 2009). Within the 4-H study, youth strengths are operationalized by a measure associated with the SOC model, which assesses adolescents’ adaptive intentional self-regulation skills. In addition, we will use measures of the activities that youth engage in outside of school, operationalized by both number of activities and intensity (frequency per month) of involvement; these measures will capture the benefits afforded by both diverse and frequent participation in youth development programs.

Along with the individual strengths of intentional self-regulation skills and the contextual assets afforded by YD program participation, the 4-H study also provides measures of PYD (conceptualized by the “Five Cs” – Competence, Confidence, Connection, Character, and Caring; Lerner, 2004, 2009). These concepts are used to assess domains of healthy development and characteristics that place youth on a life trajectory marked by mutually beneficial individual → context relations that in turn, lead to the “Sixth C” of youth Contribution (e.g., contribution to self, family, community, society; Lerner, 2004, 2009; Lerner et al., 2005). Measures of the “Five Cs” and of Contribution are used to assess the benefits of adolescent participation in YD programs (Eccles & Gootman, 2002; Roth & Brooks-Gunn, 2003) and are recognized as indicators of a “thriving youth” (King et al., 2005).

In sum, the measures used in the present study (i.e., of YD program participation, SOC, PYD, and Contribution) enable the fundamental question of this study to be addressed: How does the combination of youth strengths, as operationalized by SOC, and the contextual asset of participation in youth development programs, combine within and across time to promote mutually-beneficial relations that may lead to thriving among youth? Past research has shown consistent links between YD programs containing the...
program participation and both PYD and Contribution (Lerner, Lerner, & Phelps, 2008, 2009). As such, the present research aims to explore the relationship between YD program participation, SOC skills, PYD, and Contribution in more detail, and to ascertain the development sequence of this relationship.

**Method**

**Participants and procedure**

**Sample**

The current study included a subset of participants in the 4-H Study of Positive Youth Development, a national, longitudinal study. Overall, across the first six waves of the study, 6120 youth (59% female) in 41 states were surveyed, along with 3084 of their parents. Across the first six waves, 2527 of these students were tested two or more times. The present study utilized a subsample of youth from Grades 8 through 10 (Waves 4 through 6).

In Grade 8 (Wave 4), 1990 youth were surveyed from 17 states along with 563 of their parents. These youth were 62.2% female, with a mean age of 14.40 years (SD = 1.41). Self-reported race for these youth was American Indian, 1.5%; Asian American, 2.6%; African American, 8.2%; Latino/a, 11.5%; European American, 73.3%; and Multiracial 2.9%.

In Grade 9 (Wave 5), 1208 youth were surveyed from 18 states along with 292 of their parents. These youth were 60.5% female, with a mean age of 14.93 years (SD = 1.10). Self-reported race for these youth was American Indian, 3.1%; Asian American, 2.8%; African American, 9.6%; Latino/a, 11.3%; European American, 67.8%; and Multiracial, 3.1%.

In Grade 10 (Wave 6), 2488 youth were surveyed from 32 states along with 341 of their parents. These youth were 63.6% female, with a mean age of 15.71 years (SD = 1.38). Self-reported race for these youth was American Indian, 1.1%; Asian American, 1.7%; African American, 7.2%; Latino/a, 7.2%; European American, 77.6%; and Multiracial, 2.9%.

The current study uses a subsample of 895 youth from Grades 8, 9, and 10 (Waves 4, 5, and 6); the selection criterion was participation in the study for at least two of the three grades. The youth in this subsample were 62.7% female and self-reported race was 1.5% Native American, 3.2% Asian or Pacific Islander, 7.5% African American, 6.9% Latino/a, 64.9% European American, and 1.0% Multiracial. In addition, 14.5% of participants reported race inconsistently across waves of participation. Based on research documenting the link between maternal education and youth educational and career attainment (e.g., Hauser & Featherman, 1976), maternal education was used as an indicator of participants’ socioeconomic background/status (SES). The items pertinent to maternal education asked about mother’s/guardian’s (and both if the participating guardian is not the child’s mother) education level. There are nine categories, from 8th Grade or less to doctoral degree, with higher scores indicating higher levels (i.e., more years) of formal education. The variable was recoded to reflect the number of years of education, and ranges from 8 to 20. In the current subsample, the mean number of years of maternal education was 14.26 (SD = 2.43).

**Procedure**

In Grades 8, 9, and 10 (Waves 4, 5, and 6), for youth that were surveyed in their schools or youth programs, teachers or program staff gave each child an envelope to take home to the parent or guardian. The envelope contained a letter explaining the study, two consent forms (one that was returned to the school and one that could be kept for the records of the parent or guardian), a parent questionnaire, and a self-addressed stamped envelope for returning the parent questionnaire and consent form. For the youth surveys, data collection was conducted by trained study staff or assistants hired at more distant locations. A detailed protocol was used to ensure that data collection was administered uniformly and to ensure the return of all study materials. The procedure began with reading the instructions for the student questionnaire to the youth. Participants were instructed that they could skip any questions they did not wish to answer. A two-hour block of time was allotted for data collection, which included one or two short rest periods.

Youth who were absent on the day of the survey or who were from schools that did not allow on-site testing were contacted by e-mail, mail, or phone, and were asked to complete the survey. Beginning in Wave 5, youth could go online to complete the survey. Youth participating in 4-H clubs were given the paper survey or used club computers to complete the survey online. Lerner et al. (2005) provides complete details about the methodology of the 4-H study.

**Attrition**

Attrition in the 4-H Study sample is not randomly distributed across schools or youth program sites. In Grades 4, 5, and 6, many of the schools that were originally sites for data collection did not allow us to conduct on-site surveys. Youth in these schools were contacted through mail or phone and were asked to complete the survey and mail it back to us, or to go online to complete it. Since we consistently contact all youth who ever participated in the study, many youth who were not surveyed in earlier waves of the study came back into the study in later waves. During Grades 4, 5, and 6, we continued to contact all youth who were part of the first three waves and, in addition, we increased the sample by expanding our recruitment of youth in 4-H clubs around the country.

Table 1 presents the grade and variable non-response, two possible types of non-response, in Grades 8 through 10. Grade non-response ranged from 45.3% to 73.6%, and variable non-response at each wave ranged from 1.4% to 10.1% across the three grades. In addition, t-tests and \( \chi^2 \) tests were conducted to compare attrition vs. non-attrition groups (of the entire sample of youth who participated in Grades 8 to 10) on background variables (i.e., sex and mother’s education) as well as on each
outcome variable (PYD and Contribution). The results indicated that participants who dropped out of the study between Grades 8 and 9 or Grades 9 and 10 did not differ significantly in their PYD or Contribution scores. However, participants who dropped out between Grades 8 and 9 had significantly lower maternal education scores than those who did not drop out. In addition, youth who dropped out between Grades 9 and 10 were more likely to be boys than youth who did not drop out. Finally, multivariate logistic regression analyses of missingness for each outcome variable (Grade 10 PYD and Contribution) indicated that the data appear to be missing completely at random; in other words, missingness among outcome variables did not appear to be related to other characteristics of the participants. Participants’ sex, mother’s education level, and Grade 10 selection, optimization, and compensation scores were not significant predictors of missing data for PYD or Contribution. For the purpose of this research, missing data were imputed for the longitudinal subsample (N = 895) with LISREL 8.80 (Jöreskog & Sörbom, 2006), using the Expectation-Maximization (EM) algorithm.

Measures

In the current study, indices of several constructs were used, in addition to several demographic variables. These measures involved assessment of youth development (YD) program participation as well as indices of several individual characteristics including intentional self-regulation and positive youth development (PYD). Maternal education was used as an indicator of socioeconomic status.

YD program participation

Participation in YD programs was operationalized in several ways. In the 4-H study, the YD programs that participants are specifically asked about include 4-H clubs, 4-H after school programs, Girl Scouts/Boy Scouts, Big Brother Big Sister, YMCA, and Boys and Girls Clubs. Intensity of participation was measured by asking youth how often they participated in each of the programs, from “never,” “once a month or less,” “a couple of times a month or more,” “once a week,” “a few times a week,” to “every day.” The variable was recoded to reflect the number of days per month youth participated in each YD program (assuming a four week month, with five school days a week). A response of “never” was recoded as zero days per month, “once a month or less” as one day per month, “a couple of times a month or more” as two days per month, “once a week” as four days per month, “a few times a week” as eight days per month, and “every day” as 20 days per month. A mean intensity score was then calculated across all YD programs. In addition, we assessed how many YD programs youth participated in (0–6) at each of Grades 8 and 9 (youth had to participate “at least a couple of times a month or more” in order for their participation to count). Participants who did not respond to any of the activity participation questions were considered to have missing data for YD program participation.

Intentional self-regulation skills (SOC)

The Selection, Optimization, and Compensation (SOC) questionnaire (Freund & Baltes, 2002) was used to measure intentional self-regulation at Grades 8 and 9. Three subscales were used from the short version of the SOC Questionnaire: Elective Selection, Optimization, and Compensation. Elective Selection (S) represents the development of preferences or goals and the construction of a goal hierarchy and the commitment to a set of goals. Optimization (O) refers to acquisition and investment of goal-relevant means to achieve one’s goals. Compensation (C) refers to the use of alternative means to maintain a given level of functioning when specific goal-relevant means are not available anymore.

Each of the subscales has six items with a forced-choice format. Each item consists of two statements, one describing behavior reflecting S, O, or C and the other describing a non-SOC related behavior. Participants are asked to decide which of the statements is more similar to how they would behave. An item from the Elective Selection subscale is “I concentrate all my energy on few things [Person A]” or “I divide my energy among many things [Person B].” An Optimization subscale item is “I don’t think long about how to realize my plans, I just try it [Person A]” or “I think about exactly how I can best realize my plans [Person B].”

A Selection subscale item is “I think about exactly how I can best realize my plans [Person A]” or “I think long about how to realize my plans, I just try it [Person B].”

Table 1 Percentage of grade and variable (VN) non-response for each variable within each grade.

<table>
<thead>
<tr>
<th>Grade 8</th>
<th>Grade 9</th>
<th>Grade 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of grade non-response in overall samplea</td>
<td>54.4</td>
<td>73.6</td>
</tr>
<tr>
<td>Percentage of grade non-response in subsampleb</td>
<td>20.1</td>
<td>18.2</td>
</tr>
<tr>
<td>YD program participation</td>
<td>3.2</td>
<td>22.7</td>
</tr>
<tr>
<td>Selection</td>
<td>7.4</td>
<td>26.0</td>
</tr>
<tr>
<td>Optimization</td>
<td>7.7</td>
<td>26.3</td>
</tr>
<tr>
<td>Compensation</td>
<td>9.7</td>
<td>27.8</td>
</tr>
<tr>
<td>Positive Youth Development (PYD)</td>
<td>2.2</td>
<td>21.9</td>
</tr>
<tr>
<td>Contribution</td>
<td>5.7</td>
<td>24.7</td>
</tr>
</tbody>
</table>

a Percentages were calculated based on the overall sample size for youth who participated at least once in Grades 8 to 10 (N = 4282).
b Percentages were calculated based on the longitudinal subsample of youth in the current study (youth who participated at least two times in Grades 8 to 10, N = 895).

For the purpose of this research, missing data were imputed for the longitudinal subsample (N = 895) with LISREL 8.80 (Jöreskog & Sörbom, 2006), using the Expectation-Maximization (EM) algorithm.
Positive youth development (PYD)

There are several models of PYD (Hamilton, 1999; Lerner, Phelps et al., 2009; Lerner et al., in press). In the current study, we used a measure derived from the Five Cs model of PYD. A PYD score (ranging from 0 to 10) for each participant was computed for Grade 10. In the 4-H data set, the Cronbach’s alpha for Grade 10 PYD is 0.77. The Five Cs comprising the PYD construct are operationalized as follows:

- **Competence** is a positive view of one’s action in domain-specific areas including the social and academic domains (11 items for Grade 10). In the 4-H data set, the Cronbach’s alpha for Competence in Grade 10 is 0.70.
- **Confidence** is an internal sense of overall positive self-worth, identity, and feelings about one’s physical appearance (16 items for Grades 10). In the 4-H data set, the Cronbach’s alpha for Grade 10 Confidence is 0.83.
- **Character** involves respect for societal and cultural rules, possession of standards for correct behaviors, a sense of right and wrong, and integrity (20 items for Grade 10). In the 4-H data set, the Cronbach’s alpha for Grade 10 Character is 0.71.
- **Connection** involves a positive bond with people and institutions that are reflected in healthy, bidirectional exchanges between the individual and peers, family, school, and community in which both parties contribute to the relationship (22 items for Grade 10). In the 4-H data set, the Cronbach’s alpha for Grade 10 Connection is 0.70.
- **Caring** is the degree of sympathy and empathy, i.e., the degree to which participants feel sorry for the distress of others (9 items for Grade 10). In the 4-H data set, the Cronbach’s alpha for Grade 10 Caring is 0.83.

Full details about these measures, their construction, and validity and reliability can be found in Lerner et al. (2005) and Bowers et al. (2010).

Contribution

Youth responded to 12 items, which were weighted and summed to create two subscales, action and ideology. The Contribution items are derived from existing instruments with known psychometric properties and used in large-scales studies of adolescents, such as the Profiles of Student Life-Attitudes and Behaviors (PSL-AB; Benson, Leffert, Scales, & Blyth, 1998) survey and the Teen Assessment Project (TAP; Small & Rodgers, 1995) survey question bank. Items from the leadership, service, and helping scales measured the frequency of time youth spent helping others (e.g., friends or neighbors), providing service to their communities, and acting in leadership roles. Together, the leadership, service, and helping subsets comprise the action component of Contribution. The ideology scale measured the extent to which Contribution was an important facet of their identities (e.g., ‘It is important to me to contribute to my community and society’). The action and ideology components are weighted equally to calculate the Contribution scores. As with the PYD scores, in this study, the Contribution scores range from 0 to 10 (in past research, a range of 0–100 was used; Jelićić, Bobek, Phelps, Lerner, & Lerner, 2007). In the 4-H data set, the Cronbach’s alpha for Grade 10 for Contribution is 0.80.

Results

The present research explored how youth strengths, as operationalized by SOC, may be linked to the contextual asset of participation in youth development programs within and across time (Grades 8 and 9). We hypothesized that the coupling of intentional self-regulation skills and YD program participation in Grades 8 and 9 would constitute a relational structure linked to PYD and Contribution in Grade 10.

Preliminary analyses

Table 2 presents the means and standard deviations for the measures of youth development program participation (number of programs and intensity of participation), SOC (selection, optimization, and compensation), PYD, and Contribution.
across Grades 8 to 10 for the 895 youth who participated in the study for at least two of the three grades. As seen in Table 2, there is little change across Grades 8 to 10 in the mean levels of these measures.

**Youth development program participation and SOC predicting PYD and Contribution**

Using LISREL 8.80 (Jöreskog & Sörbom, 2006), a series of structural equation models were tested to examine the relationship between youth development program participation and intentional self-regulation skills at Grades 8 and 9 in predicting Grade 10 PYD and Contribution. To test these relationships, we began by examining a “baseline” model (Model 1) testing the influence of YD program participation and SOC across time in predicting Grade 10 PYD and Contribution. In the next model (Model 2), we added the relationship across time between YD participation and SOC skills in predicting PYD and Contribution. Both Model 1 and Model 2 included correlations of the residual variance between selection, optimization, and compensation over time (Grades 8 to 9) as well as between Competence and Confidence, and Caring and Character at Grade 10. These estimations were based on theoretical understanding of and previous empirical research with these constructs (Bowers et al., 2010) and, as well, on the relatively high correlations between these indicators. Model 3 was then created to improve on Model 2 by additionally estimating the correlations of residual variance among all of the Five Cs indicators as well as among selection, optimization, and compensation within-time, as suggested in the modification indices (see Fig. 1).

We evaluated the models using the RMSEA (Root Mean Square Error of Approximation) with a 90% confidence interval as a recommended measure of fit (Steiger & Lind, 1980), with a value of 0.08 or less indicating an adequate fit (Browne & Cudeck, 1993). In addition, we used the CFI (Comparative Fit Index) and TLI (Tucker-Lewis Index; Tucker & Lewis, 1973) measures, both with a recommended “acceptable” fit at 0.90 and above (McDonald & Ho, 2002). The commonly used $\chi^2$ statistic is presented, although it is sensitive to large sample size as is the case in this study (Bollen, 1989). Table 3 presents and compares model fit statistics for all three models.

The first baseline model indicated that while YD participation did not predict Grade 10 PYD, SOC scores in Grade 8 predicted SOC scores in Grade 9, which did appear to predict PYD in Grade 10. In addition, there appears to be a significant pathway between YD program participation in Grade 9 and Grade 10 Contribution, as well as between Grade 9 SOC and Grade 10 Contribution. This model has only mediocre fit (RMSEA = 0.09; TLI = 0.88; see Table 3 for full model statistics), indicating that there are further relationships among the variables that this baseline model does not account for.

Model 2, which estimated the relationship between YD participation and SOC in predicting youth thriving, indicated that when accounting for this relationship, YD participation at Grades 8 and 9 still did not predict PYD at Grade 10, although SOC scores in Grades 8 and 9 did continue to predict PYD in Grade 10. In addition, both YD participation and SOC predicted Grade 10 Contribution over time, although there did not appear to be a significant relationship between the two variables in predicting Grade 10 PYD or Contribution. However, the fit for Model 2 did not improve significantly from Model 1 (see Table 3).

In order to improve model fit, the third model (see Fig. 1) estimated the residuals suggested in the modification indices that were theoretically-relevant and interpretable (i.e., among the Five Cs indicators and among the within-time selection, optimization, and compensation scores). These modifications improved the fit significantly (see Fig. 1 for $\chi^2$, RMSEA, CFI, and TLI model fit statistics). Similar to the previous models, Model 3 indicated a direct relationship between SOC at Grade 9 (but not YD participation) in predicting overall Grade 10 PYD, as well as significant pathways between both YD participation and SOC in Grade 9 in predicting Grade 10 Contribution. However, this model also suggested that there was a positive relationship between Grade 8 YD participation and Grade 9 SOC (although this relationship was relatively weak), which, in turn, predicted higher Grade 10 PYD and Contribution scores, and therefore provides some initial support for our hypothesis of a mutually influential relationship between these two individual and contextual assets.

The models tested suggest several potential pathways to youth thriving (indexed by PYD and Contribution in Grade 10), as predicted by youth development program participation and intentional self-regulation skills at Grades 8 and 9. Consistent with previous research (e.g., Gestsdóttir & Lerner, 2007), intentional self-regulation skills across Grades 8 and 9 predicted Grade 10 PYD, providing further support for the importance of these self-regulation skills in promoting positive developmental outcomes in adolescence. However, it did not appear as though participation in youth development programs at Grades 8 and 9 was directly predictive of Grade 10 PYD.

However, both YD participation and SOC scores at Grade 8 and 9 did, in fact, predict Grade 10 Contribution, a key outcome of PYD. In addition, Model 3 indicated that Grade 8 YD program participation predicted Grade 9 SOC skills, which, in turn,
were predictive of Grade 10 PYD and Contribution. Although the relationship between Grade 8 YD participation and Grade 9 SOC was relatively weak, the path was significant, and therefore provides some support for the hypothesis that the ecological asset of youth development program participation is associated with the individual asset (strength) of intentional self-regulation skills in predicting youth thriving. Furthermore, this finding suggests that participating in YD programs may in fact positively affect a youth’s SOC skills, which, in turn, are predictive of positive developmental outcomes.

**Discussion**

Extant research points to the importance of youth development program participation (Theokas & Lerner, 2006; Urban, Lewin-Bizan, & Lerner, 2009, 2010) and self-regulatory behaviors (Gestsdóttir & Lerner, 2007) as contextual and individual assets, respectively, for promoting positive development among adolescents. Accordingly, the present study aimed to further elucidate the relationship between YD program participation and intentional self-regulation skills. We predicted that the

<table>
<thead>
<tr>
<th>Table 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model fit statistics.</strong></td>
</tr>
<tr>
<td><strong>Model</strong></td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>Model 1</td>
</tr>
<tr>
<td>Model 2</td>
</tr>
<tr>
<td>Model 3</td>
</tr>
</tbody>
</table>

Note: Significant $\chi^2$ test indicates that the model listed had a significantly better fit than the previous model at the $p < .001$ level.
individual characteristics of intentional self-regulation, as operationalized by the selection (S), optimization (O), and compensation (C) measure (Freund & Baltes, 2002), would, when coupled with the contextual asset of participation in YD programs (operationalized by number of programs and intensity of participation), be linked to PYD and Contribution in Grade 10.

The results provided some initial support for the hypothesis that there is an important relationship between the ecological asset of youth development programs and the individual strength of intentional self-regulation skills. Furthermore, it appears as though there is directionality in that relationship; youth development program participation at Grade 8 was predictive of Grade 9 SOC skills, which, in turn, were predictive of Grade 10 PYD and Contribution. However, the results suggest that, contrary to suggestions in the literature (e.g., Benson et al., 1998) and to our hypothesis, there was no direct relationship between YD program participation at Grades 8 and 9 and PYD at Grade 10. While SOC skills at Grades 8 and 9 positively predicted Grade 10 PYD, this direct relation did not exist for Grade 8 and 9 YD program participation (Grade 8 YD participation predicted Grade 10 PYD only in an indirect relationship through Grade 9 SOC).

These findings suggest a more nuanced link between intentional self-regulation skills and YD program participation than suggested in past research. There was evidence for a relationship between the contextual resource of YD program participation at Grade 8 and the individual asset of SOC skills in Grade 9 (although this relationship was not as strong as the effects of SOC) and, in turn, Grade 9 SOC skills predicted Grade 10 PYD and Contribution. In addition, there was a direct relationship between Grade 8 and 9 YD participation and Grade 10 Contribution. However, there was no evidence for a direct relationship between YD participation and Grade 10 PYD.

The PYD theory tested by Lerner, Lerner, and colleagues (e.g., Lerner, 2004, 2009; Lerner et al., 2005) stipulates that Contribution is the “Sixth C,” emerging from the presence of the Five Cs of PYD. Within this conceptualization, it does not seem to make sense that we would see a direct relationship between YD participation and Contribution, but not PYD. However, the way in which the measures of PYD and Contribution are operationalized may be contributing to the patterns that emerged in the present study. For example, a possible explanation for the absence of a direct relationship between YD participation and PYD may be related to the nature of the PYD measure as an overall index of youth thriving. By the time youth are reaching the end of middle school and beginning of high school, there are many potential pathways to overall thriving, and participation in YD programs is just one of the many ways in which youth can thrive. However, it is still important to note that the present research cannot make any claims about the direct impact of YD participation on PYD.

Moreover, the presence of a direct link between YD participation and Contribution does make conceptual sense, given that Contribution is often a key outcome for youth development programs, and service to one’s community may be a value that is highlighted specifically within the program context (National 4-H Council, 2010). Therefore, for youth participating in YD programs, Contribution may be a specific outcome directly related to program curricula, instead of an outcome of general thriving as conceptualized in the PYD model.

Furthermore, it appears as though participation in a YD program is positively related to SOC skills. The ability to select goals, optimize resources in the environment to achieve these goals, and then compensate when problems arise would seem to be relevant skills relating to youth contribution to family, community, and self. The potential relationship between intentional self-regulation skills and YD program participation identified in this study points to the need for future research that examines trajectories of positive developmental outcomes, an assessment that would be useful to further understanding the nature of the relationship between YD participation and SOC skill (and the mechanisms underlying this relationship) in promoting youth thriving.

Limitations and future research

The selective subsample used in this research provides limitations for generalizing the results of this study. The subsample included only youth who participated in the study for at least two years, and such youth are likely to be similar in other characteristics (for example, the high levels of maternal education suggest a fairly advantaged sample. In addition, the majority of the participants were European American). Moreover, the indices reflecting participation in a YD program indicated relatively low participation in the sample (see Table 2), and participation level variance may have constrained the degree to which we were able to identify the potential impacts of participation in such a program. It is possible that the age of our particular sample (Grades 8 to 10) affected levels of participation in YD programs (e.g., youth in these grades may be becoming more involved in school-based activities such as sports or clubs).

In addition, this study used a general measure to index positive youth development, and it may be useful for future research to examine the impact of the relationship between youth development program participation and intentional self-regulation skills in promoting domain-specific outcomes. Programs vary, of course, in their behavioral objectives, and obtaining more nuanced information about what specific facets of intentional self-regulation are linked to what specific outcomes for particular YD programs may enhance program design and sharpen program evaluations. Furthermore, the present data only are able to assess whether or not youth participate in a YD program, and how frequently they participate; the data do not afford any explanation of how or why youth become involved in the first place. Adolescents and their parents may have different reasons for becoming involved in YD programs (e.g., after school time supervision, social skills). Certainly, the specific motivational factors driving youth to become involved (or parents to encourage involvement) might differentially affect the experiences and outcomes for youth.
In addition, while the current research highlights the important developmental impacts that involvement in a YD program may have on youth, and suggests the use of the general principles that are necessary to encourage positive outcomes (i.e., the Big Three; Lerner, 2004), it is critical to note that the specific aspects of such programs that provide these impacts are not discernible within the current data set. Within the survey method of the 4-H Study data set, the specific features of any given instance of the YD programs in which participants engaged were not assessed. As such, these programs constitute a “black box.” Each individual program may have a different theory of change, and the activities and relationships within programs certainly encompass many domains. Furthermore, even programs that have a general guiding structure at the national level (e.g., 4-H programs, Big Brothers/Big Sisters, Scouts) may not enact these protocols with high fidelity in individual settings. Therefore, there may be considerable variance at the local level in programmatic practices. In order to meet the needs of individual communities, programs evolve within their organization’s guidelines to fit their personal needs and constraints. In fact, even when programs delineate specific procedures and guidelines, that does not necessarily mean that such guidelines are actually put into practice. As a consequence, our two indicators of YD participation (number of programs and intensity of participation) certainly do not capture the full breadth and depth of experiences that youth have in such programs.

The presence of variance among YD programs presents a unique methodological challenge when attempting to ascertain the specific aspects of various programs that are associated with developmental outcomes. The methodology of the 4-H Study is not best suited to make transparent the contexts of a given program (“black box”). Therefore, it will be important in future research to use detailed qualitative, process-oriented information about individual programs in order to fully test outcome-oriented research questions. Future research must delve deeper into the individual practices of programs to explore both the framework for such programs and also what actually happens in terms of implementation. Such research will be critical in order to identify and assess the mechanisms that may be involved in the relationship between intentional self regulation and YD program participation and to identify which youth with what characteristics benefit the most from what particular program features.

Conclusions

The results of this research provide support for the notion that a convergence of contextual and individual assets is critical in promoting positive developmental outcomes for adolescents. The findings of this study have important policy and program implications, suggesting that participation in high quality YD programs may be an especially important resource for youth in developing individual strengths, such as self-regulatory skills, and that the alignment of program resources and youth strengths may be critical in promoting specific positive developmental outcomes. These findings begin to provide insight into the relationship between individual and contextual assets, and suggest the need for future research to address these complex relationships in a nuanced way using longitudinal data from diverse populations of adolescents.

References


