

DISSERTATION

IDENTIFYING PROFILES OF YOUTH CHARACTERISTICS, TRAJECTORIES OF
DEVELOPMENT, AND RETENTION FACTORS IN A POSITIVE YOUTH DEVELOPMENT
PROGRAM

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ABSTRACT

IDENTIFYING PROFILES OF YOUTH CHARACTERISTICS, TRAJECTORIES OF DEVELOPMENT, AND RETENTION FACTORS IN A POSITIVE YOUTH DEVELOPMENT PROGRAM

Positive Youth Development (PYD) programs are an increasingly common form of intervention for youth of all backgrounds. In particular, PYD programs that take youth “off the streets” while not in school, termed out-of-school time (OST) programs, are of special interest to practitioners and researchers alike due to the diversity of programming available and the ecological contexts they provide . In addition, most youth engage in some form of risky behavior over the course of development, or are exposed to risk factors out of their control. However, PYD programs as a whole have provided little evidence of having meaningful impacts on the youth they serve, and they continually struggle to serve youth from disadvantaged backgrounds or who engage in risky behaviors. These shortcomings potentially result from selection bias that manifests through high attrition rates, which are influenced by many factors, such as a lack of programs to choose from or disinterest in program content. Even when attrition is partially accounted for, evaluating program impacts is difficult, as the processes and outcomes that define PYD remain relatively unclear, including their relation to risk factors. Therefore, in order for PYD programs, and specifically those categorized as OST, to take the next step in increasing and demonstrating the impacts of their programs, additional collaboration and research in a real world context is needed.

This dissertation will use data from a PYD program, SOS University, to address two primary research questions. The first study will address the question of, are there specific factors

that are associated with youth attrition from PYD programs? This research is timely as prevention scientists have struggled to provide guidance to practitioners on how to minimize attrition rates, a commonly cited impediment to translating scholarly research into real world application (Farb & Matjasko, 2012). The second study seeks to answer the question, can youth be distinguished into profiles of development characterized by the patterns of responses to PYD indicators? To answer this question, the second study will analyze differences in youth development profiles as they participated in an outdoor leadership program over the course of three years. This study is important in that it has the potential to highlight the positive development that can occur in the context of experiencing or engaging in risk behaviors.

The dissertation is organized as follows. Chapter I provides an overview of the existing literature on theory related to PYD and the evidence base for PYD and OST programs. Chapters II and III are studies I and II cited above, respectively. Chapters II and II follow the typical format of an academic manuscript. That is, each chapter will include a more refined literature review that provides an in-depth view of research related to the study at hand, a description of the current study, methods, data analysis approaches and results, and then a discussion. Finally, Chapter IV will be a general discussion of the overall results and how they relate to one another. Additionally, Chapter IV will review overarching strengths and weaknesses of the dissertation, and finally highlight implications that may surface as a result of the studies, including a discourse on future steps that can be taken to increase collaboration between the scientific and applied communities.

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Best thing to ever happen to me was failure.

LITERATURE REVIEW

Positive Youth Development (PYD) programs have become a widespread and popular form of intervention for youth in America. As a result, public and private investment in these programs is substantial. Defining features of PYD programs include a curriculum for participants to follow, intervening mechanisms, such as outdoor recreation, and the presence of supportive adults. For example, in 2011 the Office of Juvenile Justice and Delinquency Prevention awarded \$60 million to Big Brothers Big Sisters of America and \$40 million to locally based mentoring programs operating across the country (DuBois, Portillo, Rhodes, Silverthorn, & Valentine, 2011). In 2015, the 4-H youth development program, which serves up to 6 million youth annually, generated nearly \$48 million in revenue, allocating just over \$24 million to educational services for youth, such as providing opportunities to conduct science, healthy living, and citizenship projects (“National 4-H council 2016 annual report,” 2016). Other PYD programs have sprung up from local grassroots efforts additionally, as people interested in helping their communities have developed programs that use their skills and passions to connect with youth. The focus of this dissertation, SOS Outreach (SOS), is a prime example of local individuals working together to help their communities. The history of the program, the goals, and methods SOS Outreach uses to serve their youth will be discussed in more detail following the literature review.

WHAT IS POSITIVE YOUTH DEVELOPMENT?

The theory of PYD emerged as a loose but guiding framework for researchers and organizations who focus on serving youth, with the premise that all youth have strengths that can be fostered to promote their successful transition to adulthood. As PYD comprises such a general goal,

it has been characterized as a theory of the processes youth experience during development, a philosophical view on youth programming, and a blanket description for programs that focus on serving youth (Hamilton, 1999). Additionally, due to the popularity of the framework among a wide variety of programs, the PYD movement has gained credence as a foundational piece for policymaking related to serving America's youth (J. V. Lerner et al., 2012).

The PYD perspective recognizes that development occurs as a result of mutually influential relations between individuals and the multiple contexts they are a part of, characterized as individual \longleftrightarrow context relationships (R. M. Lerner, Lerner, & Benson, 2010). That is, the relations between individuals and their multiple contexts govern (i.e., guide) developmental trajectories, directions, and outcomes of the individual. Just as important is the recognition that individuals always have an ability to change, termed plasticity (R. M. Lerner, 2006). Plasticity can thus be represented as individual \longleftrightarrow context relations because it is expected that the individual and context are both fluid in their adaptations to the other, and when these relations are mutually beneficial to the individual and the context, adaptive developmental regulations occur, which are interrelations between an individual and his or her environment that facilitate healthy development and functioning for all parties involved. A result of adaptive developmental regulations is that positive, healthy development should occur for the individual, and society should benefit as well (Brandtstädter, 1998, 1999). For example, goodness of fit between a youth and a new school may lead to an improvement in the youth's developmental trajectory (e.g., youth discovers a passion), which may also result in civic services to the community. This viewpoint, therefore, champions the possibility for positive change in individuals, no matter their circumstances or developmental history, positing that change can occur if the individual and contexts are aligned properly. Moreover, when such an alignment occurs, society stands to benefit as well. However, questions

remain on how PYD programs can promote positive change occurs in youth, and what these changes look like (Benson, Scales, & Syvertsen, 2011).

THE FIVE C'S OF DEVELOPMENT

Though theory underlying PYD is actively developing and well documented (see Figure 1), measurement of indicators of PYD has been slow to emerge. This is likely a result of the broad diversity of researchers and programs falling under the umbrella of PYD, each with varying methods of measurement or intervention. What is the ultimate outcome? Is there a specific track that youth need to follow in order to be successful? Do risks play a key role in PYD? How do we define successful development? These are all questions that remain today. However, what the scientific community and the applied field can both agree on is that youth who are actively engaged and contributing back to their families, communities, and society at large, are *thriving* (R. M. Lerner et al., 2010). Thriving youth are satisfied with their lives, use their talents and strengths, and are contributing members to society (Baber & Rainer, 2010). The most generally accepted characteristics that may indicate thriving are the “five Cs” of development. The five Cs (Competence, Connection, Character, Confidence, and Caring) of development are all positive attributes that, when manifested, stand to benefit the youth and society at large (R. M. Lerner, 2000). Briefly, the five C's can be defined as

1. *Competence*, or a positive view of one's actions in academic, social, and vocational areas;
2. *Confidence*, or a positive self-identity, which results in an internal sense of self-worth and self-efficacy;

3. *Connection* to community, family, and peers. The individual has positive bonds with people and institutions that are reflected in bidirectional exchanges, or contributions from both sides to the relationship;
4. *Character*, which demonstrates a respect for societal and cultural rules, and reflects positive values, integrity, and moral commitment;
5. *Caring* and compassion, or a sense of sympathy and empathy for others (R. M. Lerner, 2000; Roth & Brooks-Gunn, 2003).

Additionally, when all of the five Cs are present, they result in *Contribution*, or contributions to the self, family, community, and civil society (Pittman, Irby, Tolman, Yohalem, & Ferber, 2001). The five Cs (plus the sixth), though, remain relatively dynamic in their defining characteristics and are continuing to be refined (Baber & Rainer, 2010). Nevertheless, they remain the most generally accepted representation of PYD.

Figure 1.1 displays R. M. Lerner et al. (2005)'s developmental systems model of the individual \longleftrightarrow context relations that potentially lead to PYD, and the results that may be expected when PYD occurs. This model focuses on the strengths youth possess and how they interact with the youth's ecological contexts. For example, a particular strength of note is youth-school engagement. School engagement is the active involvement in academic and/or social or extracurricular activities; positive affect towards school staff, classmates, academics, school in general; and investment in oneself (Fredricks, Blumenfeld, & Paris, 2004). School engagement is an important concept because there is evidence supporting the claim that higher levels of engagement correlate with academic performance, and because researchers believe it is *malleable* (Fredricks et al., 2004; Li, 2010). Accordingly, if youth have high levels of or increases in their

school engagement, it becomes a strength. As a strength, school engagement can increase youths' access to resources or individuals who may act as mentors. In turn, this relationship between youths and their ecological context (such as resources and adults) acts as an adaptive developmental regulation if the youth positively contributes to the self, family, and society.

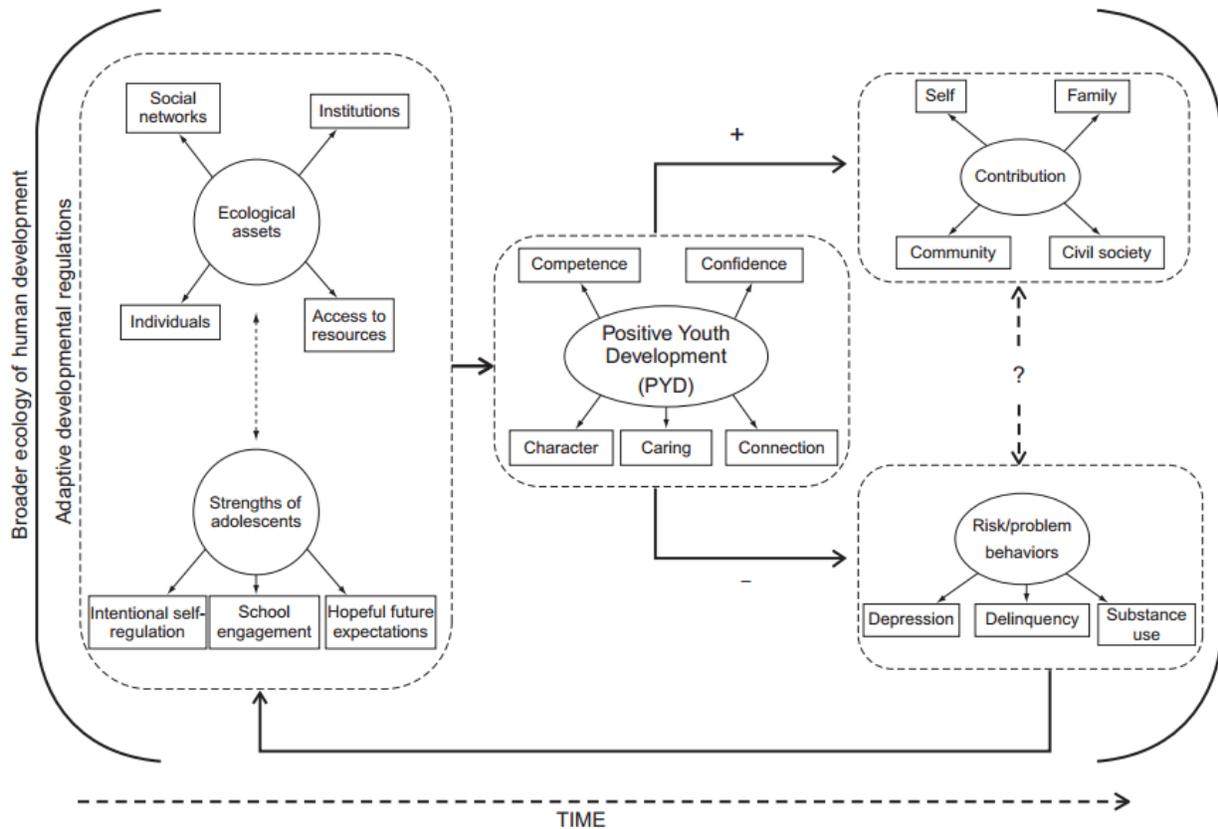


Figure 1: The relational, developmental systems model of the individual ↔ context relations (from Lerner et al., 2005)

As the five Cs increase, risk/problem behaviors may tend to decrease, which feeds back to the strengths of the adolescent. Thus, R. M. Lerner et al. (2005)'s model, Figure 1, illustrates how increases in PYD may result in decreases in risk or problem behaviors, and how these changes feed back into the developmental system, further increasing potential for adaptive developmental

regulations. Yet important to this model is the realization that, in order for positive development to occur, youth must engage programs that align with their interests and needs. Providing youth with opportunities to engage programs that are beneficial to them, and then ensuring that they receive the needed dosage in order to realize the potential gains, remain important objectives for PYD researchers and practitioners.

RESEARCH ON PYD

Following Lerner's conceptualization of the five Cs and PYD, empirically validating scales developed to represent the five Cs became a top priority. This is because there were already many PYD programs in existence across the country, such as Big Brothers/Big Sisters, the Boys and Girls Club, and 4-H. Many of these programs had little to no evidence base. For instance, in a review of the literature on empirical studies of PYD, Catalano, Berglund, Ryan, Lonczak, and Hawkins (2004) identified 161 separate programs that qualified as promoting PYD, yet only 77 had conducted systematic evaluations. Moreover, only 25 had evaluations rigorous enough to be considered evidence-based. Of these 25, the methods of intervention were so wide and the targeted processes and outcomes were so diverse that few commonalities could be identified. As such, while community-based PYD programs continue to spring up, evaluation and collaboration between researchers and practitioners remains sparse (R. M. Lerner, Lewin-Bizan, & Warren, 2011).

The existing research on PYD can be categorized into two separate groups. The first may be described as developmental studies, which focus on factors that may promote PYD. Specifically, this includes research on the environment and characteristics of youth that may elicit or promote PYD, such as the school context, potentially key to PYD (R. M. Lerner, Dowling, & Anderson, 2003). The second group can be described as applied research, or evaluation of a broad expanse of

interventions and programs that aim to promote indicators of PYD, such as the five Cs. Both groups, however, recognize that youth development is a complex phenomenon, and that aligning youth with programs that are specifically tailored to meet their individual needs is of paramount importance. Two types of PYD programs that are particularly relevant to this dissertation are mentoring programs and Youth Adventure Programming (YAP), both of which will be reviewed following the summarization of the developmental studies on PYD.

DEVELOPMENTAL RESEARCH ON PYD: THE 4-H STUDY

Following R. M. Lerner (2000) and others' conceptualization of PYD, the first large-scale project devoted towards measuring and empirically validating such a theory was the 4-H Study of PYD. Beginning in 2002, the study enrolled roughly 1,700 fifth-grade youth and their families, following them throughout their adolescent years. Accordingly, the project's purpose has been to observe the conditions that create healthy development and support PYD across the adolescent years; put another way, test the individual \leftrightarrow context hypothesis (R. M. Lerner et al., 2005).

Specifically, the project collects data on youths' regulatory functioning and goal-oriented behaviors, risks and problem behaviors, ecological assets, and demographics. Additionally, given that the 4-H Study is the first of its kind, it also serves as a pilot study for the development of a set of questionnaires that may be used to indicate each of the five Cs and subsequently a model for PYD. R. M. Lerner et al. (2005) presented initial results from the validation of a scale for the five Cs. A number of important outcomes deserve attention. First, a set of measures was adopted from the literature that was representative of the five Cs. Following refinement, a structural model that included five first-order latent factors (one for each of the five Cs) and a second-order construct,

PYD was validated. Secondly, the constructs were significantly related to indicators of the sixth C (Contribution), including ideas or a desire to give back to the community and world, and active engagement in activities that give back, such as volunteering in the community. Third, and final, the constructs were correlated with participation in youth development programs and indicators of risk, such as depth of involvement in the 4-H program. They found a small but sporadic relationship between PYD and program participation; additionally, at the time when youth were in the fifth grade, there were very few who had engaged in substance abuse or delinquency.

Throughout the 4-H project's history, the five Cs have continually been tested and validated (e.g., see Bowers et al. (2010)). These longitudinal studies have demonstrated that, in the 4-H sample, the five Cs and PYD as developed in R. M. Lerner et al. (2005) hold as constructs across the adolescent years and cohorts, lending validation to the models. Additionally, many elements of PYD have been assessed longitudinally. For example, indicators of PYD have been shown to predict later youth contributions and risk behaviors, there is evidence supporting the hypothesis that gender moderates the link between youth activity involvement and neighborhood assets, and bullying status predicts lower grades over time, among other findings (R. M. Lerner, von Eye, Lerner, & Lewin-Bizan, 2009). More recently, research on the 4-H sample has demonstrated the utility of participating in out-of-school activities (OST). For instance, youth who were actively engaged in the Boy Scouts of America program experienced significantly greater increases in moral and performance character than comparison youth. Additionally, results suggested that the largest increases came from youth who were highly engaged in the program and were also surrounded by other highly engaged youth (Lynch et al., 2016). Thus, participation in youth development programs shows potential for helping youth develop attributes and characteristics that can set them up for successful development over the life course.

However, even though the vast majority of studies using 4-H study data has provided evidence for the validity of the five Cs and PYD constructs, and that these constructs are positively correlated with indicators of healthy youth development, research on trajectories of development over time has provided somewhat puzzling results. Agans et al. (2014) examined patterns of the breadth of involvement in OST activities for youth as they moved from the 7th through 12th grades. They found that youth who maintained high levels of involvement in OST activities throughout their schooling were more likely to have high scores of PYD than youth who were inconsistently involved in OST activities or youth who were consistently not involved in OST activities. Additionally, they reported less substance abuse, lower levels of depression, less engagement in risk behaviors, and higher levels of Competence and Contribution. However, results began to diverge when comparing high- versus low-participating youth over the years. In Grades 8, 9, and 11, high-participation youth actually had higher rates of registering depressive symptoms, and there were no differences between groups in substance use, delinquency, or risky behaviors. In Grades 10 and 12, high-participation youth scored lower on depression and risk behavior assessments, and had higher PYD and Contribution scores than low-participating youth.

The variability in activity involvement across grades, or ages of youth, suggests that further research should be conducted to better understand how PYD may be related to this phenomenon. Beyond the 4-H study, until recently there has been little empirical work focusing on the developmental aspects of PYD. For instance, are any constructs more important than others? Can improvements in one area of development facilitate growth in other areas? Holsen, Geldhof, Larsen, and Aardal (2016) used data from a cohort of youth in Norway to examine the construct validity of surveys developed to measure the five Cs and PYD. They found that, in general, the constructs held across samples. Robinson, Esters, Dotterer, McKee, and Tucker (2016) sampled a cohort of youth

in Indiana, and found that those who participated in 4-H reported significantly higher levels of four of the five Cs than youth who had never participated in 4-H. Other works, such as in Scotland (Chauveron, Linver, & Urban, 2016), have demonstrated relatively comparable results as well. It is important to consider the utility of measuring these constructs, and what they really mean when it comes to youth development. As PYD programs expand to include new mechanisms for intervening, such as using outdoor experiences to intervene with youth, it will become more important for researchers to be able to provide guidance on elements of development that programs have the best chance to influence. This may be particularly important after programs have clearly identified the objectives of their interventions.

YOUTH ADVENTURE PROGRAMMING

As opposed to programs that engage youth through contexts such as a school, another form of intervention for youth is Youth Adventure Programs (YAPs), which provide youth with opportunities to grow through experiences in outdoor environments. Especially when YAPs provide exposure to novel environments, these programs demonstrate potential to positively effect youth, yet there remains a dearth of information on the processes and mechanisms that occur within YAPs that potentially make them successful (Deane & Harré, 2014). While these novel environments hold potential for many youth, research has indicated that some youth might actually be worse off from program participation. For instance, African American youth who participated in a YAP experienced decreases in their self-concept scores (Orren & Werner, 2007). These programs can also encourage a “conquering nature” mentality that may not resonate with youth from collectivist cultures, such as the Maori of New Zealand or Native Americans (Hollis, Deane, Moore, & Harré,

2011; Carter, Straits, & Hall, 2007). Such findings result in questions related to who stand to benefit the most from these programs? Is culture being adequately considered when developing these programs?

Though YAPs have received attention in the literature, the body of evidence on their effects is stretched thin across a large number of outcomes. For example, Hattie, Marsh, Neill, and Richards (1997) conducted a meta-analysis to examine the overall effectiveness of adventure programs, and found research on 40 different outcomes, such as grade point average, reasoned decision making, physical ability, femininity, cooperation, or flexibility. Based on 96 studies, they calculated an average effect size of .34 for YAP attendance, suggesting that these programs have the potential to be meaningfully beneficial to youth. However, the authors also noted that effect sizes differed considerably based on outcomes, program length, and participant ages, illustrating the importance of moderating factors, such as program fit. Additionally, almost none of the studies used an experimental design in evaluation, limiting the interpretation or generalizability of the findings.

With the importance of moderating factors such as those listed above in mind, more recent work, although sparse, has focused on identifying key processes that result in program effects. For instance, Passage Northwest is a nonprofit organization tailored to help late-stage adolescent girls maintain and improve their courage as they become teens (Kent, Evans, & Shirley, 2004). Courage is a loosely defined term, but in general it may be thought of as a relationship between psychological health and toughness, which in turn helps an individual cope with challenges as they occur (Whittington & Mack, 2010). An evaluation of the Passage Northwest organization's intervention demonstrated that outdoor adventure programs potentially increase courage in girls, which in turn can enhance resilience (Whittington & Mack, 2010). For example, by increasing

moral courage, individuals can overcome their fear of social disapproval, and are thus more likely to stand up for their beliefs and passions.

Conversely, other studies have found that adventure programs can have adverse consequences for participants, depending on individual characteristics. For example, Orren and Werner (2007) used a wait-list control experiment to assess the effects of one- and two-day wilderness adventure programs. Using a pre- post-assessment design, youth filled out questionnaires on self-concept and attitudes towards the outdoors environment. No differences were found between groups or over time. However, when race was included as a moderator, the authors found that African American youth who attended the outdoors programs actually showed a decrease in self-concept over time. Additionally, while all groups showed an increase of respect for the environment over time, Hispanic youth had significantly lower baseline scores of environmental respect. The moderation of program effects due to race illustrates the importance of understanding factors that relate to program fit in order to minimize the possibility of harming youth and maximizing the potential to help them. Overall, research on youth outdoor programming is very sparse, and almost no experimental studies have been conducted with these programs (Deane & Harré, 2014). As a result, it is difficult to draw broad conclusions about the elements of these programs that spark change, or whether or not there is even change occurring as a result of program participation.

One potential barrier to the advancement of YAPs as a viable evidence-based program is the lack of unifying theory and subsequent rigorous testing. In response to this shortcoming, the field has acknowledged the need for additional efforts towards theory development, testing, and dissemination; however, addressing these areas of growth remains in the early stages. To address these challenges, PYD has been identified as a potential foundation to build upon (Sibthorp, 2010).

Deane and Harré (2014) described a model that integrates existing research on YAPs with principles of PYD. The model builds on Walsh and Golins (1976)'s description of Outward Bound, an adventure program dating back to the early 1940s that is largely considered to be the first of its kind (Priest & Gass, 2005). Using the Outward Bound model, YAPs generally make three assumptions. First, the outdoors, especially the wilderness, is generally believed to be novel to participants. Second, the activities are challenging yet attainable, and third, the outdoors context, combined with program curriculum, creates an intense social atmosphere as a small group of individuals are generally required to work and stick together in order to be successful (Deane & Harré, 2014; Walsh & Golins, 1976). Under these conditions, a *psychological change process* occurs as an experiential learning cycle is embedded in the intervention. Through this process, indicators of PYD, such as self-esteem, mastery, or self-concept, among other outcomes, are thought to be influenced (Gillespie & Allen-Craig, 2009; Schell, Cotton, & Luxmoore, 2012).

The first characteristic of youth adventure programs is to include a novel physical environment. Novel physical environments may develop tension within individuals, which in turn focuses their attention towards the present context. The novel physical environment can heighten the senses, potentially leading to a more enhanced observation of the self. Qualitative findings illustrate the importance of novel environments. D'Amatoa and Krasny (2011) interviewed 23 youth who participated in a range of outdoor adventure education programs, with the main difference being length of trips (16-78 days; average of 28 days). All 23 participants cited the experience of being in a pristine natural environment as making the program unique. Many reported personal growth, such as psychological well-being, as a result of being in a natural environment that they had never experienced. Additionally, being in a wilderness environment may confer feelings of risk and unpredictability, which may lead to the important element of novel experiences: a state of

disequilibrium in which the individual must act in order to alleviate threats to feelings of safety or security. Thus, novel environments can promote change.

The second element of the model is the inclusion of difficult yet attainable challenges. The participants in their study also cited the physical and emotional challenges they faced. Said one participant, “Pushing myself physically, and not being able to give up...moved into more psychological things. If anything ever went wrong before Outward Bound, emotionally I would just give up. [My course] helped with perseverance. (p.248)” Overcoming challenges such as these resulted in feelings of accomplishment and gains in confidence. Shellman and Ewert (2010) came to the same conclusion, finding that youth who participated in Outward Bound experienced a sense of achievement through completing the program, resulting in improvements in the belief of their own capabilities to accomplish whatever they set out to do.

Third, adventure programs provide an intense and supportive social setting. Spending an extended amount of time in the outdoors, especially the wilderness, creates an isolated community for groups. All need to work together to accomplish the tasks set forth by the program, such as cleaning an area of trash and debris, which in turn requires communication and cooperation. When these groups are created, diversity of personalities is expected to be present. Thus, conflict resolution will likely need to occur in order for the group to be successful. To maximize the potential for conflict resolution to occur and minimize division within groups, YAPs typically focus on creating small social groups, generally between seven and 15 people (McKenzie, 2000). Through these experiences, youth can learn to work and socialize with people who may have differing perspectives than their own, they can learn to rely on and trust others, and hopefully develop strong social bonds, resulting in lasting positive relationships.

The change process thought to occur through YAPs does so through an experiential learning cycle. Experiential learning is learning by doing, followed by reflection on the experience (Priest & Gass, 2005). Additionally, it is an active, rather than passive, process in which individuals must be motivated and responsible for their own learning and supported by an instructor (King, 1988). Importantly, experiential learning is especially powerful when the learner is put in a position where challenges occur that force adaptation in order to achieve the desired outcome, or equilibrium. More precisely, YAPs are thought to incorporate four phases of experiential learning: participation, reflection, generalization, and application of the learning, then restarting the cycle (Deane & Harré, 2014). Specifically, YAP participants are thought to engage in an experience that creates psychological disequilibrium, motivating them to act in order to adapt to their situation. Through this process, peers and the instructors or mentors provide support and encouragement to help individuals overcome the challenges they face. Once this occurs, participants will begin developing a sense of mastery over themselves and the challenges at hand. Throughout the experience, they receive feedback from the environment they engage in, the peers with whom the individuals interact with, and the instructors or mentors who are guiding them. Participants then reflect on the feedback, internalize it and use the experience to face the next challenge to occur. The idea is that, when this occurs often enough, participants will learn to generalize their experiences to those outside of the current context, such as school environments or other contexts in their daily lives.

Finally, the effects of YAP programs likely depend on person and program delivery factors (Deane & Harré, 2014). Of note, characteristics such as ethnicity, household makeup, and age likely play key roles in the success of adventure programs. Another potential moderator, gender, has received attention, yet there does not seem to be significantly different reports of outcomes between girls and boys, even though they may value different activities or targeted outcomes differentially

(Hattie et al., 1997; Deane & Harré, 2014). Contextual factors, such as characteristics of the instructors, or mentors, are likely to be important as well. Instructors must be able to develop and maintain relationships with the youth they serve, while also ensuring safety of all participants (Priest & Gass, 2005). They, and the program in general, must be able to provide physical and emotional safety, while also determining the correct amount of program dosage and support (Deane & Harré, 2014). Culture is a key element of programming as well. Research has been conducted in countries such as the U.S., Australia, New Zealand, Singapore, and South Africa. As previously described, Orren and Werner (2007) found that African American youth saw decreases in their self-concept scores following participation in a YAP. Additionally, adventure programs potentially encourage a mentality akin to conquering nature, which may not resonate with youth from collectivist cultures, such as the Maori of New Zealand or Native Americans (Hollis et al., 2011; Carter et al., 2007).

Programs of all types, especially those that use the outdoors as a mechanism for intervention, typically rely on mentors to implement their programs, and in many cases mentors are the focal point of the intervention. Understanding how programs incorporate mentors into their interventions is therefore important; however, it is just as important that researchers understand whether or not mentors provide the benefits that are expected of them.

MENTORING PROGRAMS

In general, mentoring is thought of as the relationship between a youth and an adult or older peer who can provide support, guidance, and act as a role model. R. M. Lerner (2004) suggests that the most successful PYD programs will incorporate positive and sustained adult-youth

relationships, skill building, and opportunities for leadership. The presence of mentors is therefore an important component of most PYD programs, including YAPs. By filling these roles, mentors are expected to influence a variety of youth outcomes, including those in the behavioral, social emotional, and academic outcomes.

Mentoring programs have seen an increase in popularity for a number of reasons. First, many programs, such as Big Brothers Big Sisters of America (BBBS), have a long history and are embedded in communities across the U.S. The brand equity associated with these programs has resulted in sustainable funds from charitable organizations, individuals, and more recently by the Office of Juvenile Justice and Delinquency Prevention (OJJDP) and Departments of Health and Human Services (HHS), Education, and Labor (DuBois et al., 2011; Tolan, Henry, Schoeny, Lovegrove, & Nichols, 2014). Additionally, results that people might expect from programs like BBBS are intuitive and straightforward. When looking back on the lives of chronic criminals, a common characteristic seems to be that they come from single-parent homes in unsafe neighborhoods. People often point to the failure of families, communities, and society to provide youth with adults who are a positive presence as a reason for these risks to turn into realities. By providing youth with positive role models, many of the risks are thought to be mitigated. Finally, mentoring programs tend to resonate with our ideals. As pointed out by R. Larson, Walker, and Pearce (2005), mentoring programs match a youth with a volunteer who may have a similar background and interests. Thus, youth are afforded the opportunity to learn from someone who they can identify with and act accordingly so as to successfully navigate the challenges they face in their environments. In other words, mentoring programs provide a tool for youth to use in order to “pick themselves up by their bootstraps.” In essence, the American ideal. Finally, mentoring programs are cheap relative to other interventions due to the majority of mentors being volunteers.

Rhodes, Spencer, Keller, Liang, and Noam (2006) provided a road map of the pathways in which mentors can influence youth outcomes. First, mentors provide youth with opportunities to interact socially with adults in a safe and secure atmosphere. These interactions have the potential to act as a respite from stressors that may be experiencing, and can also be fun experiences for youth who may not otherwise have the opportunity to engage in these activities. For example, a youth who comes from a disadvantaged home may live in a neighborhood where public parks are not kept clean and safe. If a mentor takes this youth to a Rockies baseball game, the experience may act as a respite from the neighborhood while also being a fun experience if he or she enjoys baseball.

Apart from providing respite and meaningful experiences, theory also suggests that mentoring relationships can enhance social and emotional development. The presence of a supportive adult may cause youths' working models of relationships to change, acting as a corrective experience when youth may be experiencing difficulties with their parents (Rhodes et al., 2006; Rhodes, DuBois, & Karcher, 2005). The mentoring relationship thus acts as an example of the potential benefits youth can garner if they are able to successfully cultivate relationships with other adults. Additionally, mentors may help youth to learn how to express and regulate their emotions (Pianta, 1999). The overall mentoring experience therefore can help youth to grow their social support systems, such as outside members of the community, while also helping them to better understand their emotions and how to appropriately express them (Rhodes et al., 2006).

Mentors are also theorized to influence cognitive development. According to Vygotsky's (1978) theory of development, the "zone of proximal development" is a period of learning in which a child or youth learns through the assistance of an individual. While in the zone, the child or youth reaches the limits of his or her abilities when problem solving, and the teacher or mentor facilitates learning by providing guidance to help take the next step. One example of the potential for mentors

to facilitate cognitive growth is to engage with youth in meaningful conversations that are more sophisticated and intellectual than they may otherwise typically engage in (Dubois, Neville, Parra, & Pugh-Lilly, 2002).

Mentoring has been theorized to influence youth through identity development. Mentors may influence how youth conceive their current and future identities (Rhodes et al., 2006). By serving as role models and advocates for the youth, mentors may serve as an example of a “possible self,” or youths’ ideas of who they may become, who they want to become, or who they are fearful of becoming (Markus & Nurius, 1986). For example, youth from low- to middle-income households tend to underestimate the occupational opportunities they have or the skills these jobs will require (R. Larson, 2000). Mentors may be able to help facilitate a stronger understanding of the options youth have as they progress towards adulthood, including providing education and guidance on the investments that will be required in order for youth to achieve their goals. The involvement of mentors, therefore, may also influence identity development by providing opportunities to build social and cultural capital through the use of community resources, and serving as role models. Exposing youth to prosocial activities in the community can also spark interests or help discover a passion, which can aid in identity development while also introducing youth to high-achieving peer groups (Rhodes et al., 2006).

The extant literature on the effectiveness of mentoring programs, however, reveals that these effects are significant but small. DuBois et al. (2011) conducted a meta-analysis of 73 independent evaluations of mentoring programs. Key to their findings was that effects of mentoring on youth development were small but significant and extended across a broad range of outcomes, including behavioral, social, emotional, and academic outcomes. Additionally, these findings were largely independent of youth age and gender, but varied by risk patterns in youth. Specifically, youth who

exhibited high levels of environmental risk in conjunction with low individual risks and vice versa experienced the largest gains across developmental outcomes, whereas youth with low environmental risk and low individual risk or high levels of both experiencing smaller gains. As an example, a relatively recent study of BBBS school-based mentoring programs found that youth with moderate levels of relational difficulties tended to benefit more from the program than youth who had more pronounced difficulties (Schwartz, Rhodes, Chan, & Herrera, 2011). Overall, the meta-analysis demonstrated further evidence that youth who participate in mentoring programs accrue small, but significant, benefits.

Another recent meta-analysis focused on the effects of mentoring on outcomes related to juvenile delinquency, such as aggression and externalizing problems. Youth who exhibited risks related to juvenile delinquency, such as prior involvement in the court system, were the subjects of focus. This study was different from DuBois et al. (2011) in that the meta-analysis only included research that focused on youth exhibiting risk factors for delinquency rather than studies that included youth showing “problem behaviors.” Tolan et al. (2014) found effects similar to those of DuBois et al. (2011), with effect sizes ranging from 0.11 for academic achievement to 0.29 for aggression, and an average of .18. Additionally, the authors investigated the moderating effects of implementation factors, mentor motivation and training, and program processes on youth outcomes. Of note, youth outcomes were strongest when mentor motivation was professional development, as opposed to civic duty. When program processes included advocating for youth in public systems and providing emotional support to youth, effects were higher. Importantly, however, the authors noted the relative lack of guidance that research on mentoring has been able to provide regarding the underlying processes and mechanisms that lead to better outcomes for youth (Tolan et al., 2014). Indeed, while theory surrounding mentoring has been developed, there has been little evaluation

using experimental methods. The lack of experimental methods used in evaluating mentoring programs leads to questions of the efficacy of mentoring as a primary means of intervention for youth.

Overall, mentoring appears to be a viable method of intervention with youth; however, the effects are typically small, and it is important that mentors are provided the guidance and support needed to cultivate strong and meaningful relationships with the youth they serve. Though mentoring is probably one of the most popular forms of intervention for youth, the processes and mechanisms that lead to change in youth as a result of these relationships, along with the amount of training and support that is needed in order for mentors to be successful, remains an important area of work in the future. As previously noted, youth tend to benefit from mentors when they experience modest levels of risk; that is, not too many risks but not the absence of risk either. Therefore, refining the mentoring approach to ensure that youth who stand to benefit the most from mentoring relationships remains a key objective for the field moving forward. In many cases, mentors are the primary means for programs to implement their curriculum. Thus ensuring that youth are comfortable with their mentors and program staff is potentially key to ensuring that youth do not drop out before they can realize the benefits that they are expected to gain (Pearce & Larson, 2006).

SOS OUTREACH

SOS Outreach is a national youth development nonprofit that focuses on developing long-term life skills in youth through progressive outdoor programs which include community service, mentoring, and peer group facilitation. Founded in 1993, SOS has served over 50,000 disadvantaged youth by engaging participants in a values-based leadership curriculum. Centrally

located in Edwards, Colorado, SOS includes program sites in metro-Denver, Summit County, CO, Lake Tahoe, CA and Seattle, WA. Additionally, part-time offices are located in Steamboat and Durango, CO, Portland, OR, Salt Lake City, UT, and new in 2017, Detroit, MI. Overall, SOS serves over 5,000 youth annually. With foundations in outdoor adventure, SOS creates opportunities for youth to cultivate relationships, foster community, and thrive.

To accomplish these tasks, SOS implements a curriculum focused on core values, leadership training, positive adult mentorship, and community service. Additionally, SOS targets recruitment efforts to underserved youth and provides low-cost participation, transportation, costly equipment, and lift tickets for local ski lodges, providing them with experiences they otherwise will not have an opportunity to engage in.

The curriculum offers students ages 8-18 up to 10 years of outdoor experiential learning that includes character development, values-based leadership training, and community service. From beginning to end, each year's activities build on the lessons of the previous year. This multi year curriculum thus makes SOS a unique program as it provides consistency and support over many years to youth who choose to continue participation.

The multi-year curriculum offerings include:

- **Adventure**, a one or two day program that exposes youth to a new adventure sport or experience
- **Academy**, a multi day program in which a new SOS core value is introduced and coupled with an outdoor activity each day;
- **University**, a four-year, year-round curriculum, with each year offering an increased responsibility to the community and personal growth, as students engage in leadership

training with a consistent adult mentor, take part in service learning and life skills workshops, as well as participate in five days of both winter and summer outdoor adventure

- **Masters**, a multi-year, year-round program designed for students who have demonstrated extraordinary commitment to SOS' six core values throughout five years of participation in University and Academy programs. This program is focused on fostering mentor-based leadership capabilities, communication skills, and self-directed goal setting.

All programs are grounded in instilling the six SOS core values while simultaneously providing an intentional approach to youth development. This is achieved through the combination of the following programmatic elements: responsible outdoor recreation, character development, adult mentorship, service learning, career training and post-secondary education preparation, and encouraging healthy lifestyle choices. In particular, the University program highlights how these elements come together. Following is the basic structure of the University curriculum:

- Year 1: students participate in five ride days and three service days, all alongside a mentor;
- Year 2: additional to the ride and service days, students complete 10 hours of service at a community organization;
- Year 3: students continue ride and service days, and participate in a large-scale service project in which participants work with a group to identify an issue they would like to address. They then work on creating a plan to make a difference with the issue and collaborate with local organizations already addressing the issue (e.g., develop an anti-bullying campaign);
- Year 4: students continue ride and service days, and complete another large scale service project that aligns with one of the six core values.

The University program contains key ingredients identified in the PYD and YAP literature that enhance the chances of success. Similar to characteristics of successful PYD programs outlined in R. M. Lerner (2004), youth are matched with a mentor over the course of their participation, the outdoor recreational activities provide opportunities to develop skills, and community service projects include leaderships development. The University program also closely aligns with key features of YAPs. In general, most youth who enter the program have never had the opportunity to engage in snow sports, and so the experience is novel. Additionally, snow sports require concentrated effort and sustained practice in order to master the skills required. This, along with carefully developed community service projects, creates a challenging atmosphere that pushes youth to adapt in order to be successful. Finally, youth engage in peer groups during recreational and service-related activities. This context requires the youth to work together and overcome obstacles they face. Through this vein, a psychological change process is embedded in the intervention, as the progression through the program requires successfully completing prior challenges and using experience to overcome new ones. Therefore, the University program has strong ties to the foundations of YAP (Deane & Harré, 2014). By incorporating principles of PYD programming and YAP into their model, SOS Outreach is influencing indicators of PYD, such as self-esteem, mastery, or self-concept, among others (Gillespie & Allen-Craig, 2009; Schell et al., 2012).

The PYD perspective is an important and burgeoning field of applied research. Compared to other research paradigms, such as examining youth development from a deficits approach, the PYD field is still young and growing. Youth development programs, on the other hand, have been a popular form of intervening with youth for much longer. Thus, aligning research on PYD with practices in the field remains an ongoing objective. Specifically, deepening our understanding of

how youth select in and out of programs is an important area for growth because attrition may be an optimal choice by youth, or it may be due to factors outside of their control. Additionally, in order for researchers and practitioners to refine programs serving youth, there remains a need to better understand how to distinguish youth. Using indicators of PYD, such as self-regulation skills, to characterize and distinguish youth may provide additional insight into youth development, and the benefits that they can accrue from participation in programs.

THE TWO STUDIES

Positive Youth Development (PYD) programs are an increasingly common form of intervention for youth of all backgrounds. In particular, PYD programs that take youth “off the streets” while not in school, termed out-of-school time (OST) programs, are of special interest to practitioners and researchers alike due to the diversity of programming available and the ecological contexts they provide (R. M. Lerner et al., 2011). This dissertation will use data from a PYD program, SOS University, to address two primary research questions. First, are there factors that are associated with youth dropout from a PYD program? And second, can youth be distinguished into profiles of development characterized by their patterns of responses to PYD indicators?

More specifically, the first study focuses on examining exogenous and endogenous factors that potentially affect youth attrition from a grassroots program. To complete this task, associations between program attrition and factors that were 1) exogenous to youth, such as familial instability; 2) individual-specific factors of youth, for example prior engagement in delinquent behaviors; 3) indicators of self-regulation and mentoring relationships that were collected annually throughout a youth’s participation in the program; and 4) time. Together, these exogenous and endogenous factors may be characterized as risks to dropout, yet much remains to be known about the factors

that play important roles in youth attrition from programs (Agans et al., 2014; McGuire, Dworkin, Borden, Perkins, & Russell, 2017).

The goal of the second study is to identify profiles, or classes, of youth who participated in SOS University, and to highlight patterns of development (PYD and risk related) that could be identified with a person-oriented, rather than variable-centered, approach. The current study's focus on identifying separate profiles of youth, and examining their development, builds upon prior research that has focused on examining the processes that occur when youth engage with PYD programs, but have rarely been able to examine PYD in the context of risk. By characterizing classes of youth who engaged with a PYD program, future research may continue to implement a more refined approach to recruiting youth to specific programs that may best meet their needs. Overall, the novelty of this data set represents a rare opportunity to observe disadvantaged youth as they developed in the context of an extracurricular program. Specifically, this dataset has advantages in that 1) it is longitudinal in nature; 2) over half of the participants came from Hispanic and minority backgrounds; and 3) it contains information on participants' elements of PYD and risks they experienced on an annual basis as they progressed through the program's curriculum.

STUDY I

Youth development programs provide opportunities for adolescents to explore and develop interests, find hobbies, and make friends. These programs have the potential to be especially beneficial to youth who come from disadvantaged contexts and have limited access to resources that facilitate positive development (Benson, Scales, Hamilton, & Sesma, 2006). However, access to PYD programs remains restricted for many youth, and even when it is provided, attrition is high. For example, the Big Brothers Big Sisters program attempts to keep matches (a mentoring relationship) active for one year, yet routinely 30-50% of matches terminate before the prescribed end date (Rhodes, 2002). Similarly, Weisman and Gottfredson (2001) found one-year program dropout rates of 11-53% among eight different after-school programs for youth in Maryland. This study also found that dropouts faced significantly more risks, such as increased peer drug models, missing more days of schools, and living in socially disorganized neighborhoods, than youth who remained active in their programs. Attrition, therefore, is a common and well documented problem that potentially indicates youth most in need. On the other hand, attrition can be conceptualized as a choice by youth to disengage with a program if it fails to meet their needs, or a choice by PYD programs to weed out youth who may not fit well with their particular services. Yet there is little research that conceptualizes exogenous and self-selection factors related to at-risk youth's participation and engagement in PYD programs (Eisman, Stoddard, Bauermeister, Caldwell, & Zimmerman, 2016). Moreover, there is a lack of research focusing on ethnic minority youth from disadvantaged neighborhoods (McGuire et al., 2017). In order for researchers and practitioners to continue to improve the quality and availability of programming available to youth, and especially those from disadvantaged or minority backgrounds, refining theories of youth development and

subsequent experimentation is needed (Warren, Wray-Lake, Rote, & Shubert, 2015). Exploring why attrition from programs occurs, including factors that are in and out of youths' control, may provide additional insight into developmental processes that occur if youth use PYD programs to explore interests and build skills.

Using a longitudinal data set from a grassroots youth development program, the present study takes a step towards better understanding factors related to attrition in positive youth development programs. Specifically, the present study used the PYD perspective to conceptualize attrition factors as exogenous and endogenous to participants, and then examined these factors to assess the complexities surrounding attrition from a youth development program. PYD characteristics and risks youth experience, such as self-regulation skills or experiencing familial conflict, may have distinguishable associations with dropout, yet there is little research examining these relationships (Dawes & Larson, 2011; Eisman et al., 2016). As such, distinguishing between exogenous and endogenous characteristics that are associated with attrition may help in the design of policies that make evidence-based programming more available to youth whose attributes align well with the services particular programs offer. For example, youth who perform well in school but have low levels of self-esteem may especially benefit from programs that focus on building self-esteem through a school environment. Additionally, a better understanding of endogenous factors related to program attrition may help program practitioners target their interventions to youth who stand to benefit the most from participation.

EXOGENOUS FACTORS RELATED TO ATTRITION IN PYD PROGRAMS

From a developmental ecological perspective, youth develop in a system of environments such as a school and community, and are active agents in their own contexts (Bronfenbrenner &

Morris, 2006). In order for development to occur effectively, the individual must interact with these environments regularly. Indeed, many youth *want* to be involved in activities that are fun, provide meaning or a safe context in which to spend time, and provide novel learning experiences.

However, there are many factors outside of their control, termed exogenous factors, that can prevent, or at least restrict, their opportunities for involvement. The existing research, though sparse, highlights a number of key variables that should be considered when examining youth attrition. First, ethnic minority youth, and especially those from distressed communities, have few opportunities to join programs; therefore, even if these youth have an opportunity to participate in a program, it is less likely to align with their interests and needs, resulting in higher attrition (Brown & Evans, 2002; Rhodes, 2002; Weiss, Little, & Bouffard, 2005). The lack of opportunity appears to result from a variety of factors, including a lack of trustworthy adults, location, and few quality programs to choose from (Weiss et al., 2005). A second exogenous factor that may inhibit youth from participating is parental support. Perkins et al. (2007) interviewed African American, Latino/a, Arab, and Chaldean youth from a group of programs in urban communities in Michigan, and found that many youth do not participate in after-school activities simply because their parents will not give permission for them to do so. There are many reasons parents may be reluctant to grant their offspring permission, some which may be related to cultural background. For instance, Arab males have cited their parents' insistence on working outside of school rather than participating in recreational activities, and Latina girls have commented on the importance of familial responsibilities taking precedence over school performance or extracurricular activities (Perkins et al., 2007). In other instances, parents can be too distant from their offspring to encourage participation, or too controlling. Indeed, when parents are more knowledgeable of their offspring's free time activities, youth tend to be more motivated to engage in activities; when parents exert

substantial control over offspring's free time, however, youth tend to be less motivated (Sharp, Caldwell, Graham, & Ridenour, 2006). Thus, when parents are not necessarily supportive of youth's participation in after-school activities, youth tend to remain disengaged.

Structural barriers can impede youth involvement, including lack of transportation to and from activities, high costs of participation (such as membership fees or equipment purchase), and language barriers, which can be especially problematic for dual language learners (McGuire et al., 2017). Language barriers are particularly important because they reduce the likelihood that youth will not participate, yet PYD programs can present an opportunity for youth to make more friends, continue learning their secondary language (in the US, typically English), and integrate more fully into the local community. When programs or clubs are not tailored or flexible enough to be inclusive of individuals from different backgrounds, youth may be further isolated from their peers. The language barrier is thus illustrative of the importance of developing culturally inclusive PYD programs, and is an area of research that needs to be addressed (e.g., Hollis et al., 2011).

Beyond a lack of opportunity and parental support, another exogenous reason some youth do not participate in programs is fear of alienation by peer groups. For example, youth within a program can sometimes be alienated by others through the formation of cliques, and also be ridiculed by youth outside of the program for their participation (Dworkin, 2007). This pressure can result in dropout as the youth are uncomfortable in the program and do not expect their relationships to improve (Fredricks, Hackett, & Bregman, 2010). At other times, youth will not join activities or clubs for fear of losing "cool points" because they will not be able to engage in risky behaviors, such as getting drunk or selling drugs, with friends (Perkins et al., 2007). Though sparse in the evidence base, these ideas are relatively supported in the literature that does exist, as program attendance has been linked with lower incidence of peer drug models, days absent from school, last

month drug use, variety of drug use in past year, and social disorganization (Weisman & Gottfredson, 2001). Thus, involvement in after-school programs may act as a protective factor, preventing youth from falling in with peer groups who may be negatively influential. On the other hand, “creaming,” or selecting youth who may be more likely to succeed in the given context, may be preventative of youth engaging in programs (Huang, Duffee, Steinke, & Larkin, 2011; Larzelere, Kuhn, & Johnson, 2004). After-school programs may not be accessible to troubled youth because the programs may have certain benchmarks that prevent “bad apples” from joining or continuing participation. For example, youth can be kicked off of sports teams if they test positive for illegal drugs, or program leaders may elect to expel youth who get into trouble. As another example, many private schools can select the youth they allow to enroll, and can thus select out youth who display troubled or risky profiles. These types of barriers may be beneficial to attending youth who are susceptible to risks, but they can also have adverse consequences for youth who are already engaging in risky behaviors, as they lose the opportunity to engage in promotive and protective environments.

Another factor that may directly or indirectly affect youth is the use of volunteer mentors. Many nonprofit organizations depend on volunteers to administer programs, such as mentors implementing a curriculum with youth, and thus when mentors are poorly trained or bow out, organizations and youth suffer the consequences. Mentors quit for a variety of reasons, but attrition is often related to characteristics of the organizations or the youth they serve. For example, one reason Big Brothers Big Sisters has such a high attrition rate is that volunteer mentors are typically unprepared to deal with the challenges that many at-risk youth pose. Interacting with youth who have behavioral difficulties is stressful, and without proper support from the organization, matches tend to close before the prescribed one year mark (DeWit et al., 2016). Mentors of high-risk youth

have also reported additional challenges to maintaining relationships, including frequent cancellations of meetings by youth, difficulty in managing behaviors, troubles addressing youths' emotional and social needs, and difficulties in maintaining positive relationships with parents and caregivers (Herrera, DuBois, & Grossman, 2013). Additionally, mentors with little previous experience working with children and youth routinely feel less efficacious of their ability to support youth from troubled backgrounds (Spencer, 2007). This lack of confidence can become exacerbated when youth come from unstable homes, or their perceptions of parental emotional support are low, as the youth may demand more from the relationship than the mentor is able to give, and thus the chances that a match ends prematurely increase as well (DeWit et al., 2016; Rhodes, 2002; Shlafer, Poehlmann, Coffino, & Hanneman, 2009).

Retaining quality mentors is important to organizations because it reduces the costs of finding and training new mentors. Additionally, there is evidence suggesting that youth are more likely to remain in programs when their relationships with mentors are strong. Mentors who maintain an inclusive and welcoming atmosphere can discourage youth from dropping out (Pearce & Larson, 2006). Attrition can also be mitigated when staff and mentors are flexible and use different relational strategies to keep youth engaged (Jones & Deutsch, 2011). By remaining engaged in a program, youth can take many lessons from the people involved in PYD programs. For instance, mentors may cause youth's working models of relationships to change, as the positive experience may help youth grapple with difficulties they have with their parents (Rhodes et al., 2006; Rhodes et al., 2005). The overall mentoring experience therefore can help youth grow their social support networks in their communities while also providing opportunities to increase their understanding of their emotions and how to appropriately express them (Rhodes et al., 2006). Moreover, mentoring relationships may influence youth identity development through changes in

conceptions of current and future identities (Rhodes et al., 2006). By serving as role models and advocates for the youth, mentors may serve as an example of a “possible self,” or youths’ ideas of who they may become, who they want to become, or who they are fearful of becoming (Markus & Nurius, 1986). For example, youth from low- to middle-income households tend to underestimate the occupational opportunities they have or the skills these jobs will require (R. Larson, 2000). Mentors may be able to help facilitate a stronger understanding of the options youth have as they progress towards adulthood, including providing education and guidance on the investments that will be required in order for youth to achieve their goals. The presence of mentors, therefore, may also influence identity development by providing opportunity to build social and cultural capital through the use of community resources, and serving as role models.

Overall, many exogenous factors have been empirically related to attrition from PYD programs. These include family support and conflict, peer group relations inside and outside of the programs, structural barriers such as transportation, high costs of participation, or language barriers, and factors that may be related to cultural background. However, these same factors remain important correlates of attrition from PYD programs today, leading to the following questions: can factors outside of youths’ control be mitigated in order to decrease attrition? What is the relative contribution of exogenous risk to attrition?

SELF-SELECTION FACTORS RELATED TO RETENTION

Though the reasons for joining are diverse, involvement in these programs provides opportunities for proximal processes, or interactions between individuals and their environment, that encourage the development of assets and positive trajectories of growth (R. M. Lerner, 2004; R. M. Lerner et al., 2005). When provided the *opportunity*, youth join programs for a variety of

reasons, including interest in a specific activity, joining peer groups, parental guidance, or school requirement, among others (Herrera & Arbreton, 2003; Hirsch, 2005; Perkins et al., 2007). Many times, the only specific reason for joining a program is that its activities are fun (Perkins et al., 2007), and a common reason for dropping out of a program is that it is boring (Weisman & Gottfredson, 2001). For ethnic minority youth, and especially those in urban communities, however, the reasons for joining programs are as diverse as the communities themselves. For example, Halpern, Barker, and Mollard (2000) interviewed youth from a low-income community in Chicago on their reasons for joining local programs. The two most common responses were that programs can be a safe place to commune with friends, and that close relationships with staff are meaningful. Similarly, Perkins et al. (2007) found that reasons for joining programs differed by ethnicity and gender. For instance, African American and Latina girls cited being in a safe place as a reason for program involvement. African American males, but not Latino, Arab, or Chaldean males, also cited safety as a reason for joining. All youth cited avoiding the streets, the opportunity to learn, avoiding boredom, and fun as reasons for joining programs.

However, although providing youth with a safe and supportive environment is important and beneficial, it is not enough to maximize their potential to thrive. In order for youth to accrue the additional benefits offered through program involvement, such as increased self-esteem or improvements in future orientation, youth must be psychologically engaged, or motivated to invest themselves in the program (Dawes & Larson, 2011). When youth become increasingly engaged, they devote greater attention towards the activities and content of the program, which in turn leads to greater learning experiences (Blumenfeld, Kempler, & Krajcik, 2006). Becoming engaged, as Dawes and Larson (2011) pointed out, is a process that can extend over time. In some cases, youth may not initially identify with a program or activity, but as they gain knowledge and develop

positive feelings towards it, they can become engaged (Hidi & Renninger, 2006). When this process occurs, youth may integrate the goals of the activity or program into the self, resulting in an accrual of additional benefits, such as elements of PYD that the program targets (Ryan & Deci, 2000). For example, Dawes and Larson (2011) interviewed 100 youth to evaluate the role of personal connection to activities as a mechanism of change in becoming engaged in activist programs. Of those interviewed, 38 were considered to have become engaged with their program through a sense of personal connection to the goals of the activity. These youth cited the alignment of the activities with their personal values, ambitions, or identities as instrumental in the process. Additionally, the personal connection occurred through changes in themselves, such as developing knowledge or skills, and in their perceptions of the activities, including learning the importance of the activity in reaching a specific goal.

Another characteristic that likely influences a youth's decision to maintain involvement in a program is their intentional self-regulation (ISR) skills. ISR is comprised of intrinsically motivated and intentional actions, including goal setting, decision making, and developing strategies to achieve an objective (Geldhof, Little, & Colombo, 2010). This helps the individual develop an identity, which includes interests, values, and abilities, among others (Côté, 2009). By governing their own emotional, behavioral, and cognitive actions in light of a selected goal or in a specific context, individuals regulate themselves (R. M. Lerner, 2011). According to Napolitano, Bowers, Gestsdóttir, and Chase (2011), ISR can be defined as “an individual's chosen, organized action-in-context that further self-defined, valued goals or purposes (p.23).” When youth have strong self-regulation skills, they are able to select into activities and programs that best serve their own goals and long-term objectives. For example, they may be able to distinguish between intrinsic and extrinsic motivations for participating in a PYD program. Motivation can be intrinsic, as in

enjoyable or self-defining (Hansen & Larson, 2007), or extrinsic, such as spending additional time with friends or to fulfill an educational requirement (R. Larson, 2004). Finding programs that youth enjoy for intrinsic reasons may indicate that the program has become self-defining to the youth (Coatsworth, Palen, Sharp, & Ferrer-Wreder, 2006). On the other hand, if youth join a program for extrinsic reasons, such as enjoyment of the activity, once the novelty wears off, or youth can engage the activities without the help of the program, they may be more likely to drop out of the program. Strong self-regulation skills may be necessary for youth to make these distinctions. When youth are unsure of their long-term goals or objectives, activities and programs provide experiences that help them to begin building identities and formulating plans for their futures. Conversely, when specific activities and programs no longer serve their purpose to youth, they can select out and move towards new experiences that will help them continue refining who they want to be in the present and as they move into adulthood.

From a developmental perspective, we might expect youth who have strong self-regulation skills to be able to select in and out of programs that provide a curriculum that is potentially self-defining. Self-defining activities are those that represent who the youth is or would like to become (Coatsworth et al., 2006; Waterman, 2004). For example, youth who carry a set of moral attributes may be internally motivated to engage a program that focuses on building on these attributes. Reasons such as these are intrinsic to the individual, and may make the curriculum of the program more important than the context that the program occurs in, such as the activities and social groups that are involved (R. Larson & Rusk, 2010). As such, in the context of a PYD program, when youth are intrinsically motivated to remain engaged, the activities of the program are either self-defining, or are expected to become so, which in turn can result in stronger identity development (Dawes & Larson, 2011; Waterman, 2004). On the other hand, youth with strong

self-regulation skills may also find that a program's content does not align with their goals or identities, and thus select out when the extrinsic motivators, such as peer groups or activities, lose their appeal. In either case, the choice to engage with or drop out of a program may be an optimal decision for youth, as they may be able to explore other programs or activities that are potentially self-defining and more aligned towards their goals for the future.

Although research has provided insight into the benefits youth can gain from participating in programs and activities, questions of the processes that are involved in youths' decisions to engage with some programs and drop out of others remain to be answered. Specifically, characteristics endogenous to youth, including personal attributes such as self-esteem, leadership skills, self-regulation skills, or intrinsic or extrinsic motivation, may be important factors in youths' selection in and out of programs that best serve their needs. Yet there is relatively little work that has focused on considering these individual-level factors when examining engagement in out-of-school time programs (Greene, Lee, Constance, & Hynes, 2013). The current study begins to address this gap by separating out endogenous characteristics of youth from exogenous factors, and examining their association with attrition from a PYD program.

Separating exogenous from endogenous factors of program attrition may be important because developing successful policies and programs may be enhanced by distinguishing between the two. Exogenous factors, such as a lack of opportunity or logistical barriers, may only require more funding streams in order to be overcome, whereas exogenous factors related to culture may require the development of programs that are more inclusive and relevant to the culture. Endogenous factors, such as self-regulation skills or other personal attributes, may be indicative of youth optimally selecting into programs and activities that best suit their needs, indicating that the best way to serve these youth is to provide them with a diverse array of programs to choose from.

On the other hand, personal attributes that may be characterized as risks, such as depression or low self-esteem, may require more refined program settings that are better suited to address the needs of youth, while also supporting their strengths. Yet empirical research has mostly focused on the 4-H and Boy Scouts of America studies to observe elements of youth development programming, and there has been little work analyzing attrition over time (i.e., using time series data rather than dichotomous participant/non participant data). Moreover, these studies have focused mostly on white, middle class youth, and questions of whether or not the existing research on development applies to youth from minority backgrounds still remain. Together, these are limiting factors in translating theory to practice. Using data from real world, grassroots programs that track their participants throughout their engagement, therefore, can increase our knowledge base for developing rigorous and generalizable core philosophies that lead to youth successfully developing. Moreover, diversifying the data used to generate an evidence base can potentially provide additional insight into the complexities of youth development and engagement in PYD programs.

THE CURRENT STUDY

This study used a longitudinal design to investigate factors potentially related to dropping out of a PYD program over the course of three years of involvement. The current study focuses on research questions related to conceptualizing risk as exogenous and endogenous to youth, and how these overarching risks may be related to program attrition. Additionally, the current study aimed to investigate the relationship between elements of youth development and attrition from a PYD program. To complete these tasks, I considered the associations between program attrition and factors that were a) exogenous to youth, such as familial instability; b) self-selection factors of youth that may be characterized as risk of attrition, for example behaviors that may lead youth to be

dismissed from programs, such as prior engagement in delinquent behaviors; c) indicators of self-regulation, mentoring relationships, and social responsibility that were collected annually throughout youths' participation in the program (to be described below); and d) time. Together, (a) and (b) may be characterized as risks that affect dropout, whereas self-regulation, mentoring relationships, and social responsibility may be described as attributes of the individual and the program context.

In relation to the study's aims, the key drivers of this study were four hypotheses. Hypothesis 1 followed results presented by Agans et al. (2014) indicating that youth who experience risk and engage in risky behaviors are more likely to drop out of programs and activities. I hypothesized that exogenous risk factors, such as familial instability or problems making friends, are positively associated with dropout. For instance, if youths' families cannot afford transportation, youth may be unable to enter or maintain engagement in PYD programs (Perkins et al., 2007). Hypothesis 2 followed Agans et al. (2014) as well. I hypothesized that endogenous risk factors, such as mental health problems or low levels of PYD, are positively associated with dropout. For instance, it is possible that youth who struggle with depression or anxiety are unable to fully engage in a program's content. Additionally, characteristics of youth that are person-specific, such as being an English Language Learner (ELL), may make key elements of the programs, such as socializing with other youth and mentors, tough to engage with. This, in turn, may lead to dropout (McGuire et al., 2017).

My third hypothesis was that higher self-regulation skills will be negatively associated with attrition. Additionally, I hypothesized that youth with stronger relationship ties to their mentors will be less likely to drop out of the program. Higher levels of self-regulation may help youth to select in and out of programs that have the potential to help in the development of their identity; that is,

strong self-regulation skills may allow youth to engage programs they find intrinsically motivating, and therefore self-defining (Coatsworth et al., 2006; Waterman, 2004). Youth who have strong relationships with mentors in the program may also be more likely to remain in the program, as strong mentoring relationships may be indicative of the mentors acting as role models to youth who are developing their identities. Additionally, strong mentor relationships may be indicative of supportive adults who implement programs with efficacy, facilitating further integration of the program curriculum into youths' selves. An additional measure that SOS collected, described as youths' ability to socialize with others and their feelings towards civic responsibility, was included as well. I did not hypothesize how this construct, termed social ease and responsibility, would be related to program dropout, but I included it in the analyses as an exploratory mechanism. Given that SOS seeks to instill feelings of civic responsibility and provide opportunities to socialize with other youth, however, it was plausible that higher levels of social ease and responsibility are associated with lower levels of dropout.

The fourth and final hypothesis was that youth from Hispanic backgrounds are more likely to drop out of the program than White youth, although this research question was exploratory in nature. PYD programs, on average, have not been tailored to meet the demands of specific populations of youth, such as urban Hispanic youth (e.g., Deane & Harré, (2014)). Though SOS serves many minority youth, it is unclear that they have tailored their program to be culturally appropriate. Additionally, it was plausible that barriers to program engagement, such as being ELL (McGuire et al., 2017), are associated with higher dropout rates. Therefore, I expected that SOS struggles with cultural responsiveness as well, and that this would manifest in the present analysis.

This study builds on previous literature in a variety of ways. First, it conceptualizes risk for attrition as exogenous and endogenous to youth, a potentially important distinction for applied

settings. Second, it uses a PYD framework to characterize how youth may decide to select in or out of PYD programs. Third, this study serves as a snapshot of real-world attrition in an applied program, providing an opportunity to study key factors that relate to program attrition as they occur in a real-world context. Fourth, this study focuses on Hispanic youth, of which the majority come from disadvantaged contexts; namely, that virtually all participants have been identified as at risk for school dropout. Fifth, the current study considers the PYD and risk factors as they may relate to program attrition. Together, these contributions may help prevention researchers and program practitioners to better understand why youth choose to engage or disengage in programs. Moreover, it may illustrate the importance of separating factors internal and external to youths' control when evaluating PYD and YAP programs.

METHOD

Participants

Participants consisted of 1,737 youth who were enrolled in the University program between the 2012-2013 and 2015-2016 seasons. These youth came from all of the geographic locations described previously, including Colorado, California, and the Lake Tahoe region. Table 10 describes the number of observations occurring in each of the three seasons. During the 2013-2014 season, 794 youth completed the University program and had available data. In the 2014-2015 and 2015-2016 seasons, the number of University youth with available data were 887 and 913, respectively. Table 11 displays observation frequencies at each time point, or University year, that youth were observed in. For the current study, youth could have been enrolled in the University program for one to three years. Youth who graduated in the third year or completed University year

one or two during the 2015-2016 season were considered right censored, as the dataset does not extend beyond the 2015-2016 season.

On average, youth exited the University program in seventh grade. Of those reporting, 55% were male, 37% were female, and the final eight percent never indicated their gender. At all three time points, the ratio of males to females remained roughly the same. For the given years, 44% of the youth identified as Hispanic/Latino, 38% as Caucasian/White, 3% Black, and the remaining 15% came from various ethnic backgrounds, including Native American, Middle Eastern, Native Hawaiian/Pacific Islander, and “other.” As SOS focuses on serving youth from disadvantaged backgrounds, it was surprising to see that only 25% of parents indicated that their families lived in low-income homes. However, 32% either did not complete the risk assessment at baseline or refused to answer the question pertaining to income. Still, it is somewhat surprising that 43% identified as not being low income. While enrolled in the program, youth typically had two potential learning days to attend, but only completed one, on average. Youth also had approximately nine potential ski days and attended eight, on average. Youth were enrolled in the program 1.79 years on average, indicating that the majority dropped out after either the first or second year. The majority of youth, upon entrance into the University program, were in grade school.

SOS Outreach Program

SOS Outreach is a national youth development non-profit that focuses on developing long-term life skills in youth through progressive outdoor programs which include community service, mentoring, and peer group facilitation. Overall, SOS serves over 5,000 youth annually, targeting recruitment efforts to underserved youth. The program provides low-cost participation,

transportation, costly equipment, and lift tickets for local ski lodges, providing youth with experiences they otherwise were unlikely to have an opportunity to engage in.

The curriculum offered students ages 8-18 up to 10 years of outdoor experiential learning that includes character development, values-based leadership training, and community service. From beginning to end, each year's activities built on the lessons of the previous year.

Following is the basic structure of the University curriculum that was implemented:

- Year 1: students participate in five ride days and three service days, all alongside a mentor;
- Year 2: additional to the ride and service days, students complete 10 hours of service at a community organization;
- Year 3: students continue ride and service days, and participate in a large scale service project in which participants work with a group to identify an issue they would like to address. They then work on creating a plan to make a difference with the issue and collaborate with local organizations already addressing the issue (e.g., develop an anti-bullying campaign);
- Year 4: students continue ride and service days, and complete another large scale service project that aligns with one of the six core values.

The University program contains key ingredients identified in the PYD and YAP literature that enhance the chances of success. Similar to characteristics of successful PYD programs outlined in R. M. Lerner (2004), youth were matched with a mentor over the course of their participation, the outdoor recreational activities provide opportunities to develop skills, and community service projects include leaderships development. The University program also closely aligned with key features of YAPs. In general, most youth who entered the program have never had the opportunity

to engage in snow sports, and so the experience was novel. Additionally, the recreational activities required concentrated effort and sustained practice in order to master the skills required. Finally, youth engaged with peer groups during recreational and service-related activities. This context required the youth to work together and overcome obstacles they face. Thus, the curriculum was structured such that progression through the program required successfully completing prior challenges and using experience to overcome new ones. Following enrollment in the program, youth were required to complete each year's curriculum before graduating to the next year's. Importantly, as youth progressed through the University program, their responsibilities, such as service-learning day requirements, increased, while the number of activity days did not (i.e., skiing opportunities). Thus, the "cost" of participating in snow sports through SOS increased progressively through each University year.

Procedure

Annually, youth were asked to complete a survey that included measures of self-regulation, perceptions of the mentoring relationship, attitudes towards drug use, attitudes towards school, leadership efficacy, self-efficacy, future orientation, community engagement, goal setting, self-esteem, decision making, and acceptance of diversity. These measures were developed to replicate the five Cs of development, but were not exact replicas. Aside from the PYD measures, before the beginning of each University year, parents were also asked to complete a "needs assessment," which focused on risks the youth was experiencing at the time, such as family conflict, drug use, or living in a low-income household. Covariates included workshop and ski day attendance rates, ethnicity, and grade.

Measures

Program dropout. Following completion of each University year, SOS Outreach staff documented whether or not each youth graduated (finished the program year) or dropped out of the program. As such, in the present study, youth could drop out of the program at three different times: after University year one, two, or three. Censoring aside, youth who completed year one or two but did not have a subsequent data point were also considered to have dropped out. For instance, if a youth had a data point for University year one and graduated, but there was no data point for the second or third year, then the youth dropped out.

An overall measure of risk, developed by SOS, was completed annually by a parent or primary caregiver. Items reflected risk in a variety of areas including mental health, behavioral difficulties, struggles in school, and familial conflict, among others. First, a cumulative score of overall risk was computed and correlated with elements of demographics, indicators of PYD, and dropout. No significant results were found. Factor analysis was used to consolidate the needs assessment in order to reduce the number of variables. Specifically, principal components analysis (PCA) was initially conducted on data from youth who did not enter the University program. This analysis indicated that the measures could be reduced to three factors. Specifying that all items load onto at least one of three factors, this model was then tested using needs assessment data from youth who entered the University program. First, principal components analysis with an orthogonal rotation was completed, and then a factor analysis using the maximum likelihood method and an oblique rotation was conducted. In both cases, all three factors yielded eigenvalues greater than one. In both the principal components and factor analyses, variable loadings were somewhat different from the preliminary PCA. When conducting the PCA, in some instances, variable loadings were lower than acceptable thresholds (.30). However, the factor analysis resulted in only one variable

(difficulty making friends) not reaching an acceptable loading onto its construct. This measure was kept with this construct due to moderate correlations with the other indicators (range from .10 to .29). The loadings are presented in Table 2.6. Chronbach's alpha, a measure of the reliability of a set of measures, was generated for each factor. Each factor had low reliability (less than .70). These low reliabilities are potentially due to wide range of risk characteristics the survey is designed to capture, such as multi-generational involvement with the court system and low self-esteem. Additionally, each item was scored as yes/no. Thus, the development of a cumulative score of risk would not have been appropriate, and instead three composite measures of risk were calculated as dichotomous indicators of the presence of risk of the given factor. Dichotomous indicators are used in this study to indicate the presence of the general risk construct, as opposed to comparing levels of the risk. Youth who were experiencing any of the risks from a particular factor were scored as having the presence of the associated overall risk factor. The three risk factors were as follows:

Mental and social risk (MSR) (Chronbach's alpha:.37). This measure was composed of variables that were indicative of a mental or social risk (including bullying, English as second language, or that a parent had mental health concerns about the youth) or represented risk that could lead to mental or social challenges, such as low self-esteem. This variable was dichotomous. As indicated in Table 2.6, the presence of ESL or being in a low-income household loaded negatively onto the construct, thus a youth who was ESL or from a low income family was unlikely to manifest any of the other MSR indicators.

School Challenges and Behavioral risk (SCBR) (Chronbach's alpha:.64). This inventory was comprised primarily of variables indicating if a youth was struggling in school, such as a learning disability, manifesting low commitment to school, or anger issues. Additionally, it

included an indication of difficulty making friends and not being physically active. All variables loaded positively onto this factor.

Family and friend risk (FR) (Chronbach's alpha:.57). Family and friend risk was marked by indicators of risk occurring in accordance with family or friends, such as family conflict, friends who use drugs, or multigenerational involvement with the court system. Additionally, this risk marker included the youth's early onset of drug use. All variables loaded positively onto this factor. This variable was dichotomous.

Intentional self-regulation. Intentional self-regulation was measured through six items coming from the Selection, Optimization, and Compensation questionnaire (SOC) (Freund & Baltes, 2002; Geldhof, Bowers, Gestsdóttir, Napolitano, & Lerner, 2015), and the Early Adolescent Temperament Questionnaire-Revised (Ellis & Rothbart, 2001). The SOC is a measure of intentional self-regulation, whereas the EATQ-R is intended to assess temperament and self-regulation. Answers can range from 1=Strongly Agree to 4=Strongly Disagree (Cronbach's alphas for years 1, 2, and 3: .64, .63, .62).

Mentoring relationships. The mentoring measure consisted of five questions, such as "My SOS mentor(s) helped me to succeed in the things I did this past year." Answers could range from 1=Very Often to 4=Rarely (Cronbach's alphas for years 1, 2, and 3: .86, .82, .81).

Social ease and responsibility. This measure consisted of four questions, including "It is hard to get ahead without breaking the law now and then;" "I don't owe the world anything;" "I do not mix well with other people;" and "People find it hard to figure me out from what I say." Answers could range from 1=Strongly Agree to 4=Strongly Disagree (Cronbach's alphas for years 1, 2, and 3: .73, .69, .66). This measure, partially derived from the literature (see Benson), also contained two measures that were developed by SOS.

Note that SOS administered their surveys such that *lower* scores indicated *higher* levels of a given construct. As a result, the interpretation of these constructs was such that lower scores indicated more favorable levels of the given construct. For example the lower the score of the mentoring relationships construct, the better the youth’s perceptions of the relationship between youth and mentor.

Table 1: Need inventory constructs and factor loadings

Item	Construct	PCA ^a	ML ^b
Experiencing bullying or teasing	MSR	.36	.73
Low self-esteem	MSR	.30	.67
English as second language	MSR	.43	.68
Mental health concerns	MSR	.32	.53
Low income family	MSR	.23	.35
Difficulty making friends	SCBR	.26	.14
Not physically active	SCBR	.35	.50
Anger issues	SCBR	.20	.35
Challenge with finishing academic goals	SCBR	.37	.80
Low commitment to school	SCBR	.36	.78
Learning disabilities	SCBR	.27	.55
Challenges focusing in school	SCBR	.38	.77
Concerns with youth’s behavior at school	SCBR	.15	.50
Early drug use	FR	.31	.64
Friends who use drugs	FR	.35	.73
Involvement with court system	FR	.37	.79
Single parent, Adoptive, or Foster home	FR	.33	.78
Family conflict	FR	.31	.71
Parental attitudes favorable towards drugs	FR	.34	.76
Multigenerational involvement with courts	FR	.38	.82

^a PCA: principal components analysis with orthogonal rotation;

^b ML: maximum likelihood factor analysis with promax rotation

Stastical Analyses

All data analyses were performed using Stata 14. Consistent with Singer and Willett (2003), the following steps were taken to complete the statistical analysis. First, the data were summarized using a life table (see Table 7), which describes the distribution of event occurrence in the data set.

The life table summarizes the number and rate of dropouts across the three University years, detailing how many youth entered a University year, how many dropped out, and how many were censored. Second, hazard and survivor functions were estimated. Hazard functions can be used to identify patterns of event occurrence, in this case dropout (Singer & Willett, 2003). Survival functions, on the other hand, cumulate risk across periods, as opposed to separating risk by time period. The survival function, included in life tables, assesses the probability that a randomly selected individual will not experience the event, in this case, dropout (Singer & Willett, 2003). In addition, post-hoc analysis of the survival function, specifically log-rank tests, can be used to test for equality of survival functions based on group membership, such as being of Hispanic descent. This was completed in accordance with the fourth hypothesis.

Third, missing data were imputed using Stata 14's "mi impute chained" syntax. This method fills in multiple missing values iteratively using a chained equation approach, imputing data in ascending order, from variables with the least amount of missing cells to variables with the highest missingness. An iterative process was used because multiple variables were missing for a given respondent, the dataset was longitudinal in nature, and data were not missing purely monotonically. Data were converted to a wide format to ensure that imputation of data accounted for youths' previous observations, if available. A wide format consists of one row per subject (youth), and multiple columns representing each observation for the given subject. For each model, 40-60 datasets were imputed (Rubin, 2004). The number of datasets imputed depended on whether or not Stata 14 was able to develop estimates that converged to a stationary distribution. On average, 10 iterations (burn-in periods) were required to achieve convergence. In some instances, convergence was not achieved, in which case the number of imputed datasets was decreased, and variables with large proportions of missing data were eliminated from the models.

Fourth, following imputation of the data, to test my hypotheses, logistic regression analysis through Stata 14's "mi estimate: logit" sequence was conducted, with the outcome variable being a dichotomous indicator of dropout. Logistic regression models, as opposed to Cox-proportional hazards models, were employed due to the outcome variable being treated as discrete rather than continuous. Specifically, variants of the following baseline logistic model were tested:

$$P(\text{Dropout}) = \beta_0 + \beta_1 S_1 + \beta_2 S_2 + \beta_4 R_1 + \beta_4 R_2 + \beta_5 R_3 + \beta_6 D_i + \beta_z Z_1 + \epsilon_i \quad (1)$$

where S_1 indicates University year 1, S_2 University year 2, R_1 , R_2 , and R_3 being indicators of behavioral risk, mental and social risk, and family risk, respectively, D_i the PYD z-score, and Z_i a vector of covariates.

In accordance with Hypotheses 1 and 2, the baseline logistic regression model included indicators of exogenous and endogenous risks, and controls that included a z-score of overall PYD, an indicator of Hispanic descent, high school status, gender, and time. Specifically, mental and social risk, school and behavior risk, and family and friend risk indicators were the focal point of the first set of analyses. Although the family and friend risk indicator may be considered exogenous to the youth, and the school and behavior risk indicator is likely endogenous to youth, the mental and social factor included exogenous and endogenous risks. Therefore, interpretation of the final risk factor did not include a specific reference to its endogeneity to youth. To test the third hypothesis, a separate logistic regression model was estimated that included scores of self-regulation, mentoring relationships, and pro-social orientation. In comparison to the logistic models estimated for the first two hypotheses, where a z-score of the overall PYD scores was included as a control, the focus of this model was on specific indicators of PYD.

Finally, following multiple imputation of data specific to Hispanic youth, the same models as those employed for the first three hypotheses were tested using Hispanic youth data, with the purpose of computing the same models as those prior in order to maintain consistency.

RESULTS

Longitudinal Data, Risk, Self-Regulation, and Mentoring Relationship Characteristics

Table 2 indicates that in the sample of 1,737 participants, 2,594 observations occurred and 801 dropouts. Eleven participants had a gap between data points; for example, a youth may have had an observation at University year one and University year three, but not University year two. Given that youth had to have completed the previous work in order to graduate, it is known that the middle time point was missing. Of note, however, data for the 2014-2015 season was sparse overall due to transitions in program implementation.

Table 2: Longitudinal data

Category	Total	Mean	Min	Median	Max
Number of participants	1737				
Number of records	2594	1.49	1	1	3
(First) entry time		.29	0	0	1
(Final) exit time		1.79	1	2	3
Subjects with gap	11				
Time on gap if gap	11	1	1	1	1
Observations where dropout could occur	2,594	1.49	1	1	3
Dropouts	801	.46	0	0	1

Table 3 shows summary statistics for the self-regulation, mentoring relationship, and pro-social orientation constructs. Data were missing in large portions due to the fact that survey questions varied across University years and surveys were administered according to youth age (grade school youth were administered a brief version of the high schoolers' survey). The portion

of data missing on a per-variable basis ranged from 50-90% during year one of University, 16-85% for year two, and 12-100% for year three. To attenuate the effect of missing data on sample size, the median of the available responses for a given construct was taken. The median value, as opposed to a sum score or average, was taken to minimize the effect of outliers. In general, youth scored moderately on indicators of self-regulation, mentoring relationships, and pro-social orientation, with the means typically rounding to two (out of a possible four). Notably, some of the missing rates were due to youth in grade school not being administered questionnaires on certain constructs, such as the mentoring relationship questionnaire. However, the missing data were also a result of attrition, implementation issues, and changes in survey instruments across University years. Thus, data analyses that focused on the PYD constructs were limited in their scope and interpretability.

Table 3: Summary statistics of the PYD construct

Construct	Mean of median	Std Dev.	Min	Max	Percent missing
Mentor relationship	1.35	.58	1	4	74
Self regulation	2.10	.74	1	4	36
Prosocial behavior	2.87	.78	1	4	64

Table 4 shows that the majority of youth, at any given time, were experiencing an MSR (71%) and SCBR (61%). The presence of MSR and SCBR in the majority of youth was not surprising given that SOS targeted youth who had been identified as struggling in school. On the other hand, roughly one third of youth were experiencing an FR at any given point in time. Given that risks occurring in the home may not be readily observable to teachers or community members, youth with this risk pattern may be less likely to be identified and approached about the program.

Table 4: Risk composites summary statistics

Construct	Mean	Std Dev.	Min	Max	Percent missing
MSR	.72	.45	0	1	17
BR	.61	.49	0	1	17
FSR	.31	.46	0	1	17

Overall, missing data patterns emerged across PYD and risk measures. Displayed in Table 5, roughly a quarter of youth were missing all data on PYD measures. Seventeen percent of youth were missing risk measures, and eight percent were missing both.

Table 5: Per observation missing data patterns

Variable	Percent missing
All PYD and risk measures	8
All PYD measures	27
All risk measures	17

Description of Survival and Hazard Functions

Hazard and survival analyses were completed to assess the relationship between dropout and time. Table 6 presents estimates of the Kaplan-Meier hazard function. The hazard function displays unique risk associated with dropping out during each time period. Between University years one and two, youth had roughly a 34% chance of dropping out. Between University years two and three, the probability of dropout increased to approximately 44%, and following entry into University year three, the probability of dropout decreased to roughly 17%, although censoring, or that data collection ended before it could be determined if youth dropped out, for the final time period was high. In accordance with my hypothesis, the risk of dropping out was higher at both year one and year two; however, risk for dropout was substantially higher following University year two compared to year one.

Table 7 presents a life table describing the dropout history of youth in the University program as they transitioned through University years one through three. Row one corresponds with data collected on youth *following* their completion of University year one. All 1,737 youth in the sample graduated from year one. Of those youth, 468 did not return for University year two, and 288 were right censored. Thus, roughly 70% of youth who completed University year one returned for year two. Of the 981 youth who returned for University year two, 300, or just under a third, of participants dropped out while an additional 290 were right censored. Finally, 391 youth returned for University year three, and 33 dropped out. However, the majority of the data for youth who entered University year three were right censored. Overall, the survival analysis shows that of youth who complete University year one, 38% remain engaged through University year three. Thus, as expected, the majority of youth dropped out over the course of University years one and two.

Together, the hazard and survival function estimates indicate that youth are most likely to drop out following completion of University year two, even though they are also much likelier to drop out following University year one compared to University year three. In a subsequent analysis, dropout was regressed on time, the square root of time (to account for non-linearity in the dropout rate), and to investigate possible dosage associations, the ratio of activity days attended to activity days possible, and ratio of workshop days attended to workshop days possible. Both the activity and workshop ratios were statistically significant, with a unit increase in the activity ratio being associated with a 96% ($p < .01$) drop in the odds of dropout. A unit increase in the workshop ratio, while not statistically significant at the $\alpha = .05$ level, was associated with a 65% ($p < .10$) increase in the odds of dropping out.

Table 6: Estimate of the Kaplan-Meier hazard function

Time	Interval	Beg. Total	Cum. Failure	Std. Error	Hazard Function	Std Error	95% Conf. Int
1	[1,2)	1,737	.2938	.0114	.3444	.0157	.3136 .3751
2	[2,3)	981	.5472	.0138	.4373	.0246	.3890 .4856
3	[3,4)	391	.6177	.0162	.1688	.0293	.1114 .2262

Table 7: Life table describing survival through SOS University in sample

Time	Interval	Graduated	Dropout	Attrite	Survivor Function	Std Error	95% Conf. Int
1	[1,2)	1,737	468	288	.7062	.0114	.6832 .7279
2	[2,3)	981	300	290	.4528	.0138	.4255 .4796
3	[3,4)	391	33	358	.3823	.0162	.3505 .4140

Summary of Multiple Imputation

Before conducting logistic regression analyses, it was necessary to use multiple imputation methods in order to minimize bias that could have been present as a result of nonresponse and attrition. To account for the longitudinal nature of the dataset, multiple imputations were completed following conversion of data to a wide format. Imputing data using a wide format has been shown to yield estimates that are less biased and more efficient than estimates from data that are imputed using a long format, or when data are not imputed and a complete case analysis is employed instead (Young & Johnson, 2015). However, imputing data in a wide format poses its own set of challenges. Specifically, if there are numerous points in time for which data are collected, or if repeated measures are highly correlated, imputation may fail as a result of collinearity or model overfitting (Young & Johnson, 2015). This was indeed the case with the current study. The PYD measures within and across time periods were highly correlated, as were the risk variables. This, along with the high number of variables that were included in the initial imputation, resulted in computational errors that prevented the construction of multiply imputed data sets. Thus, an overall z score of the median value of all PYD scores for a given youth was created and used in initial imputations with risk factors.

To assess the relationship between indicators of PYD and dropout, a separate imputation was conducted, where PYD indicators and demographics were the only variables used, and risk factors were dropped. However, multiple imputations using individual PYD measures still resulted in computational errors, likely due to the number of variables that resulted from a wide format, and the strong covariations between constructs. Thus, PYD indicators were eliminated based on whether or not their inclusion prevented multiple imputations from being completed. As a result, the only PYD variables that were included in the imputation in subsequent analyses were self-regulation, mentoring relationships, and social responsibility and ease. Additionally, when conducting multiple imputations with the Hispanic sample, the grade status indicator prevented imputations from being completed, and was therefore dropped.

To evaluate the validity of the imputations, means were produced to confirm that values outside the bounds of possibility were not being produced. Then, the relative efficiency of each imputed variable was evaluated. Relative efficiency is related to the amount of missing information and the number of imputations being performed. With a score ranging from zero to one, the relative efficiency increases towards one as the number of imputations increases. This results in estimates of parameters and variances that are more efficient, with a goal of reaching a relative efficiency statistic greater than .95. In general, scores of .95 or greater are deemed good enough to obtain valid inference. For the full sample, 60 imputations yielded relative efficiencies all greater than .98, and 40 imputations using the Hispanic sample resulted in relative efficiencies all greater than .97.

Hypothesis 1: Association Between Exogenous Risk Factors and Dropout

Log-rank tests were first conducted to identify any differences in survival functions across youth according to risk status. I hypothesized that the presence of exogenous risk would be

associated with an increase in dropout rates. Specifically, it was expected that family and friend risk (FR) and mental and social risks (MSR) would be positively related to dropout. Significant differences in survival functions were found when grouping by MSR (chi-squared=11.31; $p < .01$) and FR (chi-squared=8.30; $p < .01$); however, it was unclear from the analysis in which direction these risks effected participation.

Column 1 of Table 8 displays results of regressing dropout on risk indicators, an overall PYD z-score, and demographics following multiple imputation of the data. Contrary to my hypothesis, experiencing an MSR was associated with a 28% *reduction* in the odds of dropping out, a statistically significant decrease ($p < .05$). Experiencing an FR, while not statistically significant at commonly accepted thresholds, yielded a confidence interval that ranged from a 10% decrease in the odds of dropping out to an 85% increase. Thus, while not statistically significant (point estimate: 29% increase in odds of dropping out), this confidence interval indicates many plausible values that show an increase in the odds of dropping out, as I expected. The controls varied in significance as well. The overall PYD indicator was not statistically significant, and neither was gender. Grade school status, however, was statistically significant. Being in the eighth grade or higher was associated with an increase in the odds of dropping out 120% ($p < .01$).

Hypothesis 2: Association Between Endogenous Risk Factors and Dropout

I hypothesized that endogenous risk, or School Challenges and Behavioral Risk (SCBR), such as anger issues or disinterest in school, would be positively associated with dropout as well. Significant differences in survival functions were found when grouping by BR (chi-squared=4.02; $p < .05$); however, it was unclear from the analysis in which direction risk effected participation. Column 1 of Table 8 displays results from regressing dropout on SCBR. Though significant

Table 8: Logistic regression results

Predictor	Full sample		Hispanic sample	
	Odds ratio (Risk factors)	Odds ratio (PYD factors)	Odds ratio (Risk factors)	Odds ratio (PYD factors)
	(1)	(2)	(3)	(4)
PYD	1.06 [.82, 1.39]		1.03 [.87, 1.23]	
BR	.76 [.53, 1.10]		.73* [.52, 1.03]	
FR	1.29 [.90, 1.85]		1.21 [.86, 1.72]	
MSR	.72** [.53, .98]		.75 [.51, 1.09]	
Hispanic	.73*** [.58, .92]	.61*** [.47, .78]		
High school	2.20*** [.51, 1.07]	2.88*** [2.15, 3.86]	2.09** [.46, 1.02]	
Gender	.97 [.81, 1.14]	1.02 [.79, 1.31]	.96 [.72, 1.29]	.94 [.63, 1.42]
Time	.00 [8.33e-14, 3326.32]	1.31e-06*** [3.45e-09, .00]	.00** [.00, .23]	.00** [1.90e-08, .26841]
Sqrt(Time)	3.62e-08 [2.05e-21, 2,350,163]	.00*** [3.23e-13, .00]	2,549** [1.68, 1.21e+12]	3.32e+09** [2.24, 4.94e+18]
Mentor		1.25* [.99, 1.57]		1.26 [.80, 2.00]
Self-regulation		.80** [.70, .92]		.71** [.55, .92]
Pro-social		.90 [.76, 1.08]		1.05 [.80, 1.39]
Imputations	60	60	40	40
N	5,211	1,668	1,188	770

* $p < .10$; ** $p < .05$; *** $p < .01$; confidence intervals in brackets

differences were found between youth who experienced a SCBR when testing for equality of survival functions, SCBR was not statistically significant when controlling for the other risk factors. However, the confidence interval tended towards a decrease in the odds of dropping out: 47% decrease to a 10% increase, which also ran counter to my hypothesis that risk would increase the chances of dropout (point estimate: 24% decrease in odds). The control variables varied in

significance. The overall PYD indicator was not statistically significant, and neither was gender.

Grade school status, however, was statistically significant. Being in the eighth grade or higher was associated with an increase in the odds of dropping out 120% ($p < .01$).

Hypothesis 3: Levels of Self-Regulation, Mentoring Relationships, Social Ease and Responsibility, and Dropout

I hypothesized that youth who showed relatively low levels of self-regulation and low levels of mentoring relationships would be more likely to drop out of the program than youth who had relatively higher levels of either construct. Additionally, I did not hypothesize a direction of the relationship between pro-social orientation and dropout, but included it as an exploratory variable.

Column 2 of Table 8 displays results from regressing dropout on these indicators and demographics. Counter to my hypothesis, a one-unit increase in the self-regulation score was associated with a 20% ($p < .01$) decrease in the odds of dropping out, suggesting that as a given youth's self-regulation skills were lower, the odds of dropping out decreased. The mentoring relationship was statistically significantly related to dropout at the $\alpha = .10$ level. A one-unit increase in mentoring, which indicated a lower level of the mentoring relationship, was associated with a 25% ($p < .10$) increase in the odds of dropping out (confidence interval: 1% decrease, 57% increase). This was in line with my hypothesis that greater mentoring relationship levels would be associated with a decrease in the odds of dropping out. Social ease and responsibility was not statistically significant, although the confidence interval (24% decrease; 8% increase) was suggestive of a decrease in the odds of dropping out as a youth's level of social ease and responsibility was lower (point estimate: 10% decrease in odds). Once again, grade school status of eighth grade or higher was associated with a substantial increase in the odds of dropping out. Youth

in the eighth grade or higher had a 188% ($p < .01$) increase in the odds of dropping out, relative to younger youth. Finally, gender was not statistically significant, and both time variables indicated likelihood of dropout following University years one and two were much higher than year three.

Hypothesis IV: Hispanic Youth Participation

Log-rank tests were conducted to identify differences in survival functions across groups using complete data. I hypothesized that Hispanic youth would be less likely to remain in the program; however, though identifying as Hispanic yielded significant differences in survival functions (chi-square=20.91; $p < .01$), Hispanic youth were *more* likely than White or other minority youth to continue participation across University years. This was contrary to my hypothesis that Hispanic youth would drop out at higher rates than comparison youth.

Table 9 details the hazard function estimates comparing Hispanic to other youth. Following University year one, Hispanic youth had a 27% chance of dropout, and other youth had a roughly 40% chance of dropout. For all youth, the risk of dropping out was highest following University year two; however, the risk was much lower for Hispanic youth (35% compared to 52% chance of dropout). In both groups, the risk for dropping out following University year three dropped substantially.

Table 9: Kaplan-Meier hazard function estimate

	Time	Interval	Beg. Total	Cum Failure	Std. Error	Hazard Function	Std Error	95% Conf. Int
Hispanic=0	1	[1,2)	975	.3350	.0158	.4024	0.0228	.3577 .4471
	2	[2,3)	511	.6076	.0181	.5155	.0368	.4433 .5877
	3	[3,4)	199	.6792	.0207	.2010	.0447	.1134 .2887
Hispanic=1	1	[1,2)	762	.2413	.0162	.2744	0.0209	.2334 .3153
	2	[2,3)	470	.4692	.0209	.3535	.0322	.2904 .4165
	3	[3,4)	192	.5365	.0253	.1354	.0375	.0620 .2089

Following the hazard and survival analyses of the sample of Hispanic youth, logistic regression models comparable to those tested with the full sample were estimated to further explore

and identify any significant factors related to retention of Hispanic youth. From column 2 of Table 8, identifying as Hispanic was associated with a 27% decrease in the odds of dropping out ($p < .05$). A separate set of analyses was then conducted after imputing data with a subsample of Hispanic youth. Columns 3 and 4 of Table 8 reflect results from logistic regression using risk, self-regulation, mentoring relationship, and pro-social orientation factors, respectively.

Overall, results between the full and Hispanic subsample were comparable, although a few notable differences did exist. Referring to column 3 of Table 8, the presence of a SCBR was associated with a 27% ($p < .10$) decrease in the odds of dropping out, though not statistically significant. The confidence interval of the odds ratio associated with the presence of an MSR showed a tendency towards a reduction in the odds of dropping out (49% decrease; 9% increase), though the point estimate was not statistically significant (25% decrease in odds of dropping out). Family and friend risk (FR) was not statistically significant, although the confidence interval, 14% decrease to 72% increase, tended towards its presence increasing the odds of dropping out (point estimate: 21% increase in odds).

Column 4 of Table 8 shows results from regressing dropout on the youth development indicators and demographics using the Hispanic subsample. Just as with the full sample, increases in self-regulation skills was statistically significantly associated with a decrease in the odds of dropping out. A one-unit increase in self-regulation skills was associated with a 29% ($p < .05$) decrease in the odds of dropping out. Contrary to the prior finding with the full sample, mentoring was not statistically significantly related to dropout, although the confidence interval (point estimate: 26% increase; confidence interval bounded by 20% reduction, 100% increase) suggested the plausibility of lower relationship levels leading to dropout. Social ease and responsibility behavior was not statistically significant and did not trend towards significance, nor was gender.

Grade status was not included because of computational errors that occurred when it was present in the imputation model.

DISCUSSION

Guided by theories of youth development, and using a longitudinal data set from a grassroots youth development program, the present study provided some evidence that conceptualizing attrition as exogenous and endogenous to participants may provide additional insight into the complexities surrounding youth retention. Additionally, a relationship between attrition and self-regulation skills has been established, potentially indicating that youth who select in and out of programs may do so in their best interests. The finding that youth who have stronger perceptions of their relationships with program mentors also supports prior research (Perkins et al., 2007). This study is also in line with prior research indicating that youth are likely to remain engaged with programs when factors out of their control, such as familial conflict, are not present (Eisman et al., 2016). Additionally, factors endogenous to youth, such as self-regulation skills, play a significant role in their decisions to continue participation in a program, which may lead to greater engagement (Dawes & Larson, 2011). Related to risks of dropping out, I found a negative association between dropout and the presence of mental and social risk, and a positive association between dropout and family and friend risk. I also found that increased levels of self-regulation were associated with higher dropout, that greater relationships between youth and mentor were associated with lower dropout, and that Hispanic youth were more likely to remain in the program than youth of other backgrounds. These findings warrant further discussion.

Exogenous and Endogenous Risk's Relation to Program Retention

In order for youth to be active agents in their development, they need to have the opportunity to engage with contexts that promote growth, such as PYD programs. I hypothesized that the presence of risk factors, endogenous and exogenous to youth, would be associated with a higher likelihood of attrition. In concordance with this hypothesis, risk factors were either significantly related to dropout, or approached significance. There is a growing literature base suggesting that confidence intervals, along with effect size estimates, should be the primary focus when reporting statistical analysis results, rather than significance testing (Cohen, 1994; Cumming, 2014; Harlow, Mulaik, & Steiger, 2016; Hubbard, 1995). For the current study, when considering confidence intervals, the estimates exhibited many plausible values that would point to meaningful differences in attrition rates based on the presence of risk. However, contrary to my hypothesis, not all risk factors lead to an increased probability of dropping out. Rather, only the presence of familial and friend risk (FR) was associated with an increase in the propensity to drop out. The FR indicator consisted of risk variables that were almost exclusively related to environmental risks that were outside of the youth's control, such as familial conflict, multi-generational involvement with court systems, and friends who have used drugs. This variable also included indicators of the youth using drugs and having prior involvement with the court system, and the construct was not comprised purely of exogenous risks. More research is needed to better understand whether or not these results were driven primarily by the exogenous indicators of this construct, which would support previous research suggesting that familial and parental characteristics can promote or inhibit attrition from youth development programs (R. M. Lerner et al., 2005).

The statistically significant decrease in the odds of dropping out in the presence of a mental or social risk (MSR) runs counter to my hypothesis, especially given that this construct included an

indicator of the youth being ELL. The MSR construct also included variables such as being bullied, having low self-esteem, mental health concerns, and living in a low income household. One of the key components to the SOS model is that the presence of mentors and social groups are consistently maintained. Youth experiencing mental and social risks, such as bullying, may therefore find SOS to be a place that provides opportunities to engage in an environment that is supportive and facilitates growth in social skills. This finding therefore supports prior evidence suggesting that youth can benefit from positive relationships with mentors and being part of social groups, particularly when they are susceptible to mental health risks (DuBois et al., 2011; Deane & Harré, 2014).

Relating to the presence of risk, the final finding that the presence of school challenges and behavioral risk (SCBR), although not statistically significant but plausible given the confidence interval, was associated with a lower propensity to drop out, was surprising as well. This construct was made up primarily of variables that would point to youth struggling in school, such as the presence of a learning disability, low commitment to school, or challenges focusing in school. Some of these indicators may be considered exogenous, and some endogenous, to youth. However, SOS *selects* youth who are struggling in school, and thus this finding may indicate that the program's curriculum, or active approach to serving youth, resonates with youth who find learning in a school environment to be challenging.

Youth who experience risks endogenously, such as low self-esteem, experiencing bullying, or struggle to make friends may benefit exceptionally from programs that provide opportunities to socialize with other youth and adults (McGuire et al., 2017). Programs that are tailored to help youth practice socialization skills, or put youth in a position to associate with others, may consider refining their recruitment practices to specifically target youth who may benefit from the

socialization that naturally occurs in PYD programs. Programs also need to consider the exogenous risks that may prevent their youth from fully engaging in the program. Focusing resources that can be used to retain youth who do not have the means to continue participation in a program may enhance retention. Other exogenous factors, such as familial instability, may be more difficult to navigate, but building relationships with parents may serve as a starting point to helping youth remain engaged in programs they enjoy (Dawes & Larson, 2011).

Overall, the results of exogenous and endogenous risks suggest that further study is required. Specifically, experimentation that allows to conceptualize and measure these constructs before collecting data may provide more robust estimates of their association with attrition, and therefore whether or not distinguishing between exogenous and endogenous risk is a practice that programs such as SOS should undertake moving forward.

Self-Regulation Skills, Mentoring Relationships, and Decreased Attrition Rates

Using theory related to the development of self-regulation, I hypothesized that youth with relatively higher levels of self-regulation skills would be more likely to remain in the program, and that youth with relatively strong relationships with their mentors would be more likely to remain engaged in SOS University.

Contrary to my hypothesis, higher levels of self-regulation were significantly associated with *higher* rates of attrition. Higher levels of self-regulation may be expected to indicate youths' ability to use their environment to achieve long-term developmental goals, such as attending college. Self-regulation skills may be utilized to select in and out of programs that youth find intrinsically motivating, potentially resulting in identity development (Waterman, 2004). That is, intrinsic motivation to engage a program may indicate that youth find the program's content and

activities to be self-defining (Hansen & Larson, 2007). On the other hand, youth who have strong self-regulation skills and find the program to be extrinsically motivating may be able to select out of the program when the extrinsic motivators lose their appeal. This may, in part, be due to the novelty of the experiences wearing off, and thus youth have to decide if the core elements of the curriculum, including activities, warrant further investment. It is possible that youth with greater self-regulation skills can identify whether or not a particular program provides what they need with greater precision than other youth (Napolitano et al., 2011). As such, self-regulation may be an important skill for PYD programs to measure with their youth, as it may partially explain retention while also being a skill that interventions may be tailored to foster.

Consistent with expectations, youth who had stronger relationships with their mentors were more likely to remain engaged in the program. Mentors are an important resource for nonprofits such as SOS, as in many cases they implement the core elements of the program. In addition, programs that are tailored to youth who have struggle socially, such as difficulties making friends, may especially benefit from the presence of mentors. Even though effect sizes are typically small, the presence of mentors has been shown to positively effect youth development (DuBois et al., 2011). Programs such as SOS that provide structure to their mentors may be more successful in retaining volunteers than other programs, as mentors can often feel overwhelmed due to the demands of the program and the youth they work with (DeWit et al., 2016).

Hispanic Youth and Program Attrition

I hypothesized that Hispanic youth would be more likely than comparison youth to drop out of the program, although this was exploratory in nature. Indeed, there is precedent suggesting that PYD programs, by and large, have been relatively ignorant of the importance of considering culture

when serving specific populations of youth (Hollis et al., 2011). However, I found that Hispanic youth were more likely than comparison youth to remain in the program. Post-hoc analyses also revealed that Hispanic youth with lower levels of self-regulation, just as youth in the full sample, were more likely to drop out of the program. Different from analysis results on the full sample, the presence of mentoring was not significant, although it did trend towards having a positive effect on retention rates. Risk factor associations were relatively similar to results from the full sample. Hispanic youth with a school challenge and behavioral risk or mental and social risk were relatively less likely to drop out of the program, whereas the presence of a family and friend risk was associated with an increase in the odds of dropping out. These results also lend support to the idea that exogenous factors, such as familial conflict, may be preventative of some youth remaining engaged in programs. Likewise, certain risks that SOS specifically works to ameliorate, such as low self-esteem or lack of social ties, may show a decrease in dropout rates if youth are finding these needs met. Specific to Hispanic youth, it is possible that SOS has developed a curriculum that is tailored to Hispanic youth. Developing programs that are culturally-sensitive and relevant remains a challenge for researchers today ((Hollis et al., 2011), and thus continuing to work with programs such as SOS may help to shed light on key factors that go into developing and implementing programs with specific populations of youth.

Limitations

The present study has certain limitations. First, the data are observational, rather than experimental. Though the hazard and survival analyses were not necessarily affected by this, the logistic regression results may have been susceptible to bias from model mis-specification. Multiple imputation methods were used to address biases resulting from missingness; however, research on

the best and most efficient means of imputing missing longitudinal data is still emerging (Young & Johnson, 2015; Spratt et al., 2010). The results presented above are likely to be more robust than those that would have come from complete case analyses, yet there will always be the potential for systematic bias to skew results. Given that human behavior is complex, it seems unlikely that current models explain a large portion of the heterogeneity behind retention rates, and omitted variable bias is therefore a legitimate concern.

A second shortcoming was the use of imputed data of other measures of PYD that SOS collected. The inability to impute PYD data was likely a result of the strong correlations between measures (Young & Johnson, 2015). This study was therefore unable to capture a close look at the many different elements of PYD that the literature base conceptualizes as important in youth development. This shortcoming also prevented the examination of associations between risk factors and PYD indicators. Considering the relationship between these constructs will be important moving forward, as most youth engage in risky behaviors at some point (Warren et al., 2015).

Third, the present study was unable to evaluate the importance of risk factors and PYD indicators in specific periods of time. That is, multiple imputations were unable to be completed when specifically including time as a variable, which further prevented the construction of data that could have considered interactions between time, risk, and PYD. It is unknown if heightened levels of risk upon entry has a greater effect than risk later in the program; likewise, differences in ISR skills across the years of participation may be significant determinants of retention.

Conclusion

Overall, the present study lent support to the notion that retention factors, exogenous and endogenous to youth, may be an important consideration for PYD program practitioners and

researchers alike. Specifically, the present study provided evidence that factors outside of youths' control, such as familial conflict, can prevent them from fully engaging in a program. Additionally, the present study provided evidence that youth may select in and out of programs when they have the necessary skills required to evaluate the core lessons that certain PYD programs have to offer, and whether or not these programs best suit their needs. Given these findings, future research should focus on examining the relationships between risks youth experience, exogenous and endogenous, and their own strengths. In particular, self-regulation may be an important skill that can be fostered in youth, helping them to better achieve their own goals moving forward, and develop identities. Beyond addressing these questions, future research should also focus on developing a more concrete knowledge base around what elements of PYD are most important for youth as they develop and transition into adulthood. Identifying which youth will benefit the most from individual programs, especially when culture and context are considered, is paramount to serving our youth as best as we can.

STUDY II

The adolescent years are a time when youth begin to develop identities and goals for themselves, which in turn influences their opportunities, decisions, and behaviors that ultimately comprise complex trajectories of development (Côté, 2009; Napolitano et al., 2011). Though the positive youth development (PYD) literature acknowledges the complexity and importance of observing trajectories of development, there is relatively little empirical research validating this approach. This evidence base does, however, suggest that high levels of individual elements of PYD, such as intentional self-regulation, are associated with increases in other indicators of PYD, and that decreases in risk behaviors occur as well (Mueller et al., 2011; Urban, Lewin-Bizan, & Lerner, 2010). Evidence also indicates that many youth develop healthy lifestyle trajectories while also engaging in a substantial number of risky behaviors (Phelps et al., 2007; Warren et al., 2015). Yet, there remains little theory or research that explains this phenomenon of how risky behavior and positive behavior covary within individuals.

In order to continue advancing our knowledge of the composition of healthy development in youth, a better integration of PYD and risk-taking theory and evaluation is required, and in order to accomplish such a task, person-centered, rather than variable-centered, statistical methods may take precedent. Person-centered approaches, such as latent class analysis (LCA), can help identify subgroups of youth within PYD programs that variable-centered approaches may not due to common problems with survey data. Moreover, variable-centered approaches provide information on typical or average characteristics of a sample of youth, but does not shed light on how individuals may exhibit patterns of responses that are characteristic of subgroups of a sample. A person-centered approach can highlight patterns of responses to a set of questions, which in turn

characterizes sub-groups of youth. Thus, while a sample may not initially seem heterogeneous, a person-centered approach can identify groups individuals who have similar characteristics and patterns of responses to the variables of interest. For example, some youth may score high on indicators of self-esteem, self-regulation, and self-efficacy, while other youth may score high only on indicators of future orientation and goal setting. This, in turn, has the potential to help practitioners refine their strategies for intervening with youth who display different profiles. For example, youth who are lacking in self-esteem and self-efficacy may benefit more from an intervention that focuses on building these assets than youth who are struggling in academic competencies, such as school engagement and have learning difficulties.

Additionally, the use of an analysis method such as LCA may provide new insights into the individual \longleftrightarrow context relations inherent in PYD, including risk taking (R. M. Lerner, 2006; Warren et al., 2015). Identifying classes, or groups of youth who are characterized by patterns of personal attributes, such as low self-esteem and low self-efficacy and risky behaviors, may help researchers better understand the change process that occurs when youth are aligned with programs that suit their needs, helping them to build assets and allowing them to contribute back to their environment, such as volunteering in the community. By enhancing our understanding of characteristics that tend to identify groups of youth and how their developmental trajectories are characterized by PYD and risk taking, interventions can be more efficiently tailored to provide needed resources to youth, helping them to successfully navigate through positive and risky behaviors, while maintaining healthy developmental trajectories. More precise identification of patterns of strengths and limitations in groups of youth can lead to more refined interventions that build on youth strengths while helping to cope with risky environments, or help them to take positive lessons from risky behaviors, preventing the occurrence of such behaviors in the future. For

instance, youth who get in fights at school may learn from a PYD boxing program how to control their emotions, and also how to prevent themselves from falling into situations where fighting becomes a possibility. A PYD program that uses potentially risky behaviors to teach youth may help them internalize the lessons they can learn from their previous experiences.

Taking an approach using theory on PYD to conceptualize how youth development occurs in the context of a PYD program, the purpose of the current study was to identify subgroups of youth who participated in a grassroots youth development program, as indicated by patterns of responses to a set of questionnaires that measured elements of positive youth development (PYD). As opposed to identifying mean-level changes in variables associated with PYD, the present study's purpose was to identify patterns of responses from youth, and how these patterns were related to risk factors. Following the identification of subgroups of youth, I examined potential changes in profile of PYD over time and their relation to risk factors and demographics. This study builds on previous work, serving as a replication and extension of prior research that has used latent class analysis, highlighting the additional insights into youth development that may be gleaned from using a person-centered, rather than variable-centered, approach to analysis. Additionally, considering changes in profiles of youth development over time and the relationship between these changes with risk can be used to better understand how positive attributes of youth and the risks they experience may be related.

THE POSITIVE YOUTH DEVELOPMENT PERSPECTIVE

The PYD perspective began as a loose but guiding framework for researchers and organizations who focus on serving youth, with the premise that all youth have strengths that can be fostered to promote their successful transition to adulthood. As PYD comprises such a general goal,

it has been characterized as a theory of the processes experienced during youth development, a philosophical view on youth programming, and a general description of programs that focus on serving youth (Hamilton, 1999). Additionally, due to the popularity of the framework among a wide variety of programs, the PYD movement has gained credence as a foundational piece for policymaking related to serving America's youth (J. V. Lerner et al., 2012).

The PYD perspective recognizes that development occurs as a result of mutually influential relations between an individual and the multiple contexts they are a part of, characterized as individual \longleftrightarrow context relationships (R. M. Lerner et al., 2010). That is, the relations between individuals and their multiple contexts govern (i.e., guide) developmental trajectories, directions, and outcomes of the individual. As youth are active agents in their own development (Bronfenbrenner & Morris, 2006), they can engage environments, such as after-school programs, that align with their interests, using the environment to build strengths or develop identities (Waterman, 2004). Additionally, as youth engage with these programs, they contribute back to the program and community, such as through community service projects or mentoring other youth. Together these interactions constitute individual \longleftrightarrow context relationships (R. M. Lerner et al., 2010). However, there are many youth who do not have the opportunity to engage such environments, and therefore are potentially lacking the required "nutritional" assets needed to develop into thriving adults (Scales et al., 2008). Youth without these opportunities are thus reliant on their own inherent internal assets, and must rely on themselves to develop these strengths. Internal assets, or individual qualities such as positive values or positive identity, are important because they can facilitate thriving and positive developmental trajectories (Benson et al., 2011). External assets, such as adult role models and community supports, are important as well because they may can provide environments that foster growth in youth, resulting in positive developmental

trajectories. Youth who have few internal or external assets, therefore, are at a disadvantage and are more likely to engage in risky behaviors, such as substance use (Benson et al., 2006). The current study used data on the PYD characteristics of at-risk youth who engaged a PYD program to explore differences in profiles, or classes of youth, and how these profiles potentially changed over time in the context of a supportive environment.

A key hallmark of developmental theories is that individuals always have an ability to change, termed plasticity (R. M. Lerner, 2006). The plasticity of development can be represented as individual \longleftrightarrow context relations because it is expected that the individual and context are both fluid in their adaptations to the other, and when these relations are mutually beneficial to the individual and the context, *adaptive developmental regulations* occur. A result of adaptive developmental regulations is that positive, healthy development should occur for the individual, and society should benefit as well (Brandtstädter, 1998, 1999). For example, goodness of fit between a youth and a new classroom may lead to an improvement in the youth's developmental trajectory (e.g., youth with a learning difficulty learns better as a result of a stronger relationship with the new teacher who is attentive to the child's needs and adapts to her teaching strategies), which may eventually result in the youth's increased participation in serving the community. This viewpoint, therefore, highlights the possibility for positive change in individuals, no matter their circumstances or developmental history, given the right environment. If the individual and contexts are aligned properly, positive change can occur. However, as pointed out by Benson et al. (2011), there has been very little research examining development in the context of PYD programs, and almost no longitudinal study. The dearth of empirical support for theory on PYD is a shortcoming to the field, leaving questions of what development for at-risk youth looks like in the context of PYD programs,

how their positive development may be related to the risks they experience, and how development over time can be characterized.

TRAJECTORIES OF DEVELOPMENT

Indicators of PYD have been shown to predict reductions in risk behaviors throughout development, yet many youth engage in risky behaviors and still rate high on elements of PYD (Agans et al., 2014; Warren et al., 2015). For instance, according to the CDC, in 2015 41% of high school youth had engaged in sexual intercourse at least once (Kann, 2016), and many youth experiment with alcohol before they are legally able to do so (Arbeit et al., 2014). On the other hand, risky behaviors such as substance use are associated with lower likelihood of participating in activities or PYD programs, which in turn predicts lower levels of PYD (Eisman et al., 2016). In general, risky behaviors may point to youth who are struggling and at risk of developing more problematic behaviors. But not all youth follow this path, or trajectory of development. Many youth simply engage in a risky behavior once or a few times, and then move on after learning that it is not in their best interests. Behaviors such as these, when viewed from the proper lens, may be indicative of experimentation and identity seeking, and when these experiences are properly internalized, serve as learning experiences (Klimstra, Hale, Raaijmakers, Branje, & Meeus, 2010). When behaviors are chronic or occur in the wrong context, such as with other youth who may encourage more risky behaviors, the experiences may act as signals of unhealthy development. However, it is also important to note that there are likely profiles of youth that are much more complex, and may include more frequent positive and risky behaviors.

Key to the individual \longleftrightarrow context relationship is that youth are contributing back to the context (R. M. Lerner, 2006), and in order to do so, youth need to remain engaged over time.

Therefore, studying trajectories of development, as opposed to point-in-time risks or elements of PYD, are an important consideration for researchers and program practitioners. A better understanding of what healthy youth development looks like over time, especially in the context of participation in PYD programs, can help researchers and practitioners continue refining policies and programs that encourage youth to consistently participate in programs that best align with their interests and goals. For example, youths' participation patterns in programs over time may influence the benefits they garner from the programs and activities (Tudge, Mokrova, Hatfield, & Karnik, 2009). Youth who are inconsistent in their participation in organized activities may not realize all of the potential benefits that programs have to offer (Darling, 2005), whereas youth who display consistent trajectories of participation may be more likely to develop into healthy-functioning adults (Eisman, Stoddard, Bauermeister, Caldwell, & Zimmerman, 2017). Importantly, there are a substantial number of reasons that many youth display varying trajectories of participation. Risk factors, such as substance use, may be particularly strong barriers to consistently participating in organized activities (Eisman et al., 2016). Demographic characteristics, such as parental SES, may influence participation over time as well. Youth from low-SES households may have less support from parents, or fewer opportunities to engage in programs due to a lack of programs in the community, or logistical barriers, such as transportation (McGuire et al., 2017; Weisman & Gottfredson, 2001). Therefore, the same risk factors that may prevent consistent participation over time may also result in negative trajectories of development. However, there still remains a dearth of research on positive youth development in the context of PYD programming over time, leading to questions of what development looks like when youth are actively engaged in targeted programs.

Few researchers have focused on youth development using samples outside of the 4-H Study of Positive Youth Development (Warren et al., 2015). This has led to questions of what optimal

development may look like for youth who come from diverse backgrounds and experience a wide range of risks. Investigating youth development in the context of programs that cater to youth experiencing certain risks (such as low self-esteem) may help our understanding of the individual ↔ context relationship that is instrumental in helping youth develop into thriving adults.

RESEARCH ON TRAJECTORIES OF DEVELOPMENT

Research on trajectories of development is still in the formative stages. Building from a PYD framework, Warren et al. (2015) used the National Longitudinal Study of Adolescent Health to investigate the links between adaptive functioning (a combination of PYD indicators including measures of self-esteem, life satisfaction, connection with others, and subjective health) and risky behaviors, specifically substance use and delinquency. They found that boys were more likely to be in a high trajectory class of adaptive functioning and were more likely than girls to be stable in their class membership; that is, boys were more likely to be consistent in their profile characteristics, such as self-esteem. Additionally, youth from socioeconomically advantaged homes were more represented in high trajectories of PYD. White youth had greater odds of being in the High-Stable Adaptive Functioning class than Latino youth, and Asian youth were more likely than White youth to be in the Increasing Adaptive Functioning class. However, a key highlight of this study was that the majority of youth who were in the highest adaptive functioning class also engaged in at least one risky behavior, typically substance use (Warren et al., 2015).

Although not a study on trajectories of development per se, a prime example of the complexities underlying PYD and risky behaviors was illustrated in Arbeit et al. (2014), where delinquency, depressive symptoms, substance use, sexual activity, disordered eating behaviors, and bullying were examined in conjunction with the five Cs of PYD. The authors identified six latent

profiles, including youth who could be described as 1) low risk; 2) youth with mental health struggles; 3) those who had an eating disorder; 4) alcohol use and aggressions; 5) mental health coupled with other risks; and 6) a high-risk group. The most populated class, the low-risk group, included youth who had low probabilities of engaging in any risky behaviors. These youth were also surprisingly consistent over time in that they almost never engaged in risk, although it did occur sparsely as youth aged. Youth in the mental health struggles group had high levels of depressive symptoms with elevated levels of eating disorder attitudes and behaviors. Youth in the third group also had high scores of depressive symptoms and typically bulimic symptoms coupled with body dissatisfaction. Youth who had high levels of aggression and alcohol use also reported having sex more often, and low levels of mental health symptoms or eating disorders. The mental health and other risks group was characterized by consistent mental health struggles and varying problematic (or risky) behaviors, such as cigarette, alcohol, and marijuana use. The final group, the high-risk group, was made of youth who primarily engaged in problematic behaviors, such as drinking alcohol routinely or having sex without protection.

In their relation to the five Cs, several differences were highlighted between groups as well. For example, low-risk youth had high scores on all five of the Cs, whereas most youth in the high-risk group had low levels of the five Cs. Surprisingly, however, youth in the middle (not characterized by high or low risk engagement) groups had varying scores across the Cs. For example, youth in the alcohol and aggression group had high Confidence and Competence scores, whereas youth in the eating disorder group had low levels of Confidence. The same was true for youth with mental health struggles, as Confidence was low compared to other groups.

Similarly, Agans et al. (2014) used LCA to identify classes of youth based on their participation in activities at each wave of the 4-H study. Then, using latent transition analysis

(LTA), the authors examined patterns of change and consistency in class membership across waves. Finally, they examined differences in outcomes based on associated classes at each wave, and associations between outcomes and changes in classes across waves. At each wave, two classes were distinguished by a high and low probability of activity participation, suggesting that when youth are consistently involved in one activity, they are increasingly likely to be involved in multiple activities (Agans et al., 2014). Following these results, the LTA revealed two distinct patterns of activity involvement over time. Youth, for the most part, either stayed involved over time in multiple activities, or did not become involved at all. A third group, although very small, showed inconsistent participation rates, such as being highly involved one year but not the next. Within classes, independent of wave, however, few group differences were found, except that girls in the high participation class were more likely to remain in the high activity class than boys. Additionally, youth from families with higher maternal education (greater than two years of college) were more likely to remain in the high participation class over time. Other inconsistent results were indicated as well; for instance, in Grade 7, significant differences were found in depressive symptoms, PYD, and Contribution, but not in substance use, delinquency, or risk behaviors, with high-participation youth showing lower levels of depressive symptoms and higher levels of PYD and Contribution. These results changed, however, in Grades 8, 9, and 11, such that high-participation youth still scored higher on PYD and Contribution scores, but they also had higher scores of depressive symptoms than low-participation youth. No differences were found in risk behaviors. Finally, patterns of participation membership varied over time. Individuals who remained in the high participation group across all waves had less incidence of substance use, lower depressive symptoms, less risk behaviors, and higher levels of Competence and Contribution than youth who moved between high and low participation classes. Additionally, consistently high

participation youth used substances less than consistently low participating youth and scored higher on PYD, Competence, Connection, and Contribution.

Continuing this line of research is potentially an important step that can help researchers and practitioners develop more refined approaches to serving youth who may display patterns of PYD characteristics, resulting in services that can help youth maintain their strengths while helping them to improve their weaknesses (such as low self-esteem). The present study sought to identify characteristics of PYD that may best distinguish groups of youth from each other. Distinguishing youth by their PYD characteristics may help researchers refine theories of youth development that highlight particular strengths and weaknesses that relate to one another more closely than with other elements of PYD. For instance, youth displaying a profile consisting of high self-esteem and self-efficacy, but low future orientation and engagement in school. The present study sought to identify elements of PYD that may characterize these differences in profiles of youth.

TRAJECTORIES OF DEVELOPMENT IN THE CONTEXT OF RISK

Another important factor in youth development trajectory research is context. This includes risky behaviors and risky contexts, the former being choices made by youth, and the latter being risks outside of youths' control, such as community violence. Though high levels of PYD have consistently been associated with lower levels of risky behaviors, the relationship between PYD and risk behaviors, or development in a risky context, is not exclusively inversely related (Phelps et al., 2007; Lewin-Bizan, Bowers, & Lerner, 2010; Warren et al., 2015). Eisman et al. (2016) followed African American youth from an urban, disadvantaged community over the course of four years as they transitioned through high school, examining how risk and promotive factors, such as substance use and parental support, were associated with trajectories of activity participation over time. They

found that, in general, the youth could be grouped into three trajectories of activity participation: low participation and decreasing over time, moderate and consistent participation over time, and moderate to increasing participation over time. Youth who engaged in substance use at an early age, or who came from less educated homes, were less likely to participate in activities; conversely, other risk factors, including negative behavior of friends and conflict in family environment, did not affect participation. Youth who had supportive parents were moderately and consistently likely to participate in activities and continue participation through high school, although it was not the case that the youth with the highest levels of parental support were the most involved. School attachment, however, did not predict activity trajectories. Eisman et al. (2016) also examined self-selection factors, finding that previous academic achievement and self-acceptance predicted participation in activities and programs. These results suggest that some youth, whether it be a result of confidence, belief in themselves, or because of a proven track record of success, are likely to join activities and remain involved throughout high school.

Continuing this line of work, Eisman et al. (2017) followed the same youth through early adulthood, examining differences in adult outcomes. Youth who increased their participation and maintained over high school reported higher life satisfaction and lower substance use in early adulthood than youth who decreased activity involvement over high school. The authors speculated that increasing participation over time provided additional opportunities to garner positive assets, such as mentors, that contributed to healthy development.

Considering the results presented above, it is important to note that various risk factors likely relate to specific elements of PYD. As described by Eisman et al. (2017), youth who engage in risky behaviors, such as drug use, at a young age, may be less likely than others to engage in after-school activities. The presence of risk, such as unsafe neighborhoods or families that are not

supportive of youth participating in program activities, may also effect participation and subsequent development (Perkins et al., 2007). Additionally, youth who display certain characteristics of high PYD, such as high academic achievement or self-acceptance, are more likely to engage with programs over time than youth who exhibit lower levels of these characteristics at baseline. Therefore, youth who may not exhibit strong characteristics of PYD, or who experience risk, may be less likely to engage in programs (Arbeit et al., 2014). As PYD and the presence of risk can vary over time, youth can sometimes drift in and out profiles, potentially signaling changes in trajectories that may be a result of substantial changes occurring within the youth and/or in their context. In some instances, youth may move from a high-functioning, positive-oriented developmental trajectory, to one less promising (Agans et al., 2014). Others may experience changes in their slopes to a more positive outlook than they previously had. Overall, however, these results demonstrate just how variable individuals are, and how limited cross-sectional studies, combined with variable-centered approaches, are in *predicting* human development. In addition, rather than focusing on a specific risk factor or characteristic of an individual, youth development programs have to consider trajectories of individuals' development when determining their fit in the program, and how specifically individual youth should be served.

Together, the findings on the associations between PYD and risk behaviors, especially the presence of such behaviors in youth who seem to be on optimal developmental trajectories, presents a challenge to theories of PYD (Warren et al., 2015). This has led researchers to call for theory and prior empirical work to be reexamined, and to consider that what constitutes “optimal” development may in fact include risky behaviors (Lewin-Bizan et al., 2010). For example, Warren et al. (2015) call for a) a reanalysis of experimental intervention data; b) theory generation to guide systematic testing of developmental paths and their relations to individuals and contexts, and c)

reconsideration of the definition of optimal development in the context of risky behaviors. These objectives are especially important because prevention programming, by focusing on preventing behaviors or risks from becoming realities, promotes PYD, and by relating elements of PYD to risk behaviors, programs can help youth learn from their risky behaviors (Benson & Pittman, 2001). Therefore, it is imperative that we better understand the complexities that are unique to adolescence as this is a time in which youth begin taking on additional responsibilities and to seriously plan out their long-term goals and objectives. Moreover, the literature on trajectories of growth indicate that youth may thrive while also engaging in risk, yet the best methods of serving them as opposed to youth who thrive but are exposed to or engage in minimal risk remains relatively unclear.

Latent Class Analysis

Latent Class Analysis (LCA) is a latent variable model tailored to analyze data that are assumed to be indicators of categorical latent constructs (Collins & Lanza, 2013). LCA is a person-centered, rather than variable-centered, approach to analyzing data. Additionally, LCA is a person-oriented, rather than variable-centered, approach. Variable-centered approaches, such as ordinary least squares, identify relationships between variables, assuming that these relationships exist for all study subjects, and that the indicators (independent variables) have no associated error. The person-oriented approach, rather, focuses on the participants as a whole. That is, given the characteristics of the participants' observations, what class is he or she most likely to be in? The key difference between LCA and a popular form of latent construct modeling, factor analysis, is that LCA is probabilistic in nature; that is, the latent categorical variable follows a multinomial distribution, whereas latent constructs inherent in factor models follow a continuous, normal distribution. This analytic approach does not assume that the sample is homogeneous, but that there

may be qualitative differences between groups of individuals in the data. As such, the LCA approach highlights response patterns in data and estimates the prevalence of the classes, including error associated with individual measures. This allows for the description of multidimensional patterns in the data (Syvertsen, Cleveland, Gayles, Tibbits, & Faulk, 2010). Such an approach may be preferable to variable-centered approaches in research on PYD because a) youth typically score high on surveys measuring elements of PYD, and therefore the data are right-centered, in which case mean-level differences will be hard to identify; and b) given the descriptive nature of most PYD programs, rather than experimental, highlighting classes of youth may help to better understand which youth benefit from program participation. Additionally, highlighting qualitative differences in groups of youth as evidenced by their PYD characteristics may provide insight into how certain indicators of PYD cluster together. In taking this approach to the data analysis, however, there is not one tried and true method to analyzing data that is superior to others; rather, each method has strengths and weaknesses (McWayne, Hahs-Vaughn, Cheung, & Wright, 2012).

Conceptually, LCA is used to detail how the probability of observing a set of responses is a function of the probability of membership in each class and the probabilities of observing each response conditional on class membership: Assume there are $j = 1, \dots, J$ variables, and that j has $r_j = 1, \dots, R_j$ response categories. Let y represent a vector of responses to J variables, $y = (r_1, \dots, r_J)$. Further, let Y be an array of responses patterns, and each pattern y is associated with probability $P(Y = y)$, and $\sum P(Y = y) = 1$. Let L represent categorical latent variable, with $c = 1, \dots, C$ latent classes. The γ_c 's are the probability of membership in latent class c , and the $\rho_{j,r_j|c}$'s are probability of observing response r_j on variable j , conditional on class membership c . Let y_j represent element j of pattern y . $I(y_j = r_j)$ is an indicator taking on value 1 when $j = r_j$ and 0 otherwise. Therefore, the probability of observing response pattern y is

$$\begin{aligned}
P(Y = y) &= \sum_{c=1}^C \gamma_c \underbrace{\prod_{j=1}^J \prod_{r_j=1}^J \rho_{j,r_j|c}^{I(y_j=r_j)}}_{P(Y=y|L=c)} \\
&\quad \underbrace{\hspace{10em}}_{P(Y=y,L=c)} \\
&= \sum_{c=1}^C P(Y = y, L = c)
\end{aligned} \tag{2}$$

For a more in depth description of LCA, Collins and Lanza (2013) provides a digestible explanation of the methods, along with complete examples.

To assess model fit and whether or not the assumptions of the maximum-likelihood method are tenable given the characteristics of the dataset, a number of post-hoc analyses can be completed. Throughout the process of estimating and validating a model, the likelihood-ratio statistic G^2 can be calculated to evaluate absolute model fit. The G^2 statistic is compared to the reference chi-square distribution corresponding with the degrees of freedom in the model. Generally, the greater the statistic, the more evidence there is against the null hypothesis (Agresti, Mehta, & Patel, 1990). A rejection of the null indicates the prescribed model is not equal to the population model (Collins & Lanza, 2013). Following estimation of the G^2 statistic, relative model fit indices can be estimated in order to compare model specifications in order to ensure parsimony, including the Likelihood-ratio difference tests, AIC, and BIC criterion.

The Current Study

Context and individual characteristics are essential factors that influence youths' abilities or desires to participate in activities and programs. Given the scarcity of resources that limits our ability to implement a wide variety of programs in communities across the U.S., it is important to understand which youth benefit the most from different types of programs. Doing so can maximize

the effectiveness of PYD programs, thereby giving youth the best chance to thrive and develop into successful adults. As such, the goal of the present study was to build on prior work (e.g., Lewin-Bizan et al. (2010), Warren et al. (2015)) and extend the literature base by exploring profiles of youth who participated in SOS University, and to highlight patterns of development (PYD and risk) that could be identified with a person-oriented, rather than variable-centered, approach.

The current study focuses on exploring profiles of youth by their PYD characteristics and risk, and examining changes in profiles over time. This study is unique in that little research on PYD has been conducted in the context of risk (Scales et al., 2016), and thus builds on prior work examining youth development in the context of risk by characterizing classes of youth who engaged with a PYD program over a period of three years. Continuing to implement more refined approaches to recruiting youth to specific programs that may best meet their needs may be instrumental in helping them develop identities and establish positive developmental trajectories (Waterman, 2004). Moreover, the novelty of this data set represents a rare opportunity to observe disadvantaged youth as they developed in the context of an extracurricular program. Specifically, this dataset has advantages in that a) it is longitudinal in nature; b) over half of the participants came from Hispanic and minority backgrounds; and c) it contains information on participants' PYD and risk-taking behaviors they experienced on an annual basis as they progressed through the program's curriculum.

Overall, this study had three aims. First, I sought to identify multiple profiles of youth who engaged a PYD program. To achieve this aim, I used LCA, although I did not hypothesize the number of classes that would emerge from the analyses. Prior evidence has suggested that there may be many classes of youth, representing those who are thriving and those who are struggling, but also classes representing those who are neither thriving nor struggling (Eisman et al., 2016).

Prior work has been exploratory in nature, and as such, results have varied substantially depending on essential factors related to development, such as age of youth (e.g., Agans et al. (2014)).

Therefore I conducted the analyses in an exploratory nature.

The second aim was to test associations between class membership and risk factors. I hypothesized that risk factors, exogenous and endogenous to youth, would be negatively correlated with membership in classes that were characterized as being high on elements of PYD, and positively correlated with classes of youth who scored low on the indicators of PYD. Though prior evidence suggests that youth of all backgrounds and levels of PYD engage in some sort of risk, it is also likely that risk is present more substantially in youth with low levels of PYD (Eisman et al., 2016, 2017). However, once again, this aim was more exploratory in nature, and thus while I hypothesized that risk would be correlated with membership in lower-functioning classes, I did not distinguish what type of risk may be related to class membership.

The third research aim was to characterize changes in class membership over time. Based on prior work (Lewin-Bizan et al., 2010; Phelps et al., 2007; Warren et al., 2015), I hypothesized that the majority of youth would score high on indicators of PYD, and that their scores would remain high throughout their participation. Additionally, this hypothesis included the expectation that a significant proportion of youth would experience declines in their overall PYD scores over time due to a natural regression over time. Finally, in relation to hypothesis 3, youth who scored low initially on elements of PYD were hypothesized to continue to score lower than average, but that a small proportion would improve over time as well. Hypothesis 4 was that risk, exogenous and endogenous, would be relatively evenly distributed across trajectories of development. More precisely, I hypothesized that the presence of risk would be associated with improvements over time

for youth who initially scored low, and that youth who were experiencing risk but were initially in the thriving classes would decrease over time.

METHOD

Participants

Participants consisted of 1,737 youth who were enrolled in the University program between the 2012-2013 and 2015-2016 seasons. These youth came from all of the geographic locations described previously, including Colorado, California, and the Lake Tahoe region. Table 10 describes the number of observations occurring in each of the three seasons. During the 2013-2014 season, 794 youth completed the University program and had available data. In the 2014-2015 and 2015-2016 seasons, the number of University youth with available data were 887 and 913, respectively. Table 11 displays observation frequencies at each time point, or University year, that youth were observed in. For the current study, youth could have been enrolled in the University program for one to three years. Youth who graduated in the third year or completed University year one or two during the 2015-2016 season were considered right censored, as the dataset does not extend beyond the 2015-2016 season.

Table 10: Number participants by year

Season	Frequency	Percent	Cumulative percent (%)
2013-14	794	30.61	30.61
2014-15	887	34.19	64.80
2015-16	913	35.20	100.00
Total	2,594	100.00	

On average, youth exited the University program in seventh grade. Of those reporting, 55% were male, 37% were female, and the final eight percent never indicated their gender. At all three

Table 11: Number of youth by University year

Time	Graduate	Did not graduate	Did not come back
1	1,076	176	600
2	868	102	488
3	358	33	276

time points, the ratio of males to females remained roughly the same. For the given years, 44% of the youth identified as Hispanic/Latino, 38% as Caucasian/White, 3% Black, and the remaining 15% came from various ethnic backgrounds, including Native American, Middle Eastern, Native Hawaiian/Pacific Islander, and “other.” As SOS focuses on serving youth from disadvantaged backgrounds, it was surprising to see that only 25% of parents indicated that their families lived in low-income homes. However, 32% either did not complete the risk assessment at baseline or refused to answer the question pertaining to income. Still, it is somewhat surprising that 43% identified as not being low income. Youth were enrolled in the program 1.79 years on average, indicating that the majority dropped out after either the first or second year. The majority of youth, upon entrance into the University program, were in grade school.

Procedure

This study used a cross-sectional and longitudinal design to investigate patterns of PYD and risk related to engagement in a PYD program over the course of three years of involvement. SOS Outreach is a national youth development non-profit that focuses on developing long-term life skills in youth through progressive outdoor programs which include community service, mentoring, and peer group facilitation. Overall, SOS serves over 5,000 youth annually, targeting recruitment efforts to underserved youth. The program provides low-cost participation, transportation, costly equipment, and lift tickets for local ski lodges, providing youth with experiences they otherwise were unlikely to have an opportunity to engage in.

The curriculum offered students ages 8-18 up to 10 years of outdoor experiential learning that includes character development, values-based leadership training, and community service.

From beginning to end, each year's activities built on the lessons of the previous year.

Following is the basic structure of the University curriculum that was implemented:

- Year 1: students participate in five ride days and three service days, all alongside a mentor;
- Year 2: additional to the ride and service days, students complete 10 hours of service at a community organization;
- Year 3: students continue ride and service days, and participate in a large scale service project in which participants work with a group to identify an issue they would like to address. They then work on creating a plan to make a difference with the issue and collaborate with local organizations already addressing the issue (e.g., develop an anti-bullying campaign);
- Year 4: students continue ride and service days, and complete another large scale service project that aligns with one of the six core values.

The University program contains key ingredients identified in the PYD literature that enhance the chances of success. Similar to characteristics of successful PYD programs outlined in R. M. Lerner (2004), youth were matched with a mentor over the course of their participation, the outdoor recreational activities provide opportunities to develop skills, and community service projects include leaderships development. The University program also closely aligned with key features of YAPs. In general, most youth who entered the program have never had the opportunity to engage in snow sports, and so the experience was novel. Additionally, the recreational activities required concentrated effort and sustained practice in order to master the skills required. Finally,

youth engaged in peer groups during recreational and service-related activities. This context required the youth to work together and overcome obstacles they face. Through this vein, progression through the program required successfully completing prior challenges and using experience to overcome new ones. For example, as youth progressed through the University program, their responsibilities, such as service learning day requirements, increased, while the number of activity days did not (skiing opportunities). Thus, the “cost” of participating in snow sports through SOS increased progressively through each University year.

Following enrollment in the program, youth were required to complete each year’s curriculum before graduating to the next year’s. Youth were also required to fill out a survey consisting of measures of self-regulation, attitudes towards drugs, school, behaviors, and future orientation, among others. These measures were developed to replicate the five Cs of development, but were not exact replicas. Aside from the PYD measures, at this time each year, parents were also asked to complete a “needs assessment,” which focused on risks the youth was experiencing at the time, such as family conflict, drug use, or living in a low-income household. Other measures of interest included mentoring relationships, workshop and ski day attendance rates, ethnicity, and grade.

Measures

An overall measure of risk, developed by SOS, was completed annually by a parent or primary caregiver. Items reflected risk in a variety of areas including mental health, behavioral difficulties, struggles in school, and familial conflict, among others. First, a cumulative score of overall risk was computed and correlated with elements of demographics, indicators of PYD, and dropout. No significant results were found. Factor analysis was used to consolidate the needs

assessment in order to reduce the number of variables. Specifically, principal components analysis (PCA) was initially conducted on data from youth who did not enter the University program. This analysis indicated that the measures could be reduced to three factors. Specifying that all items load onto at least one of three factors, this model was then tested using needs assessment data from youth who entered the University program. First, principal components analysis with an orthogonal rotation was completed, and then a factor analysis using the maximum likelihood method and an oblique rotation was conducted. In both cases, all three factors yielded eigenvalues greater than one. In both the principal components and factor analyses, variable loadings were somewhat different from the preliminary PCA. When conducting the PCA, in some instances, variable loadings were lower than acceptable thresholds (.30). However, the factor analysis resulted in only one variable (difficulty making friends) not reaching an acceptable loading onto its construct. This measure was kept with this construct due to moderate correlations with the other indicators (range from .10 to .29). The loadings are presented in Table 2.6. Chronbach's alpha, a measure of the reliability of a set of measures, was generated for each factor. Each factor had low reliability (less than .70). These low reliabilities are potentially due to the small number of variables in each factor and that each item was scored as yes/no. Additionally, Cronbach's alpha may not be an appropriate measure for these constructs because the assumption of tau equivalency, or that each item is a measurement of the same latent construct on the same scale, is unlikely to hold (Tavakol & Dennick, 2011). Thus, the development of a cumulative score of risk would not have been appropriate, and instead three composite measures of risk were calculated as dichotomous indicators of the presence of risk of the given factor. Dichotomous indicators are used in this study to indicate the presence of the general risk construct, as opposed to comparing levels of the risk. Youth who were experiencing any of the

risks from a particular factor were scored as having the presence of the associated overall risk factor.

The three risk factors were as follows:

Mental and social risk (MSR) (Chronbach's alpha:.37). This measure was composed of variables that were indicative of a mental or social risk (including bullying, English as second language, or that a parent had mental health concerns about the youth) or represented risk that could lead to mental or social challenges, such as low self-esteem. This variable was dichotomous. As indicated in Table 2.6, the presence of ESL or being in a low-income household loaded negatively onto the construct, thus a youth who was ESL or from a low income family was unlikely to manifest any of the other MSR indicators.

School Challenges and Behavioral risk (SCBR) (Chronbach's alpha:.64). This inventory was comprised primarily of variables indicating if a youth was struggling in school, such as a learning disability, manifesting low commitment to school, or anger issues. Additionally, it included an indication of difficulty making friends and not being physically active. All variables loaded positively onto this factor.

Family and friend risk (FR) (Chronbach's alpha:.57). Family and friend risk was marked by indicators of risk occurring in accordance with family or friends, such as family conflict, friends who use drugs, or multigenerational involvement with the court system. Additionally, this risk marker included the youth's early onset of drug use. All variables loaded positively onto this factor. This variable was dichotomous.

The following PYD constructs were measured, and though they are not exact replicas, contain elements similar to the five Cs of development (R. M. Lerner et al., 2005; Roth & Brooks-Gunn, 2003).

Intentional self-regulation (Cronbach's alphas for years 1, 2, and 3: .64, .63, .62), measured through six items coming from the Selection, Optimization, and Compensation questionnaire (SOC) (Freund & Baltes, 2002; Geldhof et al., 2015), and the Early Adolescent Temperament Questionnaire-Revised (Ellis & Rothbart, 2001). The SOC is a measure of intentional self-regulation, whereas the EATQ-R is intended to assess temperament and self-regulation. Answers can range from 1=Strongly Agree to 4=Strongly Disagree .

Leadership efficacy (Cronbach's alphas for years 1, 2, 3: .77, .78, .79), consisting of five items such as "I am confident in expression my opinions in front of a group," or "I believe that I personally can make a difference in my school." ;

Future orientation (.72, .76, .70), consisting of four items, such as "I am eager to learn new things," or "I am optimistic about the future." ;

Decision making (five items for participants in grades 2-6, eight items for participants in grades 7-12; .65, .62, .77), containing items such as "I know where to go for help with a problem," or "I make good decisions." ;

Acceptance of diversity (.80, .79, .82), consists of five items, such as "All people, no matter who they are, should be treated equally," or "I enjoy being a part of a team." ;

Self-esteem (.84, .85, .82), consists of nine items, such as "I feel I am a person of worth, at least on an equal basis with others," or "I am able to do things as well as most other people." ;

Self-efficacy (six items; .62, .61, .72), containing items such as "It important for me to always do my best," or "I have confidence in my problem solving skills."

Goal setting and attainment (one item for participants grades 2-6, five items for participants in grades 7-12; .82, .84, .79), containing items such as "I often set goals for myself," or "I set high goals for myself in and out of school." ;

Demographics. Additional demographics included grade school status, whether or not a youth was of Hispanic descent, and gender.

Statistical Analyses

All data analyses were performed using Stata 14. Latent Class Analysis (LCA) was used to identify classes of youth within each time period of participation in SOS University. The analytic process for this study was completed as follows. First, all variables in the model were converted to dichotomous indicators. This was necessary, as Stata's LCA program and post-hoc analysis software generally requires all variables to be dichotomized. Indicators of PYD were converted to indicate scoring in the top third of all respondents, regardless of wave; therefore, a score of zero indicated that the youth did not score in the top third for a given PYD construct. In reality, this translated to youth whose median PYD score was as high as possible (scored a 1 out of 4 on the Likert scale). Other variables, including risk indicators, were already dichotomized.

RESULTS

The purpose of this study was to assess and identify changes in classes over time as youth proceeded through a PYD program, and to identify any associations between such patterns with demographics and indicators of risk. Using post-hoc class membership probabilities to assign youth to classes at each wave, I examined changes in class membership over time. In sum, this analysis highlights changes that were occurring in youth as they participated in a grassroots PYD program. As a result of the large number of PYD indicators, W was large enough that generating the likelihood-ratio statistic G^2 was infeasible. Thus, relative model fit indices, including the Akaike Information Criterion (AIC), the Bayesian Information Criterion (BIC), a sample-size adjusted BIC

(aBIC), log-likelihood, and a parametric likelihood ratio test for LCA, as described in Nylund, Asparouhov, and Muthén (2007), were used to select the optimal number of classes at each wave. A particular advantage of LCA is that its primary function is to help describe qualitative differences in groups; hence, theory and intuition also play important roles when selecting the final number of classes. Finally, an entropy statistic was used to evaluate the accuracy with which the LCA models could predict class membership. Entropy is an index of the model's accuracy in placing subjects into the correct classes according to a posteriori probabilities the model calculates. As E approaches 1, accuracy of class assignment approaches 100%.

Table 12 shows summary statistics for the PYD measures. Data were missing in large portions due to the fact that survey questions varied across University years and surveys were administered according to youth age (grade school youth were administered a brief version of the high schoolers' survey). The portion of data missing on a per-variable basis ranged from 35-78%. To attenuate the effect of missing data on sample size, the median of the available responses for a given construct was taken. The median value, as opposed to a sum score or average, was taken to minimize the effect of outliers. Then, the PYD indicators were dichotomized, with a score of one indicating that a youth's score was in the top third of all scores for the given construct. That is, youth who had strong PYD characteristics scored in the top third.

Following conversion of the data, LCA was completed at each wave. All variables detailed in Table 12 were included in the analyses. Fit statistics, including AIC, BIC, aBIC, LL, and a parametric likelihood ratio test (LR) were then used to evaluate the number of classes to keep in each wave. Interpretability of classes according to distinguishable characteristics, such as high scores for a given PYD construct compared to other groups, was also considered. For each of the information criterion fit indices, a statistic closer to zero indicates a model with better fit; however,

Table 12: PYD construct

Construct	Mean of median	Std Dev.	Min	Max	Percent missing
Leadership	1.67	.61	1	4	36
Self efficacy	1.5	.56	1	4	35
Self regulation	2.10	.74	1	4	36
Goals	1.72	.74	1	4	36
Future orientation	1.42	.59	1	4	36
Decision making	1.62	.55	1	4	36
Acceptance of diversity	1.35	.52	1	4	36
Self esteem	1.73	.67	1	4	36
Education	2.90	1.07	1	6	78
Community engagement	1.56	.58	1	4	36
Attitudes towards drugs	1.99	.82	1	4	58

these different information criterion indices can sometimes point to different numbers of classes being optimal (Tekle, Gudicha, & Vermunt, 2016). The LR compares a K class solution to a $K + 1$ solution, determining which fits the data better, and may be preferable to the information criterion indices (Tekle et al., 2016). Finally, Stata assigned youth to their likeliest class membership, and these results were saved and compared over time within individuals. Table 13 presents relative fit statistics

Research Aim I: Number of Classes of Youth

The first research aim was to identify profiles of youth who engaged a PYD program. I did not hypothesize to the number of classes that would emerge from the LCA. I entered 11 PYD variables from each of the three waves into separate Latent Class Analyses. Table 13 presents relative fit statistics results at each wave, which were used to identify the number of classes to keep. When relative fit statistics gave conflicting results (e.g., AIC supported a 3-class model and BIC supported a 4-class model), the LR test was used to select the number of classes to keep. Based on the results of the fit indices and interpretability of the classes, 4-class solutions were retained for the first two waves, and a 3-class solution was retained for the third wave. At all years, the entropy

statistic only supported a two-class solution, yet all of the fit indices suggested that solutions with greater than 2 classes were preferable. Thus the other fit indices, along with the LR test, were used to determine the number of classes to keep. For year one, the 4-class solution was tested against the 3-class solution using the LR test, and results indicated that the 4-class solution was preferable. The AIC, BIC, aBIC, and LL fit statistics all supported a 5-class solution; however, the 5-class solution yielded classes that were not easily distinguishable (i.e., there were no characteristics of individual classes, such as high self-esteem and low self-efficacy, that made the classes easily interpretable). Given that, at year two, the 4-class solution was optimal and that the classes were readily interpretable, a 4-class solution was thus retained for the first year. At year two, according to the AIC, BIC, aBIC, and LL statistics, 4- and 5-class solutions were preferred to smaller-class solutions as well. The LR test indicated the 4-class solution to be optimal, and thus the 4-class solution was kept. At year three, a 3-class solution was optimal according to all information criteria and the LR. In all three cases, sample size and the number of PYD variables were also important considerations when fitting models. Additionally, race, grade, and indicators of behavioral, mental, and familial risk were not included in the first set of analyses, but rather were examined post-hoc for their relations to class membership and class transition by conducting multinomial logistic regression. By reducing the number of variables to be used in distinguishing classes, results were more likely to reveal readily interpretable classes that would be generalizable. Thus, the number of classes selected at each year were determined with this in mind. The PYD indicators that were dropped included communication and self-control.

Table 14 presents the probabilities of scoring in the top third of a given PYD indicator within each of the four classes for year one, and overall probabilities of class membership. It was apparent that there were two distinct classes of youth who were relatively high on PYD (Classes 1

Table 13: Full sample: Model fit statistics for latent class analysis by time point

Time	Classes	Model fit statistics						
		Entropy	AIC	BIC	aBIC	LL	Df	N
1	2	.84	1169	1279	1206	-4815	2024	881
	3	.79	926	1093	982	-4681	2012	
	4	.72	914	1139	990	-4663	2000	
	5	.71	654	912	741	-4253	969	
2	2	.82	915	1016	943	-3300	2024	604
	3	.79	775	929	818	-3218	2012	
	4	.76	751	958	809	-3193	2000	
	5	.75	554	792	620	-2913	969	
3	2	.87	503	578	505	-1048	2024	191
	3	.78	488	601	491	-1028	2012	
	4	.78	485	637	489	-1015	2000	

AIC: Akaike information criterion; BIC: Bayesian information criterion; aBIC: Sample-adjusted Bayesian information criterion; LL: Log-likelihood test

Df: degrees of freedom; N: sample size

and 4; hereafter referred to as Adept and Achiever youth, respectively), a class of youth who scored low on almost every PYD indicator (Class 2; Insecure), and a class of youth who scored high on some indicators of PYD, but not all (Class 3; Undistinguished).

Adept youth. This class of youth was termed “Adept,” meaning successful, due to their overall high marks on indicators of PYD, although they may have scored lower than the 67th percentile on one or two items. Adept youth, however, were distinguished from Achiever youth in their relatively low levels of self-regulation (probability of scoring in the top third of all University youth was .03), and they had highest likelihood of scoring high on self-esteem (probability=.63). Adept youth scored relatively high on virtually every other indicator of PYD, however. The probability of Adept class membership at year one was .17.

Achiever youth. This class of youth was termed “Achievers” due to their high scores on virtually every indicator of PYD. Achievers had greater probabilities of scoring high in virtually

every domain than all other classes, except for self-esteem. These results indicate that approximately 23% of youth at year one had high levels of PYD across almost all indicators. For example, a probability of .84 with respect to leadership indicated that Achiever youth were likely to carry characteristics of leadership values that SOS seeks to instill in their participants. Additionally, a probability of .76 with respect to educational expectations revealed that Achiever youth, on average, had high expectations regarding the utility of completing education and whether or not to attend college. Achiever youth were also the only class to have high levels of self-regulation, and had higher self-esteem than Insecure and Undistinguished youth, but lower levels than Adept youth. The probability of Achiever class membership at year one was .23.

Undistinguished youth. This class of youth was termed “Undistinguished” because youth who were in this class were likely to score high on some elements of PYD, but not all. That is, there were no distinguishing factors that separated these youth from other classes. Undistinguished youth had relatively low levels of PYD. However, probabilities approaching .50 for individual constructs indicated that Undistinguished youth were likely to score in the top third of some individual PYD indicators, but not all. Additionally, self-esteem was much higher in Undistinguished youth than those in the Insecure class. The probability of being an Undistinguished youth at year one was .38.

Insecure youth. This class of youth was titled “Insecure” due to their low scores in virtually every domain. Insecure youth were unlikely to score in the top third of any PYD indicator, with almost no chance of scoring high on decision making, self-esteem, goal planning, community engagement, self-regulation, and leadership. The probability of Insecure class membership at year one was .21.

Table 15 displays the classes and associated probabilities for youth who completed the second year of the University program. Fit statistics indicated that 3-class and 4-class solutions

Table 14: Latent class analysis results for year 1

Predictor	Class 1 Adept	Class 2 Insecure	Class 3 Undistinguished	Class 4 Achiever
Leadership	.76	.01	.18	.84
Self-regulation	.03	.02	.14	.72
Self-efficacy	.84	.08	.51	.97
Future orientation	.94	.16	.64	.98
Community engagement	.79	.03	.42	.92
Goals	.65	.01	.28	.85
Self esteem	.63	.00	.25	.49
Educational expectations	.37	.34	.46	.76
Decision making	.67	.00	.31	.93
Diversity Acceptance	.97	.08	.72	.94
Attitudes towards drug use	.68	.50	.67	.73
Probability of class membership	.17	.21	.38	.23

were relatively similar, but the LR test indicated a 4-class solution was preferable, and it was therefore selected. Once again, Class 1 defined Adept youth, Class 2 Insecure youth, Class 3 Undistinguished, and Class 4 Achiever youth. Compared to scores at year one, Adept youth were less likely to score high on leadership, but were more likely to score high in virtually every other domain relative to year one. For instance, the probability of scoring in the top third of self-regulation was .46 at year two, whereas at year one it was .03. The probability of scoring high on self-esteem at year two, .99, was also higher at year two (the probability was .63 at year one). However, Adept youths' probability of scoring high on attitudes towards drugs was .04 at year two, less than the score at year one (.68). This indicates that Adept youth, at year two, seemed relatively comfortable with the idea of using drugs, and that community members/adults would also be accepting of drug use. The probability of Adept class membership at year two was .14.

Achiever youth, at year two, were less likely to score high on self-regulation, with a probability of .35. The probability of scoring high on self-esteem was also lower at year two, .41.

Table 15: Latent class analysis results for year 2

Predictor	Class 1 Adept	Class 2 Insecure	Class 3 Undistinguished	Class 4 Achiever
Leadership efficacy	.66	.02	.19	.83
Self-regulation	.46	.01	.13	.35
Self-efficacy	.94	.08	.51	.93
Future orientation	.92	.01	.64	.97
Community engagement	.74	.04	.36	.96
Goals	.73	.04	.30	.74
Self esteem	.99	.03	.25	.32
Education	.36	.22	.34	.41
Decision making	.93	.01	.39	.86
Diversity Acceptance	.99	.11	.66	.98
Attitudes towards drug use	.04	.31	.64	.83
Probability of class membership	.14	.17	.43	.26

Finally, the probability of scoring high on attitudes towards drug use was .83, indicating that Achiever youth, at year two, were likely to indicate that they viewed drug use as a risky behavior, and that community members would consider drug use unacceptable. Attitudes towards drug use and self-esteem were the distinguishing factors that separated Achiever youth from Adept youth. The probability of Achiever class status at year two was .26.

Characteristics of Undistinguished youth at year two were relatively similar to the characteristics of Undistinguished youth at year one. This class was marked by scores relatively lower than Adept and Achiever youth, yet markedly higher than Insecure youth. Undistinguished youth were likely to score high in certain PYD indicators, but not all. Surprisingly, Undistinguished youth at year two had almost the same probabilities of self-regulation and self-esteem as Undistinguished youth did at year one. The probability of Undistinguished class membership at year two was .43.

Insecure youth, Class 2, once again scored low on virtually every indicator of PYD. Additionally, these youth had relatively low attitudes towards drug use, in comparison to Undistinguished and Achiever youth. The probability of Insecure class membership at Time 2 was .17.

Finally, Table 16 details results of LCA at year three. Different from the first two time periods, at year three the fit statistics pointed to a 3-class solution. The parametric likelihood ratio bootstrap test yielded results indicating that a 3-class solution was preferred to a 4-class solution. This was potentially due to the reduction in sample size, as a result of program attrition and data collection shortcomings. At year three, there did not appear to be an Adept class; rather, Class 1 seemed closer to prior descriptions of the Undistinguished class. Youth in the Undistinguished class were likely to score high on certain indicators of PYD, such as future orientation (probability of .87), self-efficacy (.76), and community engagement (.78), but less likely to score high on the other indicators. The probability of Undistinguished class membership at year three was .43. The second class, once again, described Insecure youth, or those who scored low on virtually every PYD indicator. Notably, however, youth in this class displayed higher scores on attitudes towards drug use (.31 in year two, .62 in year three) and educational expectations (.22 at year two and .58 at year three), which may indicate improvements over time. Probability of being in the Insecure class at year three was .37. Finally, Class 3 described Achievers. These youth scored high virtually every

Table 16: Latent class analysis results for year 3

Predictor	Class 1 Indist.	Class 2 Insecure	Class 3 Achiever
Leadership efficacy	.53	.09	.96
Self-regulation	.12	.08	.63
Self-efficacy	.76	.19	.97
Future orientation	.87	.18	1.00
Community engagement	.78	.28	.95
Goals	.55	.08	.96
Self esteem	.39	.05	.38
Education	.26	.58	.39
Decision making	.62	.12	.99
Diversity Acceptance	.89	.36	.96
Attitudes towards drug use	.64	.62	.94
Probability of class membership	.43	.37	.20

indicator of PYD except self-esteem, which remained low across all three time periods. The probability of Achiever status at year three was .20.

Research Aim II: Latent Classes, Demographics, and Risk Factors

The second aim was to test associations between class membership and risk factors. I hypothesized that indicators of risk, exogenous and endogenous to youth, would be negatively correlated with membership in the class comprised of thriving youth, and positively correlated with membership in the class that included low scores. Additionally, I did not hypothesize how demographics would be related to class membership, but conducted these analyses as an exploration.

Following LCA of year one data, multinomial logistic regression was completed, with class membership as the outcome variable, and predictors including: school challenges and behavioral risk, mental and social risk, family and friend risk, Hispanic descent, grade status, and gender. These were the same variables used in Chapter I of the dissertation, and were thus included in the

present study to maintain consistency. Though few significant results were found at the $\alpha = .05$ level, differences at the $\alpha = .10$ were found, and discussed as well. This was done because the literature is not clear on whether or not significance testing should be a primary focus of empirical research (Cohen, 1994). Additionally, due to the exploratory nature of the study, I believed it was important to consider effects that approached significance to minimize the likelihood of omitting potentially important findings. The relative risk ratio of youth in high school was .58 ($p < .10$) between Adept and Undistinguished youth; indicating that youth who were in high school were less likely to be in the Adept class than the Undistinguished class. The relative risk ratio of youth in high school, when comparing Undistinguished to Achiever youth, was 1.59 ($p < .10$), indicating Achiever youth were more likely than Undistinguished youth to be in high school. Insecure youth were more likely to be in high school than Undistinguished youth as well (relative risk ratio equal to 1.54; $p < .10$). Adept youth were more likely to be male than Undistinguished youth (1.54; $p < .05$), and Achiever youth were more likely than Undistinguished youth to be male (1.54; $p < .05$). Finally, as a post-hoc analysis, chi-square tests revealed that Insecure youth were more likely to drop out of the program after University year 1 than comparison youth, although this may also be a function of grade school status.

Following LCA of year two data, multinomial logistic regression was completed, with class membership as the outcome variable, and predictors including mental and social risk, school challenges and behavioral risk, familial and friend risk, Hispanic descent, grade status, and gender. At year two, significant differences were found between Undistinguished and Adept youth, and Undistinguished and Achiever youth. The relative risk ratio of youth in high school for Achiever youth was 2.07 ($p < .05$), when comparing Achiever to Undistinguished youth, indicating a higher likelihood of Achiever youth being in high school. The relative risk ratio of youth in high school,

when comparing Undistinguished to Adept youth, was .10 ($p < .05$), indicating Adept youth were less likely than Undistinguished youth to be in high school. Finally Adept youth were more likely to be Hispanic than Undistinguished youth (relative risk ratio of 2.62; $p < .01$). No differences in class membership based on risk level were found, and chi-squared tests revealed no significant differences in dropout rates between classes.

Finally, multinomial logistic regression with year three data revealed significant differences in class membership with respect to grade level and BR. Specifically, Achiever and Insecure youth were both more likely to be in 9th grade or higher, relative to Undistinguished youth. The relative risk ratio of youth in high school, when comparing Undistinguished youth to Achievers, was 3.87 ($p < .05$), indicating that Achievers were less likely to be in high school than Undistinguished youth. Additionally, the relative risk ratio of school challenges and behavioral risk for Achiever youth compared to Undistinguished was .42 ($p < .05$), indicating that Achiever youth were less likely to experience this risk. Finally, the relative risk ratio for Insecure compared to Undistinguished youth was 3.59 ($p < .05$), indicating that Insecure youth were more likely than Undistinguished youth to be in high school. There was not enough data to evaluate differences in dropout rates between classes at year three due to censoring.

Research Aim III: Changes in Profile Category Over Time

The third research aim was to characterize changes in class membership over time. Based on prior work (Lewin-Bizan et al., 2010; Phelps et al., 2007; Warren et al., 2015), I hypothesized that the majority of youth would score high on indicators of PYD, and that their scores would remain high throughout their participation. The results of the LCA across the three points in time was used to test the hypothesis that changes in profile categories, indicating improvements in PYD, maintenance, and declines over time, would be identified. The LCA results also include a prediction

of which class each individual youth is a member of, and the probability of the youth being in their most likely class. Based on LCA results, youth were assigned to their most likely class at each point in time. Then, contingency tables were generated, which detail the number of combinations of class membership over time sequentially (that is, from year one to year two, and year two to year three), as some youth remain in their initial classes, while others potentially change classes.

Before reviewing results, it is important to note that assigning class membership is a predictive and probabilistic endeavor; therefore, the potential for assigning youth to the wrong class was possible, although the classes in the current study seem distinguishable and I have found no reason to expect error associated with assignment to be anything but random.

Transitions between Year 1 and Year 2

At year one, 34 youth were identified as being in the Adept class. Twenty-nine were identified as being in the Insecure class, 66 in the Undistinguished class, and 42 in the Achiever class. In contrast, 21 youth were in the Adept class in year two, 28 in the Insecure class, 73 in the Undistinguished class, and 21 in the Achiever class. Additionally, post-hoc analyses, chi-square tests, revealed that class membership at year one was significantly related to dropout. Logistic regression revealed that insecure youth were more likely than youth of other classes to drop out of the program after spending one year in University.

Following identification of changes in class membership between year one and year two, transitions (or lack thereof) were categorized as improvements, maintaining a high PYD trajectory, maintaining a low trajectory, and a declining group. To be classified as experiencing an improvement, youth had to transition from the Insecure class to any of the other three classes, or to move from the Undistinguished class to the Adept or Achiever class. Being a high maintainer

included youth who spent both time periods in the Adept or Achiever classes. Low maintainers were youth who spent both time periods in the Insecure class or both time periods in the Undistinguished class. Finally, youth who declined were those that transitioned from Adept or Achiever classes at year one to Undistinguished or Insecure classes in year two. Additionally, youth who transitioned from Undistinguished to Insecure were considered to have declined. Table 17 displays these results. Interestingly, all categories had a similar number of youth, though the Decline category had the most (47).

Table 17: Number Improve, Decline, and maintain between year 1 and year two

Improve	43
High maintain	40
Low maintain	41
Decline	47
Total	171

Transitions Between Year 2 and Year 3

At year two, 14 youth were identified as being in the Adept class and had available data for year three, 26 were in the Insecure class, 66 in the Undistinguished class, and 30 in the Achiever class. At year three, 56 were in the Undistinguished class, 54 in the Insecure class, and 26 in the Achiever class. Chi-square tests did not provide evidence that dropout was associated with class membership at year two.

Following identification of changes in class membership between years two and three, transitions between classes were categorized as improvements, maintaining a high PYD trajectory, maintaining a low trajectory, and declining. To be classified as experiencing an improvement, youth had to transition from the Insecure class to either of the other two classes, or to move from the Undistinguished class to the Achiever class. Being a High Maintainer included youth who spent

both time periods in the Adept and Achiever classes. Low maintainers were youth who spent both time periods in the Insecure class or both periods in the Undistinguished class. Finally, youth who declined were those that transitioned from Adept or Achiever classes at year two to Undistinguished or Insecure classes in year three. Additionally, youth who transitioned from Undistinguished to Insecure were considered to have declined. Table 18 displays these results.

Table 18: Number Improve, Decline, and maintain between Time=2 and Time=3

Improve	22
High Maintain	13
Low maintain	43
Decline	58
Total	136

Changes in Profile Category and Risk

I hypothesized that risk, both exogenous and endogenous, would be significantly related to changes in profile categories. Specifically, I hypothesized that mental and social risk, school challenges and behavioral risk, and familial and friend risk would be associated with downward changes in profile categories for youth who were initially in the high PYD class. This was because, if a youth was thriving in the presence of risk, the best outcome scenario would be to maintain a high level of development. Conversely, youth who were struggling and had a risk presence would not be able to decline, but could show improvements over time.

For changes in profile categories between years one and two, multinomial logistic regression was used to assess the relationship between covariates and changes in profile categories. Decliners were significantly less likely than all other youth to be at less than 9th grade level. Contrary to my hypothesis, no other significant differences were found, although gender approached significance when comparing Decliners to Low Maintainers and High Maintainers.

Low Maintainers were less likely than Decliners to be male ($p = .11$) and High Maintainers were more likely to be male ($p = .18$).

Multinomial logistic regression was then used to assess the relationship between covariates and changes in profile categories between years two and three. Contrary to my hypothesis, Low Maintainers were more likely than Decliners to have a mental and social risk. Interestingly, although there were no significant differences between Decliners and Low Maintainers beyond the presence of mental and social risk, indicators for school challenges and behavioral risk, familial and friend risk, being in 9th grade or above, and gender all approached significance ($p < .20$). Low Maintainers were more likely to have an familial and friend risk, less likely to have a school challenges and behavioral risk or be male, and were more likely to be in high school. Finally, Improvers were more likely than decliners to have a school challenges and behavioral risk present, and to be female.

DISCUSSION

The current study used a longitudinal data set from a grassroots youth development program to examine the presence of multiple classes of youth, and how these youth's changes in profile categories over time may be characterized over the course of three years. In addition, classes and changes in profile categories were analyzed with respect to their relationships with risk factors and dropout. A number of findings bear reviewing. Specifically, the present study identified four subgroups of youth who were distinguished by their patterns of responses to PYD indicators. These classes were described as Insecure, Undistinguished, Adept, and Achievers.

I hypothesized that indicators of risk, exogenous and endogenous to youth, would be negatively correlated with membership in classes comprised of thriving youth, and positively

correlated with membership in classes that included low scores. I found little evidence of a relationship between class membership and risk factors, although at year three Achiever youth were less likely to have experienced a school challenge and behavioral risk. Class membership also varied according to demographics, as high school youth were more likely to be in the Achiever and Adept classes than the Undistinguished classes, although this varied somewhat according to University year. Males and females differed significantly in their class memberships, as males, overall, were more likely to be in the Achiever class than females. Hispanic youth, in year two, were more likely to be in the Adept than Undistinguished class. My third and fourth hypotheses were related to trajectories of development and their associations with risk factors and demographics. In line with my hypotheses, I found that trajectories of development included youth who improved over time by changing classes, youth who maintained their class membership, and youth who declined over time. Contrary to my hypotheses, however, low maintenance youth, or those who were in the Insecure or Undistinguished classes, were more likely than youth who declined over time to have a mental or social risk. No other significant differences by risk level were found. Related to demographics, the only significant finding was that youth who experienced a decline in PYD over time were less likely to be in the 9th grade or higher than youth of other trajectories.

Overall, my results suggest that there is merit in distinguishing youth by their profiles of PYD and risk. The current study identified four classes of youth in the first two years of participation in a PYD program, with the third year consisting of three well defined classes. These findings support prior research suggesting that the characterization of youth as those who thrive and those who struggle lacks sufficient complexity to adequately describe their development (Warren et al., 2015). When youth engage with programs, multiple dimensions of involvement and

interactions between program and youth, such as intensity or duration, and individual characteristics of youth, are all important considerations for evaluating effects of PYD programs on youth development (Lynch et al., 2016). Specifically, the four class solution pertaining to the first two years of participation in SOS supports the notion that there are youth who thrive, youth who struggle severely, and youth who are somewhere in the middle; that is, youth who may not be thriving in all areas of development, but are not struggling altogether either.

Beyond a variable-centered approach, the methodology used in this study allowed for the identification of patterns of development, including a group marked by low self-esteem with high levels of PYD otherwise; a group distinguished by high self-esteem, low self-regulation, and relatively high PYD; a group of youth who seemed to score high on various elements of PYD, but not all or any in particular; and a final group of youth who were struggling in all areas of PYD. A variable-centered approach, such as factor analysis, may have provided insight into how the indicators of PYD were related to each other on average, and whether or not demographics and risk factors were related to the constructs, but it would not have revealed groups of youth who had the same patterns of responses to the questions at hand, such as scoring high on all elements of PYD except self-esteem or self-regulation. Without the person-centered approach that is LCA, these groups would not have been discussed.

The current study is also among the first to consider changes in profile categories of development within a single PYD program, and to consider the relationship between these changes and the presence of risk. I find that most youth experienced some sort of risk over time, but that many youth continued to thrive or maintain positive trajectories of development, which is in agreement with past work (eg., Lewin-Bizan et al. (2010)). The SOS University program appears to be inclusive of a diverse array of youth who are thriving, youth who may be struggling in almost all

areas of development, and youth who may be struggling in many areas of development. By and large, results from this study suggest that individual characteristics of youth, such as demographics, and risk factors they may be experiencing, may have meaningful effects on their development in the context of a PYD program. As previous research has noted, I also find evidence that developmental trajectories may be associated with the presence of risk (e.g., Eisman et al. (2017)), yet many youth appear to continue positive development in spite of, or partially because of, these factors. Taken together, the results from this study highlight the importance of a person-centered approach to program evaluation, which allows for the consideration of positive attributes in the face of risks youth experience.

Distinguishing Classes of Youth

Four classes of youth were identified during the first two years of involvement, and during the third year three classes were found. The four classes of youth in the first two years of participation were identified as Achievers, Adept, Undistinguished, and Insecure. Achiever youth scored in the top third of virtually all indicators of PYD. Adept youth were similar in nature to the Achievers, although their overall scores on PYD were somewhat lower; the distinguishing characteristics of Adept youth in year one were that they had relatively low levels of self-regulation and high levels of self-esteem. The Undistinguished class was characterized as youth who may have scored high on certain elements of PYD, but did not score high on all of them, or any in particular. Finally, youth in the Insecure class scored low on virtually every marker of PYD.

The same four classes were identified in the year two of University, even though the probabilities associated with individual PYD indicators varied to a small degree. Still, youth were categorized into Achievers, Adept, Undistinguished, and Insecure classes. During the second year

of University, Achiever youth were distinguished by their high scores on virtually every indicator of PYD except for Self-regulation and Self-esteem. Adept youth were characterized by their high scores on Self-regulation and Self-esteem, and the lowest scores on attitudes towards drugs. Undistinguished youth, the class that held the largest portion of participants, was marked by scores high on certain elements of PYD, but not all. Finally, the Insecure class was once again comprised of youth who scored low on virtually all PYD indicators.

For the final period, year three, three classes of youth were identified. These included Achievers, Undistinguished, and Insecure youth. Once again, Achiever youth scored high on virtually every PYD marker except for self-esteem; additionally, self-regulation scores improved for this class of youth. Undistinguished youth, on the other hand, had lower scores of self-regulation than Achiever youth, and self-esteem also decreased by a significant margin (probability dropped from .99 to .39).

Overall these results support similar findings on PYD, including the notion that development is a complex phenomena that is not adequately characterized when categorizing youth as either thriving or struggling (Agans et al., 2014). Youth can be thriving in some areas and struggling in others, or may experience risks that effect their development. These factors, overall, potentially interact with the program contexts they engage with, and may effect the amount of benefits they garner from such programs. Additionally, if youth are not entirely successful with the activities they choose, their self-esteem, and overall well-being, may be compromised as well, whether it be from frustrations that arise when seeing others succeed at the same activities, frustrations from the amount of resources invested that did not result in the desired outcome, or for other reasons (Rosenfeld & Wise, 2010; Young-Eisendrath, 2008).

Latent Classes and Risk

I hypothesized that the presence of risk would be associated with membership in the classes marked by low functioning. Following results from Hypothesis I, this would have been indicated through an increased probability of experiencing risk when in the Undistinguished and Insecure classes. However, I did not find significant differences in risk prevalence of youth across classes following years one and two. The only differences that were found included demographics, which included Achiever and Adept youth being more likely to be in the 9th grade or above when compared to Undistinguished youth. Following year two, youth who were in 9th grade or above were more likely to be in the Undistinguished class compared to the Adept class, and were also more likely to be Hispanic. Finally, following year three, Achiever youth were more likely to have a BR than Undistinguished youth.

These results support the growing evidence base that the presence of risk is inherent in all youth, and that preventing risk taking may not need to be a focal point of interventions (Scales et al., 2016). Although the results of the present study did not find a strong relationship between PYD and risk factors, experiencing risks, when in the proper context, may serve as learning lessons for youth. Though not considered in the present study, it is also possible that experiencing risk can serve as an inoculating experience for certain youth, helping to buffer against the effects of risks that may be experienced in the future (Ungar, 2004). Risks that are potentially endogenous to youth, such as school engagement or behavioral issues, may be more readily treatable than risks that are exogenous to the youth's control, such as familial conflict. If this is the case, researchers and practitioners may consider how their interventions support youth experiencing different levels and types of risk.

Changes in Profile Categories Over Time

I hypothesized that the majority of youth would score high on elements of PYD across the three years of University participation, and that changes in profile categories indicating improvement or declines over time would be fairly uniform across the remaining youth, including those who began in categories indicating low trajectories of development. Prior research has demonstrated that youth can drift in and out of classes, which together illustrates trajectories of development that can be positive or negative (Agans et al., 2014). Development is a process that is complex. Some youth always carry the characteristics that are thought to lead to healthy development, such as high self-esteem or future orientation. Others have the potential to thrive, but may require additional intervention, or experiences that can help set them on a better path. Therefore, how individuals experience risk and react to it is variable and an important consideration. Adolescence is marked by experiencing puberty, increasing levels of independence from parents and families, and increasing opportunities to engage in risky behaviors. It may therefore be difficult for youth to maintain high trajectories of development given the many obstacles that lie ahead, and the natural tendency to engage in risk at one time or another. Conversely, while it may seem that trajectories of development in which youth are initially struggling may be the easiest to manipulate, the current findings suggest that many youth continue to struggle, and in spite of intervention, many also youth decline over time (Agans et al., 2014; Eisman et al., 2016, 2017).

Risk and Trajectories of Development

My final hypothesis was that risk, regardless of type, would be significantly related to changes in profile categories over time. Specifically, I expected to find that the presence of risk would be associated with trajectories that could be described as declining. I found moderate support

for the opposite, however. Specifically, I found that, between University years one and two, there were no significant differences in trajectories of development in association with risk. Rather, the only significant difference I found was that demographics appeared to be an important correlate of developmental trajectories. Specifically, youth in the 9th grade or higher were more likely to be in the Decliner class than other youth. Between years two and three, I found that Low Maintainers were more likely than Decliners to have a mental or social risk, but no other differences were found at the $\alpha = .10$ level. Together, these findings do suggest a weak relationship between trajectories of development and certain types of risk (in this case, mental and social risk); however, interpreting these results as causal is not recommended. More work is needed that focuses on the positive attributes that may emerge in youth when they are required to face down certain risks.

Limitations

The interpretability of the findings from this study are limited in several capacities. First, as previously described, establishing causality is not feasible without the use of experimental methods. Thus, the presence of bias resulting from attrition, selection effects according to non-response, and imprecision of measurement may all be important in factors that influence the results. Second, The relatively low sample sizes limit our ability to validate the classes that were found in the present study. A larger sample would have allowed for the development of a training and validation data set. A third limitation is that the data set consisted primarily of White and Hispanic youth, and it is possible that the classes and trajectories of development will look different for youth from other backgrounds and contexts, such as African American or Arab American youth.

Conclusion

Overall, the present study lent support to the notion that youth development is a diverse and complex phenomena. Using a person-centered, rather than variable-centered, approach to studying youth may provide additional insights into the interacting processes that occur between youth's strengths and the risks they experience, especially when development is occurring through PYD programs. When youth engage in or experience risk, how they learn from these experiences and grow to become successful and thriving adults requires additional study. Moreover, the contextual factors that influence development through programs such as SOS remain an important consideration for future researchers. As youth age, they are able to make more decisions for themselves, and when provided the opportunity, can engage with programs that best serve their needs. In many cases, the diversity of interests and aspirations of youth are as diverse as the programs they are afforded the opportunity to engage. Increasing the choices and availability of programming for youth of different backgrounds and interests should become a primary objective of PYD researchers. Additionally, a better understanding of the interactions that may occur between risks youth experience and the programs they engage with may support the development of more refined approaches to helping youth become thriving adults.

GENERAL DISCUSSION

The broad theme of this dissertation was to examine elements of PYD and risk factors in their relation to program attrition (Study I) and profiles of youth development (Study II). In Study I, variants of a baseline model predicting youth dropout across three years of participation in a PYD program were tested to identify common factors that potentially lead youth to discontinue engagement. Specifically, Study I examined the relative associations between exogenous and endogenous risks, demographics, and elements of PYD with program attrition. Study II focused on identifying subgroups of youth who were distinguished by their patterns of responses to PYD indicators. Following identification of these subgroups, or classes of youth, developmental trajectories of PYD and their relation to risk factors and demographics were analyzed. In both studies, exogenous and endogenous risks, demographics, and indicators of PYD played important roles identifying youth who appear to be engaging with SOS and are potentially benefiting from it.

Programs such as SOS Outreach are an increasingly popular form of intervention for youth. These programs can provide rich and meaningful contexts that may facilitate growth in youth while also buffering against risks (R. M. Lerner, 2000). When youth are afforded the opportunity to explore their interests and become engaged in activities that are personally meaningful, the potential for healthy development may be maximized (Dawes & Larson, 2011). However, many urban and minority youth are not provided the opportunity to engage in programs that are tailored to their interests, and many youth simply do not have any opportunities to explore their interests in the safe and supportive environment that PYD programs provide (Perkins et al., 2007; Sharp et al., 2006).

A number of key overarching results from the two studies bear mentioning. First, the emergence of self-regulation as a significant and meaningful predictor of attrition, and its role in

distinguishing classes of youth is an important finding. Contrary to my hypotheses, higher levels of self-regulation were associated with an increase in the probability of dropping out. Additionally, self-regulation scores were one of the main characteristics that distinguished two classes of high PYD youth from each other in Study II. Self-regulation, and especially intentional self-regulation, is gaining credence as an important process that individuals go through when navigating the opportunities and risks they face as youth (Geldhof et al., 2010). Intrinsic self-regulation involves intrinsically motivated and intentional actions, including goal setting, decision-making, and developing strategies to achieve an objective (Geldhof et al., 2010). This aids in the development of an identity, which includes values, abilities, and interests, among others (Côté, 2009). When youth have strong self-regulation skills, they are able to select in and out of activities and programs that serve their own goals and long-term objectives. Youth who have strong self-regulation skills and are intrinsically motivated may be able to select in and out of PYD programs until they find a program that is self-defining. Extrinsically motivated youth, or those who are attracted to the elements of a program such as the social aspects or activity settings, may also be able to determine when engagement in particular programs has satisfied their extrinsic motivations, and move on. For example, youth engaging in SOS University may find the snowboarding activity to be the primary attractant to participation; however, if the novelty of this activity fades, then youth may be more likely to drop out. This may be why youth with strong self-regulation skills were more likely to drop out of the program. However, if programs can retain youth with high levels of self-regulation, or foster this skill set in them, youth from disadvantaged contexts may garner enhanced benefits from the program (Urban et al., 2010).

Due to the results from Study I, the findings on self-regulation in Study II should be interpreted with caution. Given that youth with high levels of self-regulation were more likely to

drop out of the program than youth with low levels, the latent classes from year two and year three data understandably showed low levels of self-regulation. The present study was unable to specifically test for improvements in self-regulation, but the maintenance and increase in this skill, among others, between years two and three does suggest that some youth may be improving.

Second, the associations between risk, retention, and changes in profile categories over time are an important consideration for future research, although these associations did not reach typical thresholds for significance ($p < .05$). Youth experience exogenous risks, or those out of their control, and endogenous risks, which can be conceptualized as risks intrinsic to the individual. Both may have unique effects on youths' ability to remain engaged with programs and subsequent development as well. However, it is also important to note that while certain risks may influence certain outcomes, by and large individuals react differently to different types of risk. For instance, is it the accumulation of risks that influence youth development, or is it a combination of specific risk factors that have a particularly large effect? Are some of these risks *challenge* factors that enhance development when they are manageable, such as the loss of a loved one (Chong, 2001)? The intricacies underlying youth development in the context of risk are much more complex than studies such as this are able to uncover.

Strengths and Limitations

Though the list of shortcomings and strengths of the dissertation are lengthy, the following stand out. First, data was observational, rather than experimental. Though Study I was focused on identifying bias that can occur when youth select out of a program, there likely remains many factors related to attrition that were unaccounted for. In relation to Study II, this bias may have manifested itself in the latent classes that were estimated using data from years two and three of the

University program. Second, sample size was also a limitation to the dissertation. Data were missing in large portions due to attrition, implementation issues, and non-response. Sample size may have been especially problematic for Study II. As the number of variables that are included in an LCA increase, the number of potential response patterns increases as well. Thus, sample size can be a limiting factor when trying to determine the optimal number of classes that are representative of a population. Third, though the PYD perspective has a strong theoretical foundation, the empirical base is lacking. As a result, the measures used in the dissertation may not have been representative of the changes that SOS induces in youth. Additionally, the strong correlations between PYD constructs likely limited the ability to impute missing data. Finally, the risks constructed were less evidence-based and more data-driven. That is, the constructs were developed with the goal of reducing the overall number of variables. However, the constructs that were developed were intuitively appealing.

Other limitations specific to the statistical analyses that were chosen, such as the decision to develop constructs of risk, as opposed to a cumulative risk score, were made by the author before analyzing the data.

The strengths of this dissertation are many as well. The key strengths are as follows. First, the data set contained a large number of PYD and risk variables that were used in analyses. Second, although missing data was substantial, the longitudinal nature of the data provided a unique opportunity to observe attrition and trajectories of development in a grassroots program. Third, the data consisted primarily of observations from White and Hispanic youth. Prior research on PYD has typically focused on White, middle-class youth, and the PYD perspective thus may not be adequately representative of other cultures or marginalized populations (Batey, 1999). This dissertation serves as a continuation of the discourse needed to ensure that factors such as these will

be considered in future work. Fourth, this dissertation asserts that retention is an important factor to consider, not just for evaluation purposes, but also as a potential signal that youth are making choices that are best for themselves (i.e., moving on from a specific program). Retention, or lack thereof, does not have to be a limiting factor to program implementation. Rather, when youth have a diverse set of programs and activities to choose from, this allows them to explore their interests and develop skills suitable to their needs.

Implications

The Positive Youth Development perspective emerged as a field of study with the purpose of identifying measurable strengths of youth, and how practitioners might use these attributes to encourage further development across a broad array of outcomes (R. M. Lerner, 2000). However, the field has yet to agree on a set of characteristics that are most important in facilitating healthy development. As a result, the applied settings, or programs, have struggled to identify the key processes that occur within their interventions, and subsequently have been unable to demonstrate meaningful effects. For example, SOS measures many different characteristics thought to indicate PYD, including leadership, self-efficacy, self-esteem, attitudes towards drug use, and acceptance of diversity, among others. Conversely, other PYD programs, such as Big Brothers Big Sisters, measure constructs related to socio-emotional development and educational expectations. Other programs focus on individual indicators of PYD, such as self-efficacy (Deane and Harré (2014)) or character development (Lynch et al. (2016)). As these programs have grown and gained national notoriety, questions of *if*, *how*, and *why* these programs work has become a key objective of research on PYD. Thus, while the popular notion is that these programs are a root cause of the successes of many youth, the evidence base is lacking.

An important area of focus for future research is to address the misalignment between the PYD perspective and other fields of research, such as the study of resilience. Most, if not all, youth experience and participate in risky activities at some point. While research has largely viewed this as a hindrance to healthy development, there is evidence suggesting that experiencing risk can *contribute* to development. Research on inoculation, or the experience of risk such that future experiences are manageable by the individual, may be beneficial for PYD researchers to consider. Moreover, what constitutes healthy development for one youth may not be satisfactory for another. Depending on the background of the youth, certain interventions may or may not be appropriate, and likewise certain constructs of PYD may not be pertinent either. For example, Cirillo (2000) found that adults who were abused as children but grew up with oppositional, as opposed to victimization, mentalities had better mental health outcomes. Morgan (1998) suggested that certain elements of development, in particular locus of control, may lead to a greater sense of empowerment, and that empowered youth may rebel against institutionalized rules or expectations. It seems that this type of behavior would be deemed risky, or undesirable. However, context is an important factor to consider. If youth rebel against a set of rules, such as apartheid, should they be considered delinquents or miscreants? How researchers *define* development, including vulnerabilities and the processes and mechanisms that lead to a prescribed “desirable” outcome is an important consideration for the field moving forward. Programs that work with Hispanic youth may not work with Asian youth.

Conclusion

Programs that aim to improve the lives of youth and set them on a path to success are increasingly expected to provide evidence of their effects, while research on youth development is

transitioning into applied settings. As these lines of work continue to progress, the integration of outside perspectives, such as resilience, will be important in furthering our understanding of the complexities of human development, and subsequently the utility of interventions as mechanisms for change.

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