

# **Illuminating the Process of Youth Development: The Mediating Effect of Thriving on Youth Development Program Outcomes**

**Mary E. Arnold**

*Oregon State University*

**Ryan J. Gagnon**

*Clemson University*

*This paper examines the relationship between the developmental contexts of youth programs and resultant developmental outcomes, and explores whether the developmental process of thriving mediates this relationship. Developmental context is proposed to consist of three elements: (1) youth sparks, (2) program quality, and (3) developmental relationships. Combined, these elements describe youth program context more precisely than in previous studies, allowing for a clearer understanding of effective program settings. Likewise, the process of youth thriving provides insight into the mechanism through which youth development occurs. Sufficient model fit, convergent validity, and discriminant validity of the 4-H Thriving scale were determined through a multi-phase confirmatory factor analysis. As hypothesized, structural equation modeling revealed a full mediational effect of youth thriving on developmental outcomes. The results of this study guide youth development practitioners to focus on the quality of the developmental context of youth programs and the ways in which programs can promote youth thriving.*

*Keywords:* Youth development, youth development process, thriving, youth program context

## **Introduction**

Scholarly interest in the field of positive youth development (PYD) has burgeoned in the past 25 years, with considerable advancement in definition, theory, and practice. The prominent theory explaining the effect of youth program participation on PYD, Adaptive Developmental Regulations theory (ADR) (Brandstadter, 1998; Lerner, Lerner, von Eye, Bowers, & Lewin-Bizan, 2011), emphasizes the interaction of a young person with their contexts, which is bi-directional and mutually beneficial to the young person and the context (Lerner, Lerner, Bowers, & Geldof, 2015). The most prominent model of PYD based on ADR is the 5Cs model of youth development. This model predicts that youth participation in PYD programs that offer meaningful leadership opportunities, positive and sustained relationships between youth and adults, and activities that build critical life skills, leads to the 5C developmental outcomes:

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Direct correspondence to Mary E. Arnold at [mary.arnold@oregonstate.edu](mailto:mary.arnold@oregonstate.edu)

Caring, Character, Connection, Confidence and Competence (Lerner & Lerner, 2013). The 5Cs, in turn, lead to an important sixth “C,” Contribution, a critical long-term outcome of PYD programs (Lerner, Dowling, & Anderson, 2003). One of the key strengths of the 5C model is that it was developed and tested on a large, diverse sample of youth over eight waves of data that have been analyzed using advanced and rigorous statistical techniques (Lerner & Lerner, 2013). The model is widespread throughout the PYD literature and forms the most relevant framework for how many PYD programs are described.

Despite the strong support for the 5Cs, little further examination has occurred to investigate additional aspects of the PYD process at a deeper level. This is particularly true for research seeking to advance understanding of youth programs as rich contexts for the process of youth development, and the role program contexts play in promoting PYD (Roth & Brooks-Gunn, 2016). Further, there has been little investigation into the developmental processes that may mediate the effects of youth programs on developmental outcomes. Put differently, there are opportunities for understanding what transpires in youth as a result of program participation that leads to the achievement of developmental outcomes. This study seeks to add to the understanding of PYD through an examination of the elements that may comprise effective developmental contexts for youth. Additionally, this study considers the developmental process of youth thriving as a mediator of the effect of youth programs on developmental outcomes.

### **Review of the Literature**

Adaptive developmental regulations theory (ADR) (Lerner et al., 2011) emphasizes the mutual positive interaction of a young person with his or her contexts, such as family, school, neighborhood and youth program settings, as the principal driver of PYD. PYD is what “occurs when an active, engaged, and competent person is fused with receptive, supportive, and nurturing ecologies” (Benson & Scales, 2009, p. 90). Developmental contexts lie at the heart of ADR theory (Lerner, 2016); however, despite the critical role context plays in promoting youth development, program settings and how they enact the program’s theory of action have received relatively little attention (Arnold, 2015, 2018; Arnold & Cater, 2016).

Reflecting this need, Roth and Brooks-Gunn (2016) proposed that the next critical step for the PYD field is to focus on advancing the theory and understanding of *how* programs provide developmental contexts for youth. As noted by Roth and Brooks-Gunn (2003), not all youth programs provide a high-quality developmental context, and yet, high-quality programs are the ones that have the greatest impact on youth thriving (Lerner et al., 2003).

The elements that make up a high-quality youth development program have been consistently considered by researchers since the positive youth development field gained momentum in the 1990s. Leading the way was Roth, Brooks-Gunn, Murray, and Foster (1998) through a synthesis and analysis of published youth development program evaluations. This initial work was followed by Roth and Brooks-Gunn’s (2003) identification of three qualities that define a

positive youth development program: (1) Having a goal of promoting positive youth development, (2) a positive program atmosphere that fosters hope and facilitates youth agency, and (3) activities that allow youth to explore their interests, build skills, and experience leadership. Other efforts contributed significantly to the articulation of youth program quality, including Eccles and Gootman (2002) who identified eight critical elements to ensure quality: (1) Physical and psychological safety, (2) appropriate structure, (3) supportive relationships, (4) opportunities to belong, (5) positive social norms, (6) support for efficacy and mattering, (7) opportunities for skill building, and (8) integration of family, school and community. In a report on PYD programs in the United States, Catalano, Berglund, Ryan, Lonczak, and Hawkins (2004) identified key program objectives discovered through a systematic analysis of published rigorous program evaluations including promoting bonding and social, emotional, cognitive, and behavioral competence; fostering resilience, self-determination, self-efficacy and spirituality; providing opportunities to development pro-socially, and recognition for positive behavior.

Because of this work, efforts to measure youth program quality emerged, resulting in numerous approaches and methods for assessing and improving youth program quality (Smith et al., 2012; Yohalem & Wilson-Ahlstrom, 2010; Yohalem, Wilson-Ahlstrom, Fischer, & Shinn, 2009). The result is an ever-increasing awareness that the context of youth programs is remarkably important, and programs must be “done” well if they are to be effective. Further research has illustrated additional ingredients that make up a high-quality youth development program, including the facilitation of youth sparks (Benson & Scales, 2009), and the presence of developmental relationships (Li & Julian, 2012; Pekel et al., 2018; Search Institute 2014a).

### **Youth Sparks**

Youth sparks are an essential ingredient of youth development (Scales, Benson, & Roehlkepartain, 2011). A spark is defined as a “passion for a self-identified interest or skill, or a capacity that metaphorically lights a fire in an adolescent’s life, providing energy, joy, purpose, and direction” (p. 264). Having a spark gives a young person a sense of direction and encourages goal setting (Benson & Scales, 2011). A spark is different from a mere leisure activity in that: (1) Sparks create actions that not only contribute to the benefit of the young person, but also society writ large; (2) sparks provide the intrinsic fuel for a young person’s growth in knowledge and skill; and (3) sparks create network capital for a young person as he or she encounters others with similar sparks, and adults with expertise who can facilitate learning and opportunities for engagement (Benson & Scales, 2009).

Furthermore, sparks appear to be a protective factor for a youth keeping them out of trouble because of their intense focus on the source of their sparks, motivating them to succeed in other areas of their lives, such as personal, social, and academic contexts (Benson & Scales, 2011). When youth are encompassed by positive contexts, they are empowered to develop their sparks and to use them to enhance a common good (Scales et al., 2011). Such contexts provide

supportive opportunities for youth to grow and develop their sparks and provide youth encouragement to overcome obstacles.

### **Developmental Relationships**

An additional aspect of developmental context considered in the current study is the presence of developmental relationships for youth participants (Li & Julian, 2012; Pekel et al., 2018; Search Institute, 2014a). The importance of positive relationships in human development is rooted in the socio-ecological theory of Bronfenbrenner's (1979) developmental dyad and is a key ecological aspect of human development (Bronfenbrenner & Morris, 1998). Developmental relationships are mutually secure attachments and interactions between youth and adults that increase in complexity and gradually shift power to youth over time (i.e., the youth; Li & Julian, 2012). Developmental relationships support youth through the expression of care, expansion of possibilities, provision of support, challenging growth, and sharing of power (Search Institute, 2014a). According to Li and Julian (2012), these developmental relationships are a key metric by which to measure the quality of youth intervention programs.

Roth and Brooks-Gunn (2016) emphasize that establishing and measuring the quality of a program's developmental context is critical to understanding how programs make a difference in the lives of youth. As such, we propose combining the elements of youth sparks, developmental relationships, and program quality to define the developmental context for youth programs (Arnold, 2018).

### **Connecting Context to Program Outcomes: Thriving as a Developmental Process**

A key to connecting program context and outcomes lies in the developmental nature of program activities. Youth programs typically focus on the development of skills, attitudes, and positive behaviors. Implicit in these activities is the understanding that development takes place over time. As youth continue to participate in programs throughout childhood and adolescence, the nature of the program activities change, which offers increasing challenges and developmentally-responsive opportunities for learning (Jones & Duetsch, 2012). As such, activities within youth programs are inherently developmental and progressive, designed to consistently enhance positive change in youth.

We propose that the bridge between program context and outcomes lies in youth thriving, a concept found throughout the PYD literature (Arnold, 2018; Benson & Scales, 2009, 2011; Lerner et al., 2003; Lerner et al., 2011; Theokas et al., 2005). The Search Institute (2014b) identified six indicators of adolescent thriving:

- **Openness to challenge and discovery.** The young person has the desire and ability to explore and try new things and challenges *and possesses a growth mindset that supports effort in learning over innate ability.*

- **Hopeful purpose.** The young person has a sense of purpose and sees one's self as on the way to a happy and successful future.
- **Transcendent awareness.** The young person affirms the importance of a sacred or transcendent force and the role of faith or spirituality in shaping everyday thoughts and actions.
- **Pro-social orientation.** The young person sees helping others as a personal responsibility, and lives up to the values of respect, responsibility, honesty, and caring.
- **Positive emotionality.** The young person is positive and optimistic. *In addition, the young person is able to regulate his or her emotions in a positive manner.*
- **Intentional self-regulation.** The young person employs an effective balance of goal setting and pursuing strategies, including persevering, and making adjustments when goals are not attained. *In addition, the young person is able to make self-regulatory decisions that lead to better short-term and long-term success.*

Early research by Search Institute considered thriving as a binary status, something that a young person *has* or *does not have* (Benson & Scales, 2011). Status alone, however, gives little insight into how thriving youth may develop over time, let alone the processes by which thriving can manifest. Thus, researchers have turned to understanding thriving as a pathway or trajectory on the way to a positive future over time (Search Institute, 2014b). Consistent with ADR, adolescent thriving occurs from mutual, positive interactions between youth with their developmental contexts. At the heart of thriving is that a young person is animated and motivated intrinsically by his or her spark, or special sense of who he or she is as a person (Search Institute, 2014b).

Thriving as an orientation rather than a status becomes the “fuel for a developmental journey that helps young people reach status indicators” (Search Institute, 2014b, p. 4). Status indicators are the developmental outcomes of programs, such as the “5Cs” (Lerner & Lerner, 2013). Beyond the “5Cs,” other developmental outcomes salient to youth programs include academic motivation and success, reduction in risk behaviors, healthful choices, and elevated personal standards. Developmental outcomes, in turn, serve to predict a successful transition to adulthood, marked by quality health and well-being, economic stability, and civic engagement (Gambone, Klem, & Connell, 2002). In this manner, youth programs that are intentionally planned and conducted to provide a rich developmental context, with program activities that enhance thriving, lead to achievement of the program's developmental outcomes.

### **Developmental Outcomes**

As aforementioned, the “5Cs” model of youth development is arguably the most prevalent way in which positive youth development outcomes are articulated (Lerner & Lerner, 2013). As developmental outcomes, the “5Cs” encompass many domains, which makes their interpretation

and understanding by those outside the developmental science community difficult. Additionally, the “5Cs” are often elusive for stakeholders, program funders, and practitioners to grasp concretely. These concerns suggest the developmental outcomes must be defined more precisely in light of a program’s particular goals. Accordingly, the targeted developmental outcomes may vary from program to program based on the program’s specific developmental intentions. The model proposed and tested in this study was developed, to understand and predict the impact of the 4-H program on youth participants. The following developmental outcomes identified in the model were chosen based on their salience to the program and its stakeholders.

**Social competence.** Similar to Lerner (2007), this outcome refers to cognitive, social, emotional, and vocational competence. Unlike Lerner (2007), we do not include academic competence as part of social competence, but rather as a separate developmental outcome. Our definition emphasizes social competence due to the critical role that quality social interaction plays in adaptive developmental regulations. This approach is supported by prior research that indicates social competence is one of the most important factors in a successful transition to adulthood (Lippman et al., 2014).

**Personal standards.** This outcome captures a young person’s sense of right and wrong, and a personal commitment to make ethical and just choices. This definition is similar to Lerner’s (2007) “*character*” construct. However, the term “character” is ambiguous to teens, invoking concepts more akin to personality than moral or ethical.

**Connection.** This outcome reflects the importance of establishing and maintaining connections with other people – parents, friends, teachers, mentors, community members. These connections reflect the human need to have positive relationships with and the support of others for health and wellbeing (Lerner, 2007).

**Contribution.** Contribution reflects the young person’s ability and interest in giving back to others (Lerner, 2007). Although often described as an outcome of the “5Cs,” we include it as an indicator of PYD rather than a resultant factor, because of 4-H’s specific emphasis on service to others. Previous research has identified that youth participating in 4-H are significantly more likely to participate in service to others than youth who are not in 4-H (Lerner & Lerner, 2013).

**Positive academic attitudes.** This outcome is included in the model because of its particular salience as a marker of adolescent well-being. As Lerner (2007) points out, academic competence and success is a key factor in positive youth development. Lippman et al. (2014) distinguish the cognitive, emotional, and behavioral aspects of academic engagement and highlight the need for success in all three areas.

The two “Cs” that are not included as developmental outcomes in the proposed model are confidence and caring:

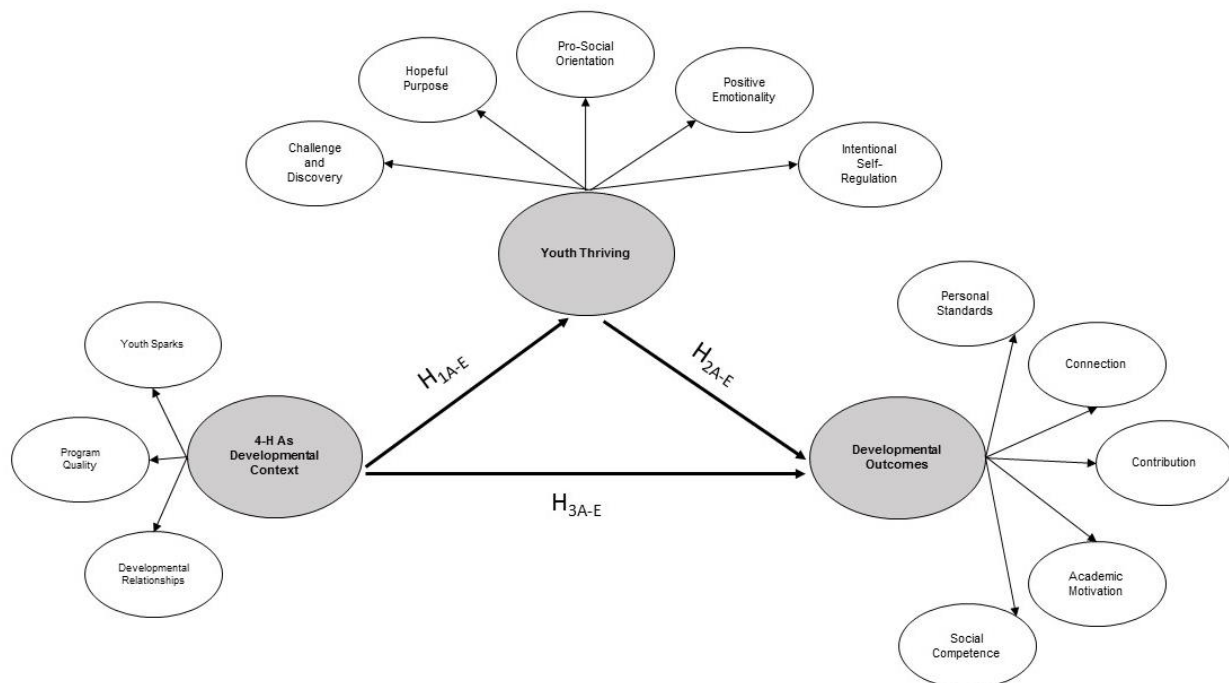
**Confidence.** As Lerner (2007) points out, a young person’s areas of confidence change over time. While the need for academic competence remains important across adolescence, younger youth need to develop physical and social confidence, while the developmental needs of older youth focus on intellectual, moral, romantic, and creative confidence. Because confidence is something that develops over time, as well as its multi-dimensionality, we did not include confidence as a developmental outcome, electing instead to shift evidence of increasing confidence to dimensions found within the thriving indicators.

**Caring.** This outcome refers to a young person’s ability to demonstrate empathy, sympathy, and other pro-social actions (Lerner, 2007). Because a pro-social orientation is a thriving indicator, we elected to omit caring from the list of developmental outcomes.

**Hypotheses**

The goal of this study is to examine the relationship between developmental contexts and the developmental outcomes of youth development programs, and to determine whether the developmental process of thriving mediates this relationship. This study will enhance our understanding of the key elements of developmental contexts (Roth & Brooks-Gunn, 2016) and thriving (Search Institute, 2014b), and the connection of the two with developmental outcomes of youth development programs. The results of this study have implications for youth development practitioners who seek to develop and implement effective youth development programs (Arnold, 2015). Figure 1 displays the hypotheses that guided this investigation.

*Figure 1. Hypothesized Model of Thriving as Mediating Developmental Context and Outcomes*



Our first two hypotheses are that developmental context will have a significant positive effect on youth thriving ( $H_{1A-E}$ ) and youth thriving will have a significant positive effect on youth developmental outcomes ( $H_{2A-E}$ ). In accounting for the potential mediational influence of youth thriving, our 3<sup>rd</sup> hypothesis ( $H_{3A-E}$ ) predicts a non-significant direct relationship between program context and developmental outcomes, thus confirming the mediating role of the developmental process of thriving in the achievement of youth program outcomes.

## Methods

### Participants

Participants in this study were 243 youth ages 14 ( $n = 162$ ) and 17 ( $n = 81$ ) participating in a statewide 4-H youth development program. These age groups were selected to sample both younger and older adolescents in this pilot study. Participants were recruited via an information letter to all 4-H youth in the targeted age groups ( $n = 1,672$ ), indicating a 14.53% response rate to the study questionnaire. The review letter provided information about the study and its purpose and asked parents to provide a link to the online survey if they granted permission for their child to participate in the study. Once provided with the link, youth completed the instrument online.

The sample was primarily female (69.4%) and was representative of the ethnic groups traditionally served by the statewide 4-H program. Specifically, the sample was 88.4% white; 2.8% Hispanic, Latino, or Spanish origin; 1.1% each Asian or American Indian/Alaska Native; 0.6% other; and 6.1% preferred not to answer. Furthermore, the demographics of responding youth matched those of the statewide 4-H program membership, including gender, race, ethnicity, and location by county.

### Preparative Data Analysis

Prior to testing the measurement model and exploring the study hypotheses, a power analysis was conducted with two independent variables predicting one dependent variable [i.e., (IV1) 4-Has Developmental Context and (IV2) Youth Thriving predicting (DV1) Developmental Outcomes]. This analysis suggested that a sample of 189 was sufficient to predict relationships at an  $R^2$  of .10 ( $\Lambda = 20.65$ ,  $\alpha = .05$ ,  $f^2 = .11$ ), thus indicating the study sample of 243 was sufficient for hypothesis testing (Cohen, Cohen, West, & Aiken, 2003). After the power analysis, the data were examined in SPSS 24 for outliers utilizing a combination of Mahalanobis distance and the chi-square difference function ( $p \leq .001$ ) in SPSS 24 (Field, 2013). This analysis suggested 5 respondents were contributing to non-normality in the data set and were removed from further analyses. The data were then transferred to EQS 6.3 for confirmatory factor analysis (CFA) and structural equation modeling (SEM) to test the measurement properties of the scale and to examine the study hypotheses. The data were examined for multivariate outliers, which indicated an additional eight respondents were contributing to



multivariate non-normality within the data set and were subsequently removed from further analyses (Byrne, 2006), leading to a sample of 230 respondents.

After power analysis and screening for outliers, the data were screened for missingness to determine if they were Missing Completely At Random (MCAR), or Missing Not At Random (MNAR) utilizing Little's test of MCAR ( $p \geq .001$ ) in EQS 6.3 software (Little, 1988). Descriptive tests indicated that complete information was available for 147 respondents (64.19% of total sample). The non-significant results of Little's test of MCAR [ $\chi^2(16,351) = 16810.311, p = .0058$ ] indicated that the data were MCAR. As such, a Full Information Maximum Likelihood (FIML) technique was utilized to simulate missing values within the analyses described below (Byrne, 2006).

## Instrument

The proposed 4-H Thriving Model was developed from a synthesis of prior research to comprise the three dimensions of interest presented in Figure 1: Developmental Contexts, Youth Thriving, and Developmental Outcomes. The proposed model consisted of differing levels of the factor (e.g., first-, second-, and third-order). The instrument items were matched to subfactors (i.e., first- or second-order) that reflected the three proposed model elements and were drawn from previously established instruments when such a match existed. A description of the items comprising the proposed dimensions and their origin is presented below.

**Factor one: developmental context.** The factors reflecting the overall developmental context factor were: (1) sparks, (2) program quality, and (3) developmental relationships, with 23 items within this overall factor. Sparks consisted of three items (e.g., 4-H gives me the opportunity to explore something I really care about) measured on a 5-point Likert scale (1 = *not true at all*, 5 = *very true*) with higher scores representing higher levels of youth sparks.

Program quality was measured by six items based on the characteristics of high quality youth programs identified by Eccles and Gootman (2002). Items assessing the youths' experience of program quality (e.g., I feel welcome in 4-H) were measured on a 5-point Likert scale (1 = *not true at all*, 5 = *very true*) with higher scores representing higher levels of program quality.

The developmental relationships factor consisted of 14 items and was adapted from descriptions proposed by the Search Institute (2014a). Specifically, items assessing the presence of developmental relationships (e.g., Adults in the 4-H program show an interest in me) were measured on a 5-point Likert scale (1 = *not true at all*, 5 = *very true*) with higher scores representing higher levels of developmental relationships. Because the items measuring developmental context were developed for the study, no prior psychometric data are available.

**Factor two: youth thriving.** As suggested by Benson and Scales (2009), any description of thriving is based on a set of moral and cultural values. Thus, finding a taxonomy for and

subsequent measurements of thriving may not be universal across settings. Since the purpose of this study was to measure youth thriving in the cultural setting of the 4-H program, the items chosen and developed to measure thriving in this study were based first on the definitions of the thriving indicators put forth by Search Institute (2014b) and adapted to measure additional aspects of the thriving indicators that are particularly salient to the 4-H program.

*Challenge and Discovery.* This 9-item, 3-factor construct was developed from two scales. In the first subscale, a modified version of the Personal Beliefs Survey (PBS; Dweck, 2006; Flores, 2006) was utilized, where both the 4-item Growth Mindset subscale (e.g., no matter how much intelligence you have, you can always change it a bit) and 4-item reverse coded Unlikely Growth subscale (e.g., you can do things differently, but the most important parts of you can't really be changed) were each reduced by one item. A 4-point Likert scale (1 = *strongly disagree*, 4 = *strongly agree*) was used with higher scores representing higher levels of growth mindset; however, there are no published psychometric data for this scale. An additional 3-item subscale was developed for the current study, Openness to Challenge, to determine a young person's willingness to try new things (e.g., I am not afraid of learning things, even if they seem hard). The three items were measured on a 4-point Likert scale (1 = *strongly disagree*, 4 = *strongly agree*) with higher scores representing higher levels of openness to challenge and discovery. Because these items were developed for the study, no prior psychometric data are available.

*Hopeful Purpose.* Items for this indicator came from the Adolescent Hope and Adolescent Purpose scales developed by Lippman et al. (2014). Three items make up the Adolescent Hope Scale that measured hope for the future (e.g., I expect good things to happen to me). An additional two items make up the Adolescent Purpose Scale that measured youths' sense of purpose (e.g., my life will make a difference in the world). Items for both scales were measured on a 5-point Likert scale (1 = *not at all like me*, 5 = *exactly like me*) with higher scores indicating greater levels of hope and purpose. Initial reliability for the Hope Scale has been established ( $\alpha = .82$ ). Initial reliability for the Purpose Scale is low ( $\alpha = .54$ ), but Lippman et al. (2014) noted that the supporting fit statistics were acceptable.

*Pro-Social Orientation.* Pro-social orientation was based upon a combination of two scales, the Adolescent Empathy scale (e.g., It is important to me to understand how other people feel) from Lippman et al. (2014;  $\alpha = .84$ ) and the Caring subscale (e.g., it is easy for me to consider the feelings of others) from the positive youth development inventory ( $\alpha = .92$ ; Arnold, Nott, & Meinhold, 2012). In total, five items were selected from the selected scales to avoid redundancy in phrasing. Items were measured on a 5-point Likert scale (1 = *not at all like me*, 5 = *exactly like me*) with higher scores indicating greater levels of empathy.

*Positive Emotionality.* Developing positive emotions and learning to regulate emotions are key development tasks that become increasingly important in adolescence when emotions

often become more powerful. How youth handle increasingly powerful emotions has an impact on their positive development (Wang, Vujovic, Barrett, & Lerner, 2015). A related aspect of emotional regulation for youth is the need to develop emotional autonomy, which is the ability to make choices independently of others. Emotional regulation is a sign of secure ego identity development (Noom, Dekovic, & Meeus, 2001). As such, a modified version of the Emotional Regulation Questionnaire (Gross & John, 2003) was used to measure emotional regulation and expression (e.g., when I want to feel more positive emotion, I change the way I am thinking about the situation). The four items were measured on a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*) with higher scores indicating greater levels of emotional regulation. Modest test-retest reliability for this scale has been previously established ( $\alpha = .69$ ).

*Intentional Self-Regulation.* Intentional self-regulation focuses on goal setting, achievement, and the adaptive choices and behaviors that youth utilize for short and long-term success, reflecting the definitions of self-regulation proposed by Search Institute (2014a) and Weiner, Geldof, and Gestsdottir (2015). In the current study, the Adolescent Goal Orientation Scale (Lippman et al., 2014) was used to measure goal-related self-regulation. The modified scale consisted of two sets of items that measure *attitudes* (four items; e.g., I develop step-by-step plans to reach my goal) and *actions* (two items; e.g., how often do you make plans to reach your goals) related to setting goals. Attitudes were measured on a 5-point Likert scale (1 = *not at all like me*, 5 = *exactly like me*) with higher scores indicating greater levels of goal orientation. Actions were measured on a 5-point Likert scale (1 = *none of the time*, 5 = *all of the time*) with higher scores indicating greater levels of goal-related actions. Acceptable initial reliability for the goal orientation scale has been established in prior studies ( $\alpha = .88$ ).

**Factor three: developmental outcomes.** The measures of developmental outcomes were chosen based on salient outcomes for the selected 4-H program. These include study three outcomes selected from the 5Cs model (Lerner & Lerner, 2013): Character (which we refer to as Personal Standards), Connection, and Contribution. Additional developmental outcomes of academic motivation and social competence were also included.

*Personal Standards (Character).* In the current study, personal standards (i.e., character) were measured based upon eight items from the Personal Standards subscale of the Positive Youth Development Inventory (Arnold et al., 2012). This subscale measured youth attitudes and actions related to personal integrity and reliability (e.g., It is important for me to do the right thing). The items were measured on a 4-point Likert scale (1 = *strongly disagree*, 4 = *strongly agree*) with higher scores indicating greater levels of personal standards, past studies utilizing this subscale have indicated acceptable levels of internal reliability ( $\alpha = .91$ ).

*Connection.* Connection with others was measured utilizing an amended version (five items) of the Connection subscale of the Positive Youth Development Inventory (Arnold et al., 2012) that assesses youth connections with parents, friends, adults and community members

(e.g., I think it is important to be involved with other people). Specifically, items reflecting peer relationships were retained. Items within this measure were scored on a 4-point Likert scale (1 = *strongly disagree*, 4 = *strongly agree*) with higher scores indicating greater levels of connection; prior research utilizing the connection scale has illustrated acceptable internal reliability ( $\alpha = .86$ ).

*Contribution.* Contribution to others was measured using the 7-item Contribution subscale of the Positive Youth Development Inventory (Arnold et al., 2012). This scale measured youth attitudes and beliefs about giving back to others (e.g., I am someone who gives to benefit others). The items were measured on a 4-point Likert scale (1 = *strongly disagree*, 4 = *strongly agree*) with higher scores indicating greater levels of contribution. Sufficient internal consistency for this subscale has been established in prior research ( $\alpha = .91$ ).

*Positive Academic Attitude.* To measure academic engagement, a combination of two scales were utilized. Specifically, three items from the Educational Engagement Scale (Lippman et al., 2014) that measured youth attitudes about school and learning (e.g., I think the things I learn in school are useful). The items were measured on a 5-point Likert scale (1 = *strongly disagree*, 5 = *strongly agree*) with higher scores indicating more positive attitudes about school and learning. Prior studies utilizing this scale have indicated sufficient internal reliability ( $\alpha = .72$ ). Four additional items were adapted from the Cognitive School Engagement Scale (Li & Lerner, 2013) that further measured school engagement (e.g., I want to learn as much as I can at school). These items were measured on a 4-point Likert scale (1 = *strongly disagree*, 4 = *strongly agree*) with higher scores indicating higher academic engagement, as with the educational engagement scale adapted for this construct, the cognitive school engagement scale has also established acceptable levels of internal reliability in past studies ( $\alpha = .90$ ).

*Social Competence.* The 9-item Social Competence Scale (Lippman et al., 2014) was used to assess youth relations with other youth (e.g., I avoid making other kids look bad). The items were measured on a 5-point Likert scale (1 = *not at all like me*, 5 = *exactly like me*) with higher scores indicating higher levels of social competence. Sufficient initial reliability for the scale has been established in prior studies ( $\alpha = .79$ ).

The items described above were used to create the 4-H Thriving Model research instrument. Data collected using the instrument in this study were analyzed for the accuracy of the items to measure the components of the model, as well as the proposed meditational effect of youth thriving on developmental outcomes.

### Analysis

Investigating the questions posed in this study involved a two-step analysis: (1) Confirmatory factor analysis (CFA) of the measurement model, and (2) Structural equation modeling (SEM) of the proposed mediating effect of youth thriving on developmental outcomes.

## Measurement Analyses

Model fit, convergent validity, and discriminant validity of the 4-H Thriving scale were assessed utilizing a multi-phase confirmatory factor analysis (CFA) with a full information maximum likelihood (FIML) technique for the management and simulation of missing data. First, model fit was examined utilizing a combination of the model chi-square ( $\chi^2$ ), Comparative Fit Indices (CFI), Non-Normed Fit Indices (N-NFI), the Root Mean-Square Error of Approximation (RMSEA), and the LaGrange multiplier test. Both the CFI and N-NFI provide evidence of a model fit, where levels closer 1.00 indicate “better” model fit (i.e.,  $\geq .90$ ) (Fornell & Larcker, 1981). The RMSEA compares theorized (e.g., CFA) model parameters to the optimal levels as indicated by the data, where lower levels also (i.e.,  $\leq .06$ ) indicate better model fit (Byrne, 2006).

Second, convergent validity of the 4-H Thriving scale was assessed through an examination of the item-covariance matrices, factor loadings ( $\lambda$ ), and Cronbach’s Alpha ( $\alpha$ ). Individual factor loadings were assessed by exploring their levels relative to the other items also comprising the factor, where the strength of each item was considered ( $\lambda \geq .5$ ) as well as the level in comparison to other items. For instance, if an item indicated a factor score of .4 and other items in the same factor indicated levels of .5 to .6, then the item would typically be retained; conversely, if an item indicated a level of .4 where other items comprising the factor ranged .8 to .9, then the item would be typically dropped or respecified based upon alternative models evidenced in the covariance matrices (Brown, 2015). This approach helps to avoid arbitrary cutoff values often associated with scale development (e.g., retaining  $\lambda = .51$ , but rejecting  $\lambda = .49$ ; see also Lance, Butts, & Michels, 2006). Additionally, reliability (i.e., consistency) of the measures was assessed through Cronbach’s Alpha ( $\alpha$ ), where values above .7 generally indicate the items comprising a factor are reliably measuring the same construct (Schmitt, 1996).

Third, discriminant validity of the scale was determined utilizing between factor Pearson correlations and the square roots of Average Variance Extracted scores ( $\sqrt{AVE}$ ). Specifically, between factor correlations were examined for excessively high relationships (e.g.,  $r \leq .9$ ) as this can suggest factors are measuring identical constructs (i.e., collinearity, see also Kline, 2011). Additionally, to establish that variance accounted for by the factors comprising the scale were primarily due to those factors and not non-random error,  $\sqrt{AVE}$  values were examined relative to the between factor correlation levels, where  $\sqrt{AVE}$  levels should be higher than the between factor correlation levels (Fornell & Larcker, 1981; Kline, 2011).

## Multiphase Confirmatory Factor Analyses Results

As noted earlier, a multi-phase CFA was utilized in this study, where all items were specified to their corresponding factors, and when issues with model fit were identified, the model was respecified. Given the large number of items and factors theorized to be present within the 4-H Thriving scale, the three primary dimensions (see Figure 1) were first examined independently for measurement properties: (1) 4-H as developmental context, (2) youth thriving, and (3)

developmental outcomes and then as a full model (see Figure 2). Below, the outcomes of the three-dimension specific CFAs are described, and the corresponding results of the full model analyses are presented.

#### 4-H as Developmental Context

The first factor, 4-H as developmental context (4HDC) was hypothesized to consist of three factors: (1) sparks (three items), (2) program quality (six items), and (3) developmental relationships (fourteen items). The results of the first CFA suggested that adjustment of the model was necessary to achieve acceptable levels of model fit (see Table 2). Inspection of the covariance matrix indicated the developmental relationships factor might have multi-factor structure. Further examination of the item wording suggested that three first-order factors (expressing care, challenging growth, and sharing power) were likely present reflected by a higher-order development relationships factor. An alternative model was then examined reflecting the change in structure of the developmental relationships factor, which resulted in substantial improvement in model fit. However, the LaGrange Multiplier test indicated one item (i.e., *Adults in the 4-H program...are someone I can count on and trust*) from the developmental relationships factor shared a significant proportion of error variance with several items across other items within the developmental relationships factors and was thus dropped from further analyses. A final CFA was conducted, which indicated no additional meaningful problems with the 4-H as Developmental Context (4HDC) model (presented in Table 1).

**Table 1. Multi-Phase CFA Model Fit Indices**

Model	DF	$\chi^2$	N-NFI	CFI	RMSEA (90% CI)
4HDC Preliminary	230	898.534*	.820	.836	.110 (.102 - .118)
4HDC Final	206	519.503*	.908	.918	.079 (.070 - .088)
Youth Thriving Preliminary	342	692.117*	.864	.877	.064 (.056 - .071)
Youth Thriving Final	223	457.128*	.892	.905	.065 (.056 - .074)
Developmental Outcomes Preliminary	247	826.355*	.812	.832	.077 (.068 - .085)
Developmental Outcomes Final	184	502.078*	.879	.894	.064 (.054 - .074)
Preliminary 4-H Thriving Scale	2,059	3,031.035*	.960	.962	.025 (.019 - .029)
Final 4-H Thriving Scale	1,871	2,787.467*	.951	.953	.028 (.023 - .033)

\* indicates significant at a  $p \leq .001$  level

#### Youth Thriving

The second dimension of the proposed model, youth thriving, was hypothesized to consist of five factors and 29 items: (1) hopeful purpose (five items), (2) pro-social orientation (five items), (3) positive emotionality (four items), and (4) intentional self-regulation (six items). The youth thriving dimension also included a second-order factor, challenge and discovery, which consisted of three first-order factors: (1) growth mindset (three items), (2) unlikely growth (three items), and (3) openness to challenge (three items). The results of the first CFA suggested promising fit

but also indicated problems at the item level. Specifically, a first-order factor, unlikely growth, indicated a non-significant path ( $p \geq .05$ ) to its respective second-order factor, challenge and discovery. As the three items comprising unlikely growth were reverse-coded, the model was respecified with the unlikely growth factor independent of the second-order challenge and discovery factor. Similar model fit issues with the two other reverse-coded items were noted, with one item each in the hopeful purpose (i.e., my life has no meaning) and positive emotionality (i.e., When I am feeling negative emotions, I make sure not to express them) factors having substantially poorer fit relative to the other items (i.e., those not reverse-coded) within their respective factors. Thus, the two poor performing items were dropped from the analyses.

Further inspection of the covariance matrices indicated that one item from the intentional self-regulation subscale (i.e., How often do you have trouble figuring out how to make your goals happen) was also harming model fit. As such, a CFA was conducted with the altered challenge and discovery factors. However, this modification resulted in a further reduction in the quality of model fit; in both instances, the model fit was still unacceptable. Resultantly, the unlikely growth factor was removed entirely from the model. The removal of this factor and the other poor performing items led to a substantive increase in overall model fit, as noted in Table 1, and a 5-factor, 23-item measure.

### **Developmental Outcomes**

The developmental outcomes dimension of the 4-H Thriving scale was hypothesized to consist of five factors: (1) academic motivation (seven items), (2) social competency (nine items), (3) personal responsibility (eight items), (4) connection (five items), and (5) contribution (seven items). Examination of the results of the preliminary CFA indicated one respondent was contributing to multivariate kurtosis. As such, they were removed from further analyses. After the adjustment for this outlier (new sample  $N = 229$ ), the CFA was rerun; the results of which suggested relatively poor fit indices. Specifically, inspection of the rerun CFA covariance matrices, LaGrange multiplier tests, and individual factor loadings indicated one item from the positive academic attitudes factor (i.e., If something interests me I try and learn something more about it), four items from the social competence factor [i.e., (1) I avoid making other kids look bad, (2) If two of my friends are fighting, I find a way to work things out, (3) When I work in school groups I do my fair share, and (4) can you discuss a problem with a friend without making things worse], four items from the personal standards factor [i.e., (1) I try to do the right thing, even when I know that no one will know if I do or not, (2) If I promise to do something I can be counted on to do it, (3) I am able to behave appropriately in most settings, and (4) I have people in my life whom I look up to and admire], two items from the connection factor [i.e., (1) I have a wide circle of friends and (2) My friends care about me], as were two items from the contribution factor [i.e., (1) I take an active role in my community and (2) I am someone who gives benefit to others]. Additional inspection of the LaGrange multiplier test did not suggest respecification of these items would positively influence the model fit indices. Consequently,

they were removed from the model. The results of the final CFA of the developmental outcomes dimension presented in Table 1 suggested significant improvements in model fit with the removal of the poor performing items.

### Final 4-H Thriving CFA

After the three subdimensions [(1) 4-H as Developmental Context, (2) Youth Thriving, and (3) Developmental Outcomes] of the 4-H Thriving scale indicated acceptable levels of fit, they were combined into one measurement model. As evidenced in Table 1, the results of the preliminary model indicated acceptable levels of fit. However, examination of the covariance matrices in combination with the results of the LaGrange multiplier tests indicated the path from the higher-order developmental outcomes factor to the contribution factor was negatively influencing overall model fit. Respecification of the 5-item contribution factor as independent but correlated from the three primary dimensions harmed both model parsimony and fit indices. Further, the contribution factor contained reverse-coded items, demonstrating similar measurement issues to the reverse-coded items removed in earlier phases of the measurement model; correspondingly, the contribution factor was removed from the final CFA model. Inspection of the respecified model covariance matrices, factor loadings, and LaGrange multiplier results did not indicate additional seriously problematic parameters within the final model.

Support for the convergent validity of the scale is provided in Table 2 in the form of Average Variance Extracted (AVE) scores, factor loadings ( $\lambda$ ), and Cronbach's Alpha. All factors exhibited acceptable AVE values (e.g.,  $AVE \leq .5$ ) with the exception of the first-order social competence factor ( $AVE = .402$ ) and the second-order challenge and discovery factor ( $AVE = .470$ ). However, examination of the factor loadings comprising these and all other factors did not indicate meaningful issues with item loadings (e.g.,  $\lambda \leq .5$ ); furthermore, inspection of the Cronbach's alphas for all first-, second-, and third-order factors did not indicate the need for modification of any factors as all levels were greater than .7. In aggregate, this information provides preliminary evidence for the convergent validity of the 4-H Thriving scale.

**Table 2. Final Confirmatory Factor Analysis Results**

<i>Factor/Item</i>	<i>M (SD)</i>	$\lambda$	$\alpha$	<i>AVE</i>
<b>4-H as a Developmental Context (Blended 2<sup>nd</sup> and 3<sup>rd</sup> Order Factor)</b>			<b>.950</b>	<b>.803</b>
F1* Sparks	-	.794		
F6* Developmental Relationships	-	.984		
F2* Youth Belonging	-	.901		
<i>Sparks*</i>			.800	.571
4-H gives me the opportunity to explore something I really care about	4.585 (.568)	.728		
I am passionate about the things I do in 4-H	4.559 (.601)	.775		
I want to learn all I can about the topic of my 4-H program	4.471 (.641)	.763		



<b>Factor/Item</b>	<b>M (SD)</b>	<b><math>\lambda</math></b>	<b><math>\alpha</math></b>	<b>AVE</b>
<b><i>Developmental Relationships**</i></b>			<b>.955</b>	<b>.878</b>
Expresses Care	-	.948		
Challenges Growth	-	.928		
Shares Power	-	.935		
<b><i>Express Care*</i></b>			<b>.922</b>	<b>.798</b>
Pays attention to me	4.443 (.647)	.848		
Likes me	4.479 (.676)	.830		
Invests time in me	4.473 (.751)	.930		
Shows an interest in me	4.435 (.743)	.959		
<b><i>Challenge Growth*</i></b>			<b>.939</b>	<b>.755</b>
Helps me see future possibilities for myself	4.428 (.789)	.894		
Expects me to do something positive with my future	4.574 (.730)	.873		
Stretches me and pushes me in new ways	4.513 (.739)	.868		
Holds me accountable	4.538 (.669)	.829		
Helps me work through barriers to achieve my goals	4.450 (.785)	.878		
<b><i>Share Power*</i></b>			<b>.959</b>	<b>.853</b>
Listens to my ideas	4.390 (.762)	.896		
Treats me fairly	4.513 (.727)	.916		
Takes me seriously	4.486 (.775)	.951		
Respects me	4.589 (.656)	.931		
<b><i>Program Quality*</i></b>			<b>.885</b>	<b>.565</b>
I feel welcome in 4-H	4.568 (.698)	.780		
I feel safe in 4-H	4.706 (.528)	.750		
I feel supported by adults in 4-H	4.618 (.595)	.706		
I feel supported by other kids in 4-H	4.328 (.795)	.796		
4-H has rules that all kids are expected to follow	4.613 (.692)	.625		
I feel like I matter in 4-H	4.413 (.797)	.834		
<b><i>Youth Thriving (Blended 2<sup>nd</sup> and 3<sup>rd</sup> Order Factor)</i></b>			<b>.894</b>	<b>.635</b>
Hopeful Purpose*	-	.822		
Prosocial Orientation*	-	.723		
Positive Emotionality*	-	.571		
Intentional Self-Regulation*	-	.821		
Challenge and Discovery**	-	.989		
<b><i>Challenge and Discovery**</i></b>			<b>.634</b>	<b>.470</b>
Growth Mindset*	-	.570		
Openness to Challenge*	-	.784		
<b><i>Hopeful Purpose*</i></b>			<b>.848</b>	<b>.583</b>
I am excited about my future	4.333 (.857)	.819		
I trust my future will turn out well	4.083 (.892)	.767		
My life will make a difference in the world	3.819 (1.060)	.725		
I am doing things now that will help me achieve my purpose in the world	4.165 (.882)	.740		

<b>Factor/Item</b>	<b>M (SD)</b>	<b><math>\lambda</math></b>	<b><math>\alpha</math></b>	<b>AVE</b>
<i>Pro-Social Orientation*</i>			.843	.519
It is important to me to understand how other people feel	4.401 (.772)	.751		
I am happy when others succeed	4.464 (.700)	.746		
I care about how my decisions affect other people	3.416 (.549)	.696		
I can be counted on to help if someone needs me	3.588 (.521)	.706		
I care about the feelings of my friends	3.711 (.464)	.700		
<i>Positive Emotionality*</i>			.842	.641
When I want to feel more positive emotion, I change the way I am thinking about the situation	4.633 (1.302)	.821		
I control my emotions by changing the way I think about the situation I am in	4.425 (.308)	.851		
When I want to feel less negative emotions, I change the way I am thinking about the situation	4.485 (1.289)	.725		
<i>Intentional Self-Regulation*</i>			.882	.599
I develop step-by-step plans to reach my goal	3.415 (1.072)	.752		
If I set goals, I take action to reach them	3.930 (.917)	.830		
It is important to me that I reach my goals	4.358 (.788)	.767		
I know how to make my plans happen	3.879 (.929)	.789		
How often do you make plans to achieve your goals	3.592 (.991)	.729		
<i>Growth Mindset*</i>			.752	.504
No matter how much intelligence you have, you can always change it quite a bit	3.187 (.612)	.768		
No matter what kind of person you are, you can always change substantially	3.072 (.682)	.621		
You can always substantially change how intelligent you are	3.067 (.719)	.733		
<i>Openness to Challenge*</i>			.764	.519
I like to try new things	3.419 (.572)	.730		
I am not afraid of learning things, even if they seem hard	3.285 (.624)	.729		
I like to try new things, even if I am not very good at them at first	3.161 (.598)	.702		
<b>Developmental Outcomes (2<sup>nd</sup> Order Factor)</b>			<b>.864</b>	<b>.614</b>
Positive Academic Attitude*	-	.792		
Social Competence*	-	.706		
Connection*	-	.812		
Personal Standards*	-	.819		
<i>Positive Academic Attitude*</i>			.885	.562
I think the things I learn in school are useful	3.743 (1.047)	.685		
Being a student is one of the most important parts of who I am	3.642 (1.092)	.757		
I want to learn as much as I can at school	3.401 (.706)	.821		
I think it is important to earn good grades	3.715 (.498)	.730		
I think a lot about how to do well in school	3.429 (.779)	.774		
School is very important for later success	3.625 (.640)	.722		

<b>Factor/Item</b>	<b>M (SD)</b>	<b><math>\lambda</math></b>	<b><math>\alpha</math></b>	<b>AVE</b>
<i>Social Competence*</i>			.768	.402
Do you get along well with people of different races, cultures, and religions	4.779 (.478)	.524		
Do you listen to other student's ideas	4.588 (.586)	.717		
Do you control your anger when you have a disagreement with a friend	4.296 (.797)	.663		
Do you follow the rules when you are at a park, theater, or sports event	4.616 (.581)	.561		
Do you respect other points of view, even if you disagree	4.411 (.641)	.682		
<i>Connection*</i>			.757	.511
I think it is important to be involved with other people	3.528 (.633)	.782		
Having friends is important to me	3.705 (.560)	.636		
I feel connected to others in my community	3.275 (.785)	.719		
<i>Personal Responsibility*</i>			.850	.588
It is important for me to do the right thing	3.812 (.391)	.636		
I think it is important for me to be a role model for others	3.681 (.546)	.768		
It is important for me to do my best	3.818 (.415)	.841		
It is important that others can count on me	3.755 (.469)	.806		

Note: \* indicates 1<sup>st</sup> Order Factor; \*\* indicates 2<sup>nd</sup> Order Factor;  $\lambda$  indicates factor loading;  $\alpha$  indicates Cronbach's Alpha; AVE: Average Variance Extracted. Within 2<sup>nd</sup> and 3<sup>rd</sup> order factors, 1<sup>st</sup> and 2<sup>nd</sup> order factors act as "items."

Similar promising evidence of the discriminant validity of the scale is presented in Table 3, where all  $\sqrt{\text{AVE}}$  values are greater than the between factor correlations. Additional support for discriminant validity is suggested due to the lack of unusually high between factor correlations (e.g.,  $r \geq .9$ ). In summary, the evidence of acceptable model fit, convergent validity, and discriminant validity provides promising, albeit preliminary, evidence for the scale as a measure of 4-H as a developmental context, youth thriving, and developmental outcomes.

**Table 3. Between Factor Correlations**

<b>Factor</b>	<b>F1</b>	<b>F2</b>	<b>F3</b>
<b>F1. Developmental Context</b>	<b>.783</b>		
<b>F2. Youth Thriving</b>	.686*	<b>.796</b>	
<b>F3. Developmental Outcomes</b>	.506*	.781*	<b>.896</b>

Note: \* indicates  $p \leq .001$ ; **Bolded Text** =  $\sqrt{\text{AVE}}$

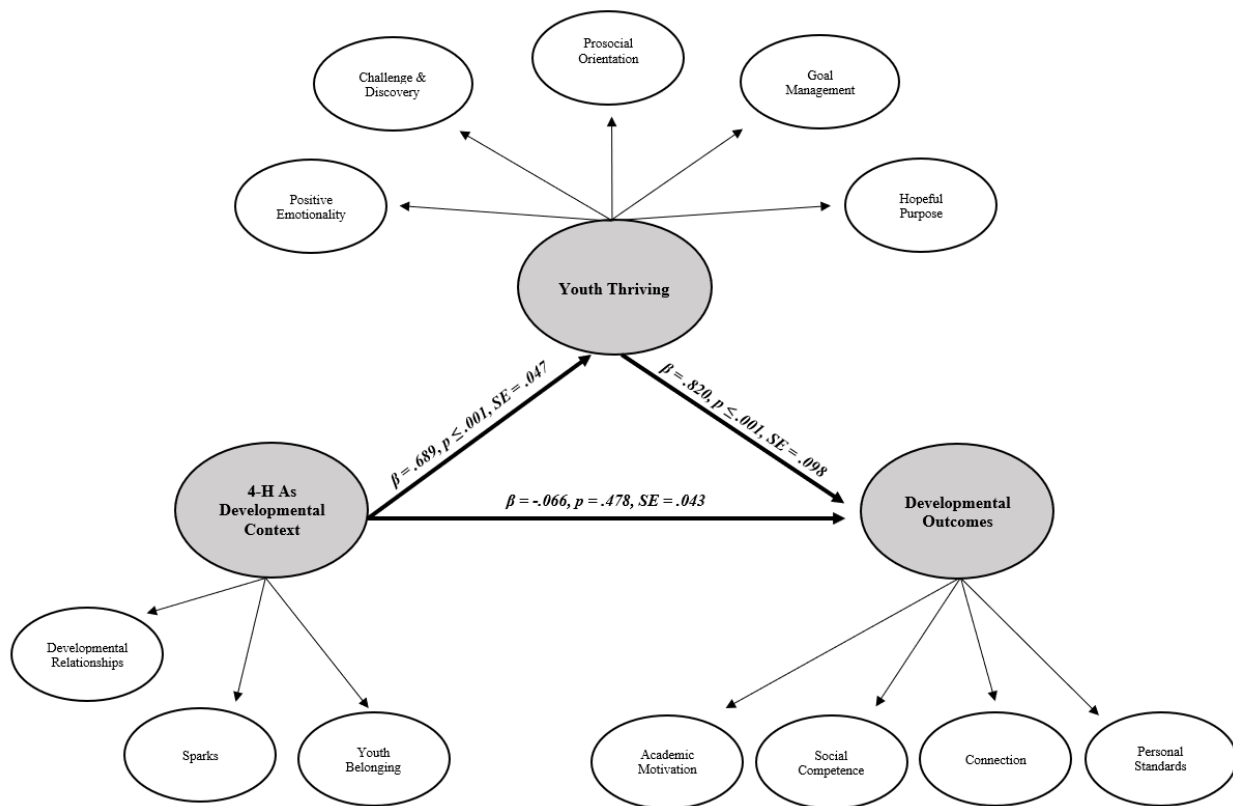
### Results of Mediation Analyses

After the preliminary validity of the 4-H Thriving measure was established through the multiphase CFA, the proposed mediational model was examined (see Figure 1) through a structural equation model (SEM). The final model indicated acceptable levels of fit: [ $\chi^2(1,870) = 2786.638, p \leq .001, \text{N-NFI} = .951, \text{CFI} = .953, \text{RMSEA} = .028 (90\%, \text{CI } .023 - .033)$ ]. Next, the study hypotheses were explored, that youth thriving would mediate the effect of 4-H as a

developmental context on developmental outcomes. Results indicated that 4-H as developmental context was a significant predictor of youth thriving ( $\beta = .689, p \leq .001, SE = .047$ ), and youth thriving was a significant predictor of developmental outcomes. ( $\beta = .820, p \leq .001, SE = .098$ ). Additionally, the direct results (no mediator in model) indicated that 4-H as a developmental context was a significant predictor of developmental outcomes ( $\beta = .632, p \leq .001, SE = .048$ ).

However, when youth thriving (the mediator) was introduced, 4-H as a developmental context was no longer a significant predictor of developmental outcomes ( $\beta = -.066, p = .478, SE = .048$ ) indicating consistency with full mediation (see Figure 2 for final model). Finally, the indirect effect of 4-H as a developmental context through youth thriving to developmental outcomes was calculated utilizing the Sobel test. The results of this analysis indicated the indirect effect was significant ( $\beta = .564, p \leq .001, SE = .077, z = 7.266$ ), and 4-H as a developmental context was associated with approximately .56 points higher developmental outcomes scores as mediated by youth thriving.

**Figure 2. Final Mediation Model**



*Note:* Error terms, covaried error terms, and constant are excluded for parsimony of presentation. Growth mindset and openness to challenge (subdimensions of challenge and discovery) are covaried due to evidence of shared variance.

## Discussion

This paper proposes a model for the 4-H youth development program that elucidates the connection between participation in a high-quality program that provides a nourishing developmental context and the program's developmental outcomes more clearly. Specifically, the model puts forth youth thriving as a mediating variable between the context of the 4-H program and subsequent developmental outcomes. Including thriving as a mediating variable in this model advances our understanding of the processes through which the 4-H program impacts youth, with resultant implications for program and professional development. For instance, this could include placing an increased focus on program quality to ensure that programs provide an enriching developmental context for youth (Arnold & Cater, 2016), and designing program activities to promote youth thriving.

The primary reason for proposing this model for the 4-H program is to respond to the need to provide greater specificity regarding the processes through which 4-H youth development programs achieve outcomes (Arnold, 2015, 2018; Arnold & Silliman, 2017; Heck & Subramanian, 2009), which is also a pressing need of youth development programs in general (Roth & Brooks-Gunn, 2016). Previous models and frameworks utilized in the 4-H system fall short of a clear articulation of these processes (Arnold & Silliman, 2017), resulting in the lack of clear program theory of action (Arnold, 2015). By focusing on the processes through which PYD is promoted in 4-H programs, the purpose of program activities can be more clearly defined and thus implemented with greater intention.

### A Preliminary Model

While the results of this study are promising and provide, to our knowledge, one of the first examinations of the process of youth development through youth program participation, the model should be viewed as preliminary for several reasons. Most prominently is the limited and homogenous sample of youth who participated in the study. While the participants are reflective of the overall 4-H program for which the model was developed, and the support for the study's hypotheses was confirmed, this study should be viewed as a positive pilot investigation.

### Defining a Developmental Context

The study supported the proposed combination of youth sparks, program quality, and developmental relations as elements of a developmental context that influences youth thriving. The CFA revealed two aspects of the developmental context that are important to highlight. First is the program quality element that considered all eight principles identified by Eccles and Gootman (2002). The four items that remained in the model as a result of the CFA all related to youth belonging (e.g., I feel welcome, safe, supported, and like I matter). This result confirmed, again, that youth belonging is one of the most critical elements of an effective developmental context. The second aspect is in the area of developmental relationships, which was measured

by 22 items reflecting the five elements identified by the Search Institute (2014a). However, the CFA results in this study supported only three of the five elements: expressing care, challenging growth, and sharing power. The three elements supported in this study align with developmental relationship qualities in the context of youth programs (Bowers, Johnson, Warren, Tirrell, & Lerner, 2015; Li & Julian, 2013). The first quality is a secure attachment between the young person and adult volunteer reflected in mutual warmth, respect, and trust (expressing care). Second, the relationship is bi-directional, with the youth and adult engaging together, with each gaining from the relationship (challenging growth). Third, developmental relationships increase in complexity over time (sharing power). As illustrated through ongoing research in the area of developmental relationships, programs should place a special emphasis on creating and sustaining these critical qualities of youth-adult relationships in programs (Pekel et al., 2018).

An additional important aspect of the context of youth programs is youth engagement, an oft-elusive point of definition and measurement. There is scant evidence to support that program participation alone leads to developmental outcomes (Roth, Malone, & Brooks-Gunn, 2010). Indeed, Roth et al. (2010) concluded that participation is just one aspect of multiple influences that affect achievement of developmental outcomes. Chaput, Little, and Weiss (2004) outline three dimensions of youth program participation that are more fully reflective of youth engagement: (1) intensity, or the amount of time a youth spends engaged with a program; (2) duration, which reflects the history of attendance, such as the number of years in a program; and (3) breadth, which reflects the variety of activities and opportunities in which a youth participates while in the program. Taken together, measures of intensity, duration, and breadth provide a more nuanced and meaningful way to assess youth engagement in a program. While there may not be a universal formula for assessing youth engagement, attention must be paid to differentiating those youth who have the greatest engagement based on intensity, duration, and breadth, from those who do not. A measure of youth engagement based on intensity, duration and breadth should be included in further testing of the 4-H Thriving Model.

### **Thriving and Transcendent Awareness**

Transcendent awareness is a sixth indicator of youth thriving (Search Institute, 2014b) that was not measured in this study. This indicator is defined as a young person's affirmation of a sacred or transcendent force, faith, or spirituality that shapes everyday thoughts and actions. Operationalizing this definition proved challenging because of its multiple latent qualities (e.g., religious or spiritual orientation, ethical decision making, moral development), and we did not feel that we had a clear enough definition of the construct to propose measurement for this study. While usually understated in descriptions of PYD, spiritual development is often implicitly or explicitly part of many programs (Catalano et al., 2002). Furthermore, the nature of spiritual development and its role in thriving, positive youth development, and identity formation represents a significant new thrust in the adolescent development literature (Benson & Roehlkepartain, 2008; Benson, Roehlkepartain, & Rude, 2003; Warren, Lerner, & Phelps, 2012).

As such, further testing of the 4-H Thriving Model should include a measure of transcendent awareness.

### Conclusion

This study examined the relationship between the developmental contexts of youth programs and resultant developmental outcomes and explored whether the developmental process of thriving mediates this relationship. Sufficient model fit, convergent validity, and discriminant validity of the 4-H Thriving scale were determined utilizing a multi-phase CFA. As hypothesized, the SEM revealed a full mediational effect of youth thriving on developmental outcomes. The study also contributes to the call for greater understanding of the processes through which youth programs influence developmental outcomes (Roth & Brooks-Gunn, 2016) and elucidated nuanced dimensions of program quality and developmental relationships that should be considered in future explorations of youth program developmental contexts.

While the results of this study are positive; the pilot was based on a limited sample. Additional testing of the model on a larger, more diverse and inclusive sample, including youth from multiple geographic areas is necessary to ensure broad generalizability of the model's accuracy and relevance. Further, the sample ( $N = 229$ ) was relatively small given the large number of parameters within the current study. While the power analysis indicated this was sufficient for the current study, it was based upon a very simple version of the model (e.g., only two IVs and one DV). Investigations and simulations of power analyses for studies utilizing latent techniques such as SEM are proposed as "simply beyond the computational stamina of many SEM investigators to implement as a routine method" (Barrett, 2007, p. 821). However, simulation and applied work by Little (2013) exploring sample sizes within SEM suggest samples of 100 are generally sufficient, and "more" is almost always better.

Despite their preliminary nature, results of the current study provide strong guidance and support for further investigations into the processes through which the desired goals of youth development programs are achieved.

### References

- Arnold, M. E. (2015). Connecting the dots: Improving Extension program planning with program umbrella models. *Journal of Human Sciences and Extension*, 3(2) 48–67. Retrieved from <https://www.jhseonline.com/article/view/685/589>
- Arnold, M. E. (2018). From context to outcomes: A thriving model for 4-H youth development programs. *Journal of Human Sciences and Extension*, 6(1), 141–160. Retrieved from <https://www.jhseonline.com/article/view/653/564>
- Arnold, M. E., & Cater, M. (2016). Program theory and quality matter: Changing the course of Extension program evaluation. *Journal of Extension* 54(1), Article 1FEA1. Retrieved from <http://www.joe.org/joe/2016february/a1.php>

- Arnold, M. E., & Silliman, B., (2017). From theory to practice: A critical review of positive youth development program frameworks. *Journal of Youth Development, 12*(2), 1–20. doi:10.5195/JYD.2017.17
- Arnold, M. E., Nott, B. D., & Meinhold, J. L. (2012). *The Positive Youth Development Inventory (PYDI)*. Corvallis, OR: Oregon State University 4-H Youth Development Program.
- Barrett, P. (2007). Structural equation modelling: Adjudging model fit. *Personality and Individual Differences, 42*(5), 815–824. doi:10.1016/j.paid.2006.09.018
- Benson, P. L., & Roehlkepartain, E. C. (2008). Spiritual development: A missing priority in youth development. *New Directions for Youth Development, 2008*(118), 13–28. doi:10.1002/yd.253
- Benson, P. L., Roehlkepartain, E. C., & Rude, S. P. (2003). Spiritual development in childhood and adolescence: Toward a field of inquiry. *Applied Developmental Science, 7*(3), 205–213. doi:10.1207/S1532480XADS0703\_12
- Benson, P. L., & Scales, P. C. (2009). The definition and preliminary measurement of thriving in adolescence. *The Journal of Positive Psychology, 4*(1), 85–104. doi:10.1080/17439760802399240
- Benson, P. L., & Scales, P. C. (2011). Thriving and sparks. In R. J. R. Leveque (Ed.), *Encyclopedia of Adolescence* (pp. 2963–2976). New York, NY: Springer.
- Bowers, E. P., Johnson, S. K., Warren, D. J. A., Tirrell, J. M., & Lerner, J. (2015). Youth-adult relationships and positive youth development. In E. P. Bowers, G. J. Geldof, S. K. Johnson, L. J. Hilliard, R. M. Hershberg, J. V. Lerner, & R. M. Lerner (Eds.), *Promoting positive youth development: Lessons from the 4-H study* (pp. 97-120). New York, NY: Springer.
- Brandstadter, J. (1998). Action perspectives on human development. In W. Damon & R. M. Lerner (Eds.), *Handbook of child psychology: Theoretical models of human development* (5<sup>th</sup> ed., Vol. 1, pp. 807–863). New York, NY: Wiley.
- Bronfrenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Cambridge, MA: Harvard University Press.
- Brofrenbrenner, U., & Morris, P. A. (1998). The ecology of developmental processes. In W. Damon & R. M. Lerner (Eds.), *Handbook of child psychology: Theoretical models of human development* (5<sup>th</sup> ed., Vol. 1, pp. 993–1028). New York, NY: Wiley.
- Brown, T. A. (2015). *Confirmatory factor analysis for applied research* (2<sup>nd</sup> ed.). New York, NY: The Guilford Press.
- Byrne, B. M. (2006). *Structural equation modeling with EQS: Basic concepts, applications, and programming* (2<sup>nd</sup> ed.). New York, NY: Psychology Press.
- Catalano, R. F., Berglund, M. L., Ryan J. A. M., Lonczak, H. S., & Hawkins, J. D. (2002). Positive youth development in the United States: Research findings on evaluations of positive youth development programs. *Prevention & Treatment, 5*, 1–111. Retrieved from <http://aspe.hhs.gov/hsp/positiveyouthdev99/>



- Chaput, S. S., Little, P. M. D., & Weiss, H. (2004). Understanding and measuring attendance in out-of-school time programs. *Issues and Opportunities in Out-of-School Time Evaluation*, 7, 1–12. Retrieved from <http://www.statewideafterschoolnetworks.net/understanding-and-measuring-attendance-out-school-time-programs>
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3<sup>rd</sup> ed.). New York, NY: Routledge.
- Dweck, C. S. (2006). *Mindset: The new psychology of success*. New York, NY: Random House.
- Eccles, J., & Gootman, J. A. (Eds.). (2002). *Community programs to promote youth development*. Washington, DC: National Academy Press.
- Field, A. (2013). *Discovering statistics using IBM SPSS Statistics* (4<sup>th</sup> ed.). Thousand Oaks, CA: Sage.
- Flores, D. (2006). *The personal beliefs survey*. Unpublished.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50. doi:10.2307/3151312
- Gambone, M. A., Klem, A. M., & Connell, J. P. (2002). *Finding out what matters for youth: Testing key links in a community action framework for youth development*. Philadelphia, PA: Youth Development Strategies, Inc.
- Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology*, 85(2), 348–362. doi:10.1037/0022-3514.85.2.348
- Heck, K. E., & Subramanian, A. (2009). *Youth development frameworks* [University of California 4-H Center for Youth Development Monograph]. Davis, CA: University of California.
- Jones, J. N., & Deutsch, N. L. (2012). Social and identity development in an after-school program: Changing experiences and shifting adolescent needs. *Journal of Early Adolescence*, 33(1), 17–43. doi:10.1177/0272431612462628
- Kline, R. B. (2011). *Principles and practice of structural equation modeling* (3<sup>rd</sup> ed.). New York, NY: The Guilford Press.
- Lance, C. E., Butts, M. M., & Michels, L. C. (2006). The sources of four commonly reported cutoff criteria: What did they really say? *Organizational Research Methods*, 9(2), 202–220. doi:10.1177/1094428105284919
- Lerner, R. M. (2007). *The good teen: Rescuing adolescence from the myths of the storm and stress years*. New York, NY: Stonesong Press.
- Lerner, R. M. (2016). Evaluating programs aimed at promoting positive youth development: A relational development systems-based view. *Applied Developmental Science*, 20(3), 175–187. doi:10.1080/10888691.2015.1082430

- Lerner, R. M., Dowling, E. M., & Anderson, P. M. (2003). Positive youth development: Thriving as the basis of personhood and civil society. *Applied Developmental Science, 7*(3), 172–180. doi:10.1207/S1532480XADS0703\_8
- Lerner, R. M., & Lerner, J. V. (2013). *The positive development of youth: Comprehensive findings from the 4-H study of positive youth development*. Washington, DC: National 4-H Council.
- Lerner, R. M., Lerner, J. V., Bowers, E. P., & Geldof, G. J. (2015). Positive youth development and relational-developmental-systems. In W. F. Overton & P. C. M. Molenaar (Eds.), *Handbook of child psychology and developmental science: Theory and method* (7<sup>th</sup> ed., Vol. 1, pp. 607–651) Hoboken, NJ: Wiley.
- Lerner, R. M., Lerner, J. V., von Eye, A., Bowers, E. P., & Lewin-Bizan, S. (2011). Individual and contextual bases of thriving in adolescence: A view of the issues. *Journal of Adolescence, 34*(6), 1107–1114. doi:10.1016/j.adolescence.2011.08.001
- Li, J., & Julian, M. M. (2012). Developmental relationships as the active ingredient: A unifying working hypothesis of “what works” across intervention settings. *American Journal of Orthopsychiatry, 82*(2), 157–166. doi:10.1111/j.1939-0025.2012.01151.x
- Li, Y., & Lerner, R. M. (2013). Interrelations of behavioral, emotional, and cognitive school engagement in high school students. *Journal of Youth and Adolescence, 42*(1), 20–32. doi:10.1007/s10964-012-9857-5
- Little, R. J. A. (1988). A test of missing completely at random for multivariate data with missing values. *Journal of the American Statistical Association, 83*(404), 1198–1202. doi:10.2307/2290157
- Little, T. D. (2013). *Longitudinal structural equation modeling*. New York, NY: The Guilford Press.
- Lippman, L. H., Moore, K. A., Guzman, L., Ryberg, R., McIntosh, H., Ramos, M. F., . . . Kuhfeld, M. (2014). *Flourishing children: Defining and testing indicators of positive development*. New York, NY: Springer.
- Noom, M. J., Dekovic, M., & Meeus, W. (2001). Conceptual analysis and measurement of adolescent autonomy. *Journal of Youth and Adolescence, 30*(5), 577–595. doi:10.1023/A:1010400721676
- Pekel, K., Roehlkepartain, E. C., Syvertsen, A. K., Scales, P. C., Sullivan, T. K., & Sethi, J. (2018). Finding the fluoride: Examining how and why developmental relationships are the active ingredient in interventions that work. *American Journal of Orthopsychiatry, 88*(5), 493–502. doi:10.1037/ort0000333
- Roth, J. L., & Brooks-Gunn, J. (2003). What exactly is a youth development program? Answers from research and practice. *Applied Developmental Science, 7*(2), 94–111. doi:10.1207/S1532480XADS0702\_6
- Roth, J. L., & Brooks-Gunn, J. (2016). Evaluating youth development programs: Progress and promise. *Applied Developmental Science, 20*(3), 188–202. doi:10.1080/10888691.2015.1113879

- Roth, J. L., Brooks-Gunn, J., Murray, L., & Foster, W. (1998). Promoting healthy adolescents: Synthesis of youth development program evaluations. *Journal of Research on Adolescence*, 8(4), 423–459. doi:10.1207/s15327795jra0804\_2
- Roth, J. L., Malone, L. M., & Brooks-Gunn, J. (2010). Does the amount of participation in afterschool programs relate to developmental outcomes? A review of the literature. *American Journal of Community Psychology*, 45(3-4), 310–324. doi:10.1007/s10464-010-9303-3
- Scales, P. C., Benson, P. L., & Roehlkepartain, E. C. (2011). Adolescent thriving: The role of sparks, relationships, and empowerment. *Journal of Youth and Adolescence*, 40(3), 263–277. doi:10.1007/s10964-010-9578-6
- Schmitt, N. (1996). Uses and abuses of coefficient alpha. *Psychological Assessment*, 8(4), 350–353. doi:10.1037/1040-3590.8.4.350
- Search Institute. (2014a). *The developmental relationships framework*. Minneapolis, MN: Author. Retrieved from <https://www.search-institute.org/developmental-relationships/developmental-relationships-framework/>
- Search Institute. (2014b). *The Search Institute model of thriving orientation: Overview of its evolution through recent funding from the Thrive Foundation for Youth*. Unpublished paper. Minneapolis, MN: Author.
- Smith, C., Akiva, T., Sugar, S., Devaney, T., Lo, Y. J., Frank, K., Peck, S. C., & Cortina, K. S. (2012). *Continuous quality improvement in afterschool settings: Impact findings from the Youth Program Quality Intervention study*. Washington, DC: The Forum for Youth Investment. Retrieved from <http://www.cypq.org/ypqi>
- Theokas, C., Almerigi, J. B., Lerner, R. M., Dowling, E. M., Benson, P. L., Scales, P. C., & von Eye, A. (2005). Conceptualizing and modeling individual and ecological asset components of thriving in early adolescence. *Journal of Early Adolescence*, 25(1), 113–143. doi:10.1177/0272431604272460
- Wang, J., Vujovic, L., Barrett, K. C., & Lerner, R. M. (2015). The regulation of emotion in adolescence. In E. P. Bowers, G. J. Geldof, S. K. Johnson, L. J. Hilliard, R. M. Hershberg, J. V. Lerner, & R. M. Lerner (Eds.), *Promoting positive youth development: Lessons from the 4-H study* (pp. 37–55). New York, NY: Springer.
- Warren, A. E. A., Lerner, R. M., & Phelps, E. (2012). Research perspectives and future possibilities in the study of thriving and spirituality: A view of the issues. In A. E. A. Warren, R. M. Lerner, & E. Phelps (Eds.), *Thriving and spirituality among youth: Research perspectives and future possibilities* (pp. 1–16). Hoboken, NJ: Wiley.
- Weiner, M. B., Geldhof, G. J., & Gestsdottir, S. (2015). Intentional self-regulation in youth: Applying research findings to practice and programs. In E. P. Bowers, G. J. Geldhof, S. K. Johnson, L. J. Hilliard, R. M. Hershberg, J. V. Lerner, & R. M. Lerner (Eds.), *Promoting positive youth development: Lessons from the 4-H study* (pp. 21–36). New York, NY: Springer.

Yohalem, N., & Wilson-Ahlstrom, A. (2010). Inside the black box: Assessing and improving quality in youth programs. *American Journal of Community Psychology, 45*(3-4), 350–357. doi:10.1007/s10464-010-9311-3

Yohalem, N., Wilson-Ahlstrom, A., Fischer, S., & Shinn, M. (2009). *Measuring youth program quality: A guide to assessment tools* (2<sup>nd</sup> ed.). Washington, DC: Forum for Youth Investment. Retrieved from <http://www.readyby21.org/resources/guide/measuring-youth-program-quality-guide-assessment-tools-2nd-edition>

*Mary E. Arnold*, Ph.D., is an Extension 4-H youth development specialist and professor in the School of Social and Behavioral Health Sciences at Oregon State University. Her research interests are in the translation and application of youth development research into effective program practice and policy.

*Ryan J. Gagnon*, Ph.D., is an assistant professor at Clemson University. His research interests are in the area of out of school time programs for youth and advanced statistical methods.