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Positive Outcomes of Out-of-School Time Activity Participation for Youth: A Pattern-Centered Approach

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Positive Outcomes of Out-of-School Time Activity Participation for Youth: A Pattern-Centered Approach

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Abstract

Youth participation in community-based, structured out-of-school time programs (OST) has been found to promote positive developmental outcomes by providing youth with resources to build interpersonal relationships and essential life skills. The increasing prevalence and multiplicity of youth participation in these activities leads us to expand the research evidence regarding the relation between program participation and positive youth development, with a focus on identifying nuanced patterns of OST participation that consider the breadth and frequency of activities across different types of programs. We apply this pattern-centered approach to analyzing how and for whom these activities may promote youth academic competence and character. The study sample is a subset of 700 middle-school youth of diverse race and ethnicity who primarily reside in low-resource areas of South Carolina. Survey respondents indicated their involvement in specific OST activities as well as the frequency of participation. PYD outcomes were measured with items from the academic competence and character subscales of the PYD-Short form. We conducted a latent profile analysis (LPA) of the activity participation variables to determine OST profile membership based on youth self-reported participation in OST activities. A series of analyses following the LPA examined the links between OST participation profile membership and academic competence and character as well as potential variation by race and gender. Our findings of consistent positive main effects of OST participation profiles on these outcomes across demographic groups underscore the value of diverse OST program participation for enhancing well-being and healthy development in early adolescence.

Keywords: positive youth development, OST, pattern-centered analysis

Introduction

A positive youth development (PYD) approach can help researchers and practitioners identify critical components necessary for adolescent health and well-being found in the relations between a young person and the contexts in which they are embedded (Lerner et al., 2021). Community-based, structured, out-of-school time (OST) programs are one such context that can provide positive relationships with others, life skill-building activities, and leadership experiences (Lerner et al., 2004; Tirrell et al., 2019). Almost eight million youth participate in some type of OST activity in the United States (Gilbert et al., 2020), with youth participating in just over three OST activities on average (e.g., Zarrett et al., 2009).

PYD approaches to adolescence are derived from relational developmental system meta-models (Lerner, 2019). Therefore, the PYD perspective highlights that youth do not participate in OST programs in isolation but rather as part of a constellation of activities and potential resources (Mueller et al., 2011). A PYD approach also emphasizes a person-centered perspective focusing on the specificity of processes (i.e., the specific principle; Bornstein, 2017) and addressing multipart "what" questions, such as "What type of participation in what programs promote what outcomes for what youth?" (Lerner, 2019). That is, the potential benefits of OST participation may depend on the types of activities in which youth participate as well as the breadth and depth of that participation (Zarrett et al., 2009). In addition, these benefits may differ for specific youth and specific outcomes. Despite the prevalence and benefits of OST activities, limited research has applied the specificity principle (Bornstein, 2017) to examine the nuanced relations between youth participation across multiple OST contexts and PYD outcomes. Therefore, in the present study, we test the links between patterns of OST participation and PYD outcomes (i.e., academic competence and character) in a sample of Black and White youth living in South Carolina. The results of this work will contribute to a fuller understanding of the OST experiences of diverse youth from a PYD perspective.

PYD outcomes can be fostered in a variety of high-quality OST settings, such as afterschool programs, faith-based settings, career-minded programs, and sport leagues (Hansen et al., 2003). Research has found that in general, the more time spent in high-quality organized activities, the greater the benefits to participating youth (Nelson, 2023); however, reflective of the specificity principle, different types of OST activities can promote different outcomes for youth participants. For instance, youth engaged in a sports program may see increases in initiative and emotional regulation, but may also see increases in alcohol consumption and stress levels (Denault & Poulin, 2018; Larson et al., 2006). On the contrary, attendees of an OST program centered around the arts may demonstrate increases in creativity, perspective taking, and critical awareness (Greene et al., 2018; Ibrahim et al., 2022). However, research applying the specificity principle to understanding how youth involved in multiple programs, such as sports- and arts-focused OST programs, are doing on PYD outcomes is limited (Nelson, 2023). This type of comprehensive approach better reflects theoretical and practical perspectives of how youth are engaged in and impacted by OST activity participation.

Measuring OST program participation reflective of the specificity principle also adds complexity, as participation can focus on Breadth (the scope of participated activities), Depth (frequency of participation in a specific activity over a set time), Duration (number of years of participation in a specific activity), or Engagement (level of youth attention, interest, or effort in a specific activity; Bohnert et al., 2010; Gagnon et al., 2020). To examine the impact of participating in multiple OST programs, contemporary pattern-centered approaches have been used to identify subgroups of young people participating in different patterns of OST programs (Vandell et al., 2020). These pattern-centered analyses show that the breadth of participation may contribute to short- and long-term positive development (Nelson, 2023). However, existing evidence on these activity participation profiles is limited from a relational-developmental systems perspective, as individual youth characteristics are often overlooked.

Experiences across particular OST programs for promoting particular outcomes may differ across diverse youth. Bornstein's specificity principle (2017) highlights the heterogeneity of experiences of youth, and research on OST programs has frequently pointed to the differential benefits of programming in relation to youth race and gender as well as the social perceptions related to youth expression of race and gender (Ferris et al., 2016; Fredricks & Eccles, 2006; Williams & Deutsch, 2016). For example, Bowers and colleagues (2021) found that among youth of color participating in a college preparatory OST program, Youth Individual (i.e., critical reflection and hopeful future expectations) and Contextual Assets (i.e., mentoring relationship quality) predicted contribution in Black youth, but not Latinx youth. In terms of gender, Urban and colleagues (2010) found a similarly complex interplay between neighborhood assets, OST program participation, and youth intentional self-regulation. For females in relatively low-resourced neighborhoods, those with greater self-regulation reported more favorable outcomes in terms of PYD, depression, and risk behaviors; however, these benefits were not seen in males (Urban et al., 2010).

Therefore, the present study applies the specificity principle to build upon extant research evidence on OST participation and PYD outcomes, with a focus on (a) identifying nuanced patterns of participation (i.e., Breadth and Depth across different types of OST programs); (b) exploring the relations between these patterns of participation and PYD outcomes (i.e., academic competence and character); and (c) considering the role of youth race and gender in moderating these relations.

Measuring OST Participation

When considering youth participation in particular OST programs from a PYD perspective, it is essential to note that youth do not participate in an OST program in a vacuum; thus, an ecological approach is needed for understanding youth outcomes. Indeed, most youth report participating in three or more OST programs during the school year (Agans et al., 2014; Zaff et al., 2003; Zarrett et al., 2009) so the comprehensive effect of this participation on youth outcomes must be considered. Youth participation in multiple programs has also been found to encourage positive outcomes for youth.

OST program participation can be difficult to measure. There is no standardized way to assess the construct when considering multiple dimensions of OST activity participation, prompting a variety of measurement approaches. For example, Gagnon and colleagues (2020) studied a sample of Native American youth attending a camp experience to explore potential variations in quantity and quality of OST program participation. Although the main objective of that study was to address quality of the program, quantity of participation was assessed by youth reporting the number of years they had attended the camp (Gagnon et al., 2020). The authors acknowledge that the measurement of frequency used in this study does not address either Breadth or Depth of OST participation. Lynch and colleagues (2016) measured dimensions of intensity, duration, and engagement in their study of youth involvement in activities sponsored by the Boy Scouts of America (BSA). This study examined the relations between program participation and various dimensions of character development, with results suggesting that engagement in the BSA programs was the strongest predictor for increases in character (Lynch et al., 2016). However, their study suffers from homogeneity of the sample with 85% of the BSA youth in the study being White. This sample does not adequately represent the population breakdown of the geographical area in which this study took place (Philadelphia and the surrounding area). In contrast, the sample used in the current study is racially diverse and more representative of the youth population in the geographical area from which the sample was recruited (South Carolina).

Other research has used person-centered analysis to measure OST program participation, with a particular emphasis on sports participation. For example, Linver and colleagues (2009) assessed whether youth experienced more favorable developmental outcomes when engaged in sports in addition to various other organized activities. The findings indicated that girls were more often in the clusters, termed Sports

Plus, School Groups, or Religious Groups, while boys were more often in the Sports or Low Involvement clusters. There were differences in cluster association based on race with African American youth who were more likely to be in the Sports and Sports Plus clusters (Linver et al., 2009). Similarly, Zarrett and colleagues (2009) looked at patterns of youth participation to determine if there were individual differences in activity participation and PYD outcomes. Comparing variable- and pattern-centered analyses, the authors examined the importance of participating in sports along with other OST activities for PYD outcomes. Findings of this study indicated that youth who participated in sports paired with other OST activities were most likely to reported increases in their levels of PYD (Zarrett et al., 2009). However, the authors note that more must be done to understand fully the specific and nuanced benefits of OST participation for youth:

> Participation in what combinations of OST activities, as operationalized by what indices, for youths of what behavioral and demographic characteristics, undertaken at what portions of adolescence and for what duration of this period of life, lead to what more immediate and longer term positive or problematic facets of functioning? (Zarrett et al., 2009, p. 379).

The current study aimed to address this call by Zarrett et al. (2009) to some degree. Our measures of participation included dimensions of Breadth and Depth, and we explored patterns and combinations of activities and their relation to PYD outcomes. Our study also explored variability in these relations across demographic groups (Black and White, male and female) of youth from a specific state in order to further specify for whom particular patterns of OST activities may predict the most developmental benefits.

OST Programs as Resources for Academic Competence and Character

Both academic competence and character are identified as key outcomes of PYD programs (Catalano et al., 2019; Roth & Brooks-Gunn, 2003). Academic competence is one of the most common goals identified by parents when considering their child's enrollment in OST programming (Lei et al., 2018). Academically-focused OST programs seek to improve youth participants' academic attitudes, behaviors, and performance by increasing youths' access to high-quality academic supports and opportunities (Linden et al., 2011).

Reflective of the specificity principle, participating in specific types of OST activities have been linked to dimensions of character in unique ways (Doyle et al., 2016; Hansen et al., 2003; Wang et al., 2017; Youniss et al, 1999). For example, youth report moral character gains through participation in faith-based settings, civic character gains through community service activities, and performance and intellectual character gains through vocational settings (Hansen et al., 2003; Youniss et al, 1999). In addition, Lynch and colleagues (2016) examined whether different dimensions of OST activity participation (Intensity/Depth, Duration, and Engagement) were linked to moral and performance character in males engaged in BSA. They found that individual engagement was the most consistent predictor of increases in moral and performance character, and depth of activity participation was linked to moral character.

Although evidence indicates that youth academic competence and character benefit from OST program participation, limited research exists that considers these outcomes within the milieu of OST activities in which youth engage. Some scholars suggest that participation in a breadth of activities may benefit youth in multiple ways due to the diversity of experiences (Nelson, 2023); however, others point to the specific outcomes linked to the targeted aims of a specific program (Lynch et al., 2016). As few studies have considered youth OST participation from a systems perspective, there is limited understanding of the benefits and impacts of participation in multiple OST activities for academic competence and character. Our analyses address questions of specific outcomes associated with OST participation through a pattern-centered approach. We developed natural-based groupings of youth according to their OST activities (Oliveira et al., 2023); we also identified the variety of activities participated in by youth and modeled the relations between these multidimensional patterns to youth development outcomes.

OST Program Participation, Race, and Gender

There are many structural and social inequities experienced by youth in relation to their identities, including their race and gender (Combahee River Collective, 2014; Garcia Coll et al., 1996; Spencer & Spencer, 2014). For example, although traditional OST programs such as Boys and Girls Clubs and Big Brothers Big Sisters often serve youth of color (Boys & Girls Clubs of America, 2012; Valentino & Wheeler, 2013), experiences within programming may affect the likelihood of participation in these OST programs by youth of color (Fredricks & Simpkins, 2012; Simpkins et al., 2017).

The specificity principle guiding this study suggests we examine the diversity of effects of OST participation patterns on PYD outcomes for diverse youth, including dimensions of race and gender (Tirrell et al., 2019). In order to understand the benefits of particular programs, we need to specify for whom the program works, and to which components of youth development it contributes (Bornstein, 2017; Shonkoff et al., 2017; Tirrell et al., 2019).

There is limited research evidence of race differences in exposure to positive OST environments (Hynes, 2011). One reason for the lack of evidence is that many studies linking OST programming and PYD outcomes are conducted with relatively homogeneous samples (Lynch et al., 2016; Nelson, 2023). Important exceptions are the research by Hynes and Doyle (2009) and Kanters et al. (2012), who find greater participation in OST programs among Black youth as compared to their White peers, with the gap in participation rates increasing over time. However, there is a need for further research to address whether differences in participation are linked to developmental benefits.

In addition to racial variations in OST program participation, research suggests that gender may also predict patterns of OST activity participation (Gillard & Witt, 2008; Perkins et al., 2007). Researchers have found that girls tend to prefer social activities as well as school involvement—arts-oriented types of activities such as dance and band (Perkins et al., 2007). Girls also report that they may experience constraints to OST participation such as self-consciousness, shyness, and the need for approval from friends; programs that promote less of a competitive environment may be more conducive for their participation (Raymore et al., 1994). Males are more likely to report participation in sports programs and have limited constraints to their participation (Perkins et al., 2007). Bouffard and colleagues (2006) found that although not as strong as income and education variables in their study, there were significant effects of race and gender on OST program participation. Black and Hispanic youth were equally or even more likely to participate in OST programming, and girls had an overall higher activity participation rate (Bouffard et al., 2006).

Summary and Rationale for Current Study

In summary, we based this study on the research evidence that OST programs benefit PYD outcomes for participating youth (Vandell, 2011). Much of this prior work did not consider the outcomes and implications of youth participation in multiple simultaneous OST activities. In order to explore these beneficial outcomes, we use person-centered analysis to create OST profiles that naturally group youth based on a range of OST activities. By examining the PYD benefits linked to the OST participation profiles, we are able to have a more nuanced understanding of what *specific combinations* of OST activities offer participating youth in terms of PYD outcomes (Zarrett et al., 2009).

The focus of this study is to continue to bring to the forefront the importance of pattern-centered methodology in OST research and to explore how participation in multiple OST programs may influence PYD outcomes among middle schoolers. Because academic competence and character have been frequently cited as highly desired outcomes from OST participation, we selected them as the chosen outcomes for this investigation (Hansen et al., 2003; Vandell 2011).

The study addresses four research questions:

1. What are the OST activities in which youth most commonly participated?
2. What are the predicted profiles based on youth selected OST activity participation?
3. Do predicted profiles of OST participation predict academic competence? Do predicted profiles of OST predict character?
4. Do the associations between profiles of OST participation and academic competence and character outcomes vary by race or gender?

Methods

From 2015 to 2016, middle school youth residing in South Carolina were surveyed as part of a larger study on PYD outcomes, contextual assets, and general well-being. Researchers systematically selected middle schools and OST program sites that, based on US Census data, were in low-income regions with racially and ethnically diverse populations. A total of 700 students at 18 different sites completed the survey questionnaire, with the number of surveys completed at each site ranging from 14 to 132 and response rates from 13.4% to 100% (overall response rate = 37.9%; Authors, 2021).

Participants

A subset of participants was selected for the purposes of secondary data analysis; we selected youth who self-identified as either African American/Black or White and were in the 7th and 8th grades in 2015 and 2016. This resulted in an effective sample size of 462. Youth included in this study reported their age as between 10 and 15 years old (M = 13.32, SD = .703). Selected youth within the smaller sample for this study who identity as White (68.8%) and Black (31.2%) were included in this convenience sample, with less than half of survey respondents being female (45.9%; male 54.1%). Participants of other ages and racial or ethnic groups were not included in this study due to their small sample size and associated concerns about power.

Procedure

The survey instrument was completed in either paper format or through an online Qualtrics survey (Qualtrics, Provo, UT) with trained study staff on hand. In both modalities, youth completed the survey in a group setting with peers present and submitted the survey to the study staff or through the online portal once they were finished.

The study staff received training on the protection of human subjects, provided assurances of anonymity to participants, and appropriately managed youth so that surveys were completed individually. The survey instrument measured many different aspects associated with youth development as part of the larger study. The total survey completion time averaged at about 30 minutes, and youth who successfully completed the survey were given an incentive of a small gift card (Bowers et al., 2021).

Measures

Participation in Activities

Students were asked to indicate their involvement in various activities. Categories were based on prior empirical work to categorize or inventory the various types of activities in which youth engage (Larson et al., 2006; Lerner et al., 2004), as the various activities in which youth spend their time can indicate productive engagement and be indicative of their potential contributions to society (Lerner, 2004). Students were asked to indicate if they were involved in various clubs, groups, or activities grouped into the following twelve categories: 4-H Camp; Academic Clubs; Arts & Crafts; Band/Music; Big Brother/Big Sister or other mentoring program; Church Youth Group; School Government; Mentoring other Students/ Peer Advising; Other youth program (BSA, Girl Scouts, etc.); Outdoor activities in parks and other natural areas; Sports; and Volunteering your time. Participants were instructed to identify activities that they were participating in during the school year. In addition, participants were asked to indicate the frequency of their participation in the various activities with the following options 0 = n*ever*, 1 = *once a month or less,* 2 = *a couple of times a month or more*, 3 = *once a week*, 4 = *a few times a week*, and 5 = *every day.*

Academic Competence

Academic competence was measured using the two items that comprise the academic competence subscale from the PYD—Short Form scale (Geldhof et al., 2014). Youth were asked to respond to the items "I am just as smart as others my age," and "I do very well in school." Youth indicated their level of agreement with each question ranging from 1 = *strongly disagree* to 5 = *strongly agree*. A composite score for these two items was created by calculating means for responding youth. The Cronbach's alpha for the academic competence scale was .53 for this study. Although this is considered somewhat low for a measure of Cronbach's alpha, we have retained it in this study. A Spearman-Brown Coefficient has been considered an appropriate measure for two-item scales (Eisinga et al., 2013); however, the Spearman-Brown Coefficient for the academic competence measure was equal to the Cronbach's alpha (.534).

Character

Character was measured using the eight items from the character subscale from the Five Cs of PYD—Short Form (Geldhof et al., 2014). Character involves respect for societal and cultural rules, possession of standards for correct behaviors, a sense of right and wrong, and integrity (Geldhof et al., 2015). Four items assessing personal values and social conscience ask respondents to determine how important each of the following is in your life? with questions such as "Helping to make the world a better place," and "Doing what I believe is right, even if my friends make fun of me." Youth indicated their level of agreement with each question ranging from 1 = *not important* to 5 = *extremely important*. Valuing diversity is assessed via two items in which youth are asked to "Think about the people who know you well. How do you think they would rate you on each of these?" with responses ranging from 1 = *Not at all like me* to 5 = *Very much like me*. An example item was "Enjoying being with people who are of a different race than I am." Finally, moral conduct was measured through two items in which youth indicated their level of agreement with each question ranging from 1 = *strongly disagree* to 5 = *strongly agree*. An example item was "I usually act the way I know I am supposed to." A composite score for these eight items was created by calculating means for responding youth. The Cronbach's alpha for the character scale was .70 for this study.

Analyses

We conducted a latent profile analysis (LPA) of the activity participation variables to determine OST profile prediction of youth based on self-reported participation in OST activities. To assess potential outcomes of OST program participation patterns, a series of analyses following the LPA were used to determine if the independent variable (OST Participation Profile Membership) was related to the dependent variables (Academic Competence and Character).

Mplus Version 6 was used to conduct LPA profiles. Through the use of LPA, the researchers were able to determine predicted profiles of OST activity participation from responding youth on the OST activities. The LPA analysis was conducted using the CLASSES command to specify the number of profiles within the data set to estimate in the model. Iterations of three to six profiles were used to determine the final estimated number of profiles. Statements specifying the analysis type as MIXTURE. TECH11 and TECH14 were also included in the Mplus syntax to evaluate model fit tests.

Suggested methods of LPA model retention state that studies commonly have determined the best fitting model theoretically and statistically after five or six grouping iterations (Ferguson et al., 2020; Masyn 2013; Tein et al., 2013). Typically, decisions on retention in an LPA model is determined through the Bayesian Information Criterion (BIC), the Sample-Adjusted BIC (SABIC), and Akaike's Information Criterion (AIC) (Ferguson et al., 2020; Masyn, 2013). When we compared iterative models, we selected those in which BIC, SABIC, and AIC are lower than the previous model, thus indicating a better fit. However, these lower values are relative; we also considered the magnitude of the difference as per Ferguson et al. (2020) and Masyn (2013). Additionally, we employed the Lo, Mendell, and Rubin (LMR) test to compare models, similarly to the X^2 difference test in other types of modeling analyses. The LMR test assists in determining when additional models are not improving the model fit, so a nonsignificant LMR test suggests that the more parsimonious model is the better fitting and more representative model for the data (Marsh et al., 2009; Tein et al., 2013). In a further step, we used the bootstrap likelihood ratio (BLMR) test to evaluate the fit of each model compared to a model with one less profile (k-1); a statistically significant BLRT indicates that the current model is a better fit than the k-1 profile.

Prior to the analysis, testing for outliers and missing data was conducted. No cases tested at a significant level for being outliers using the Malhanobis Distance analysis method. Testing for missing data within the set of cases revealed that there were 582 points of missing data, accounting to .023% of the total data points. To ensure the most robust results, 14 cases from the larger dataset were eliminated due to survey respondents skipping the entire OST activity participation question, resulting in the final sample of 462 cases.

Results

What are the OST Activities In Which Youth Most Commonly Participated?

To address the first research question, we summarized responses to a list of the 12-activity options youth could self-select and report on regarding their current OST participation. Table 1 presents frequency counts for each of 12 OST activities, as well as the percentage of youth indicating via self-reporting that they participated in that activity. Table 2 presents the mean frequencies for OST activity participation. OST activity participation frequency options ranged from 1 = *never* to 5 = *every day.*

Table 1. *Frequency Table of OST Activity Participation (N = 462)*

OST Activity	Never	Once a Month	A Couple Times a Month	Once a Week	A Few Times a Week	Every Day
4-H	379 (82.0%)	36 (7.8%)	21 (4.5%)	17 (3.7%)	4 (0.9%)	5 (1.1%)
Academic Clubs	272 (58.9%)	58 (12.6%)	55 (11.9%)	38 (8.2%)	26 (5.6%)	13 (2.8%)
Arts and Crafts	267 (57.8%)	58 (12.6%)	40 (8.7%)	33 (7.1%)	25 (5.4%)	39 (8.4%)
Band/Music	254 (55%)	35 (7.6%)	23 (5%)	27 (5.8%)	21 (4.5%)	102 (22.1%)
Big Brother/Big Sister or Other Mentoring Program	362 (78.4%)	23 (5%)	21 (4.5%)	16 (3.5%)	16 (3.5%)	1 (.2%)
Church Youth Group	114 (24.7%)	36 (7.8%)	66 (14.3%)	97 (21%)	111 (24%)	38 (8.2%)
School Government	371 (67.1%)	26 (5.6%)	21 (4.5%)	16 (3.5%)	11 (2.4%)	17 (3.7%)
Mentoring Other Students/Peer Advising	310 (67.1%)	42 (9.1%)	45 (9.7%)	24 (5.2%)	18 (3.9%)	23 (5%)
Other Youth Programs (Boy Scouts, Girl Scouts, Boys and Girls Club, YMCA)	339 (73.4%)	30 (6.5%)	34 (7.4%)	21 (4.5%)	18 (3.9%)	20 (4.3%)
Outdoor Activities in Parks and Other Natural Areas	143 (31%)	59 (12.8%)	64 (13.9%)	43 (9.3%)	73 (15.8%)	80 (17.3%)
Sports	92 (19.9%)	26 (5.6%)	55 (11.9%)	109 (23.6%)	44 (11.9%)	38 (8.2%)
Volunteering Time	136 (29.4%)	96 (20.8%)	83 (18%)	54 (11.7%)	55 (11.9%)	38 (8.2%)

Table 2. *Frequency Table of Means for OST Activity Participation*

Activity	Mean	SD
Sports	3.00	1.888
Church Youth Group	2.37	1.688
Outdoor Activities in parks and other natural areas	2.18	1.904
Volunteering your time	1.81	1.639
Band/Music	1.64	2.093
Arts and Crafts	1.15	1.665
Academic Clubs	.98	1.413
Mentoring other students/Peer advising	.85	1.451
Other youth Programs (Boy Scouts, Girl Scouts, Boys and Girls Club, YMCA)	.72	1.400
Big Brother/Big Sister or Other Mentoring Program	.65	1.448
School Government	.53	1.254
4-H	.37	.931

Note. OST Activity Scale is in Likert format, with response options: 0 (*never)*, 1 (*once or month or less*), 2 (*A couple times a month*), 3 (*once a week*), 4 (*A few times a week*), and 5 (*every day*).

Overall, South Carolina youth reported low rates of participation in the 12 OST activities; outside of Sports, frequency counts for the *never* option were most commonly selected across the OST activities (see Table 1). On average, Sports had the most participation of all the OST activities, followed by Church Youth Group and Outdoor Activities in Parks and Other Natural Areas. As can be seen in Table 2, youth reported that they participate in Sports once a week (M = 3.0, SD = 1.9) and participate in Church Youth Group (M = 2.37, SD = 1.69) and Outdoor Activities in Parks and Other Natural Areas (M = 2.18, SD = 1.9) just over "a couple times a month." We created a counter variable adding up all OST activities for every respondent. The mean value of OST activities participated in by youth was 5.42 activities.

What are the Predicted Profiles Based on Youth Selected OST Activity Participation?

Do Predicted Profiles of OST Participation Predict Academic Competence? Do

Predicted Profiles of OST Predict Character?

To determine what are the predicted profiles based on OST activity participation, we first conducted a LPA with maximum likelihood estimation using the 12 self-reported OST activities. OST activity variables were used as the grouping variables within the LPA. The LPA model selection was guided by the AIC, the BIC, the LMR, and the BLRT, as well as model stability, interpretability, and parsimony (Marsh et al., 2009). The final model solution that best approximated the data was selected based on theory and model fit indices. A summary of the model-fit information and model-selection criteria are shown in Table 3.

The AIC and the BIC were not minimized and continued to decrease as additional classes were added until the 6th model. The LMR suggested a 5-profile model, while the BLRT remained significant for all tested models. The 5-profile model showed greater profile separation compared to the other models and had the most interpretable results, thus the 5-profile LPA model was selected as optimal for interpretation and additional analysis.

Table 3. *Model Fit Information and Selection Criteria for Latent Profile Analysis*

Model	Loglikelihood	AIC	BIC	SABIC	Entropy	Smallest Class %	LMR p-value	LMR Meaning	BLRT p-value	BLMR Meaning
1	10228.006	20504.012	20603.265	20527.096	---	---	---	---	---	---
2	-9775.488	19624.976	19777.991	19660.563	0.98	10.82%	0.0111	2 > 1	<0.001	2 > 1
3	-9759.381	19355.655	19562.434	19403.747	0.92	10.39%	0.0551	3 < 2	<0.001	3 > 2
4	-9490.674	19107.347	19367.888	19167.942	0.98	5.41%	0.1854	4 < 3	<0.001	4 > 3
5	**-9291.812**	**18734.365**	**19048.668**	**18807.464**	**0.94**	**4.43%**	**0.0026**	**5 > 4**	**<0.001**	**5 > 4**
6	-9350.819	18879.637	19247.702	18965.24	0.89	3.47%	0.7531	6 < 5	<0.001	6 < 5

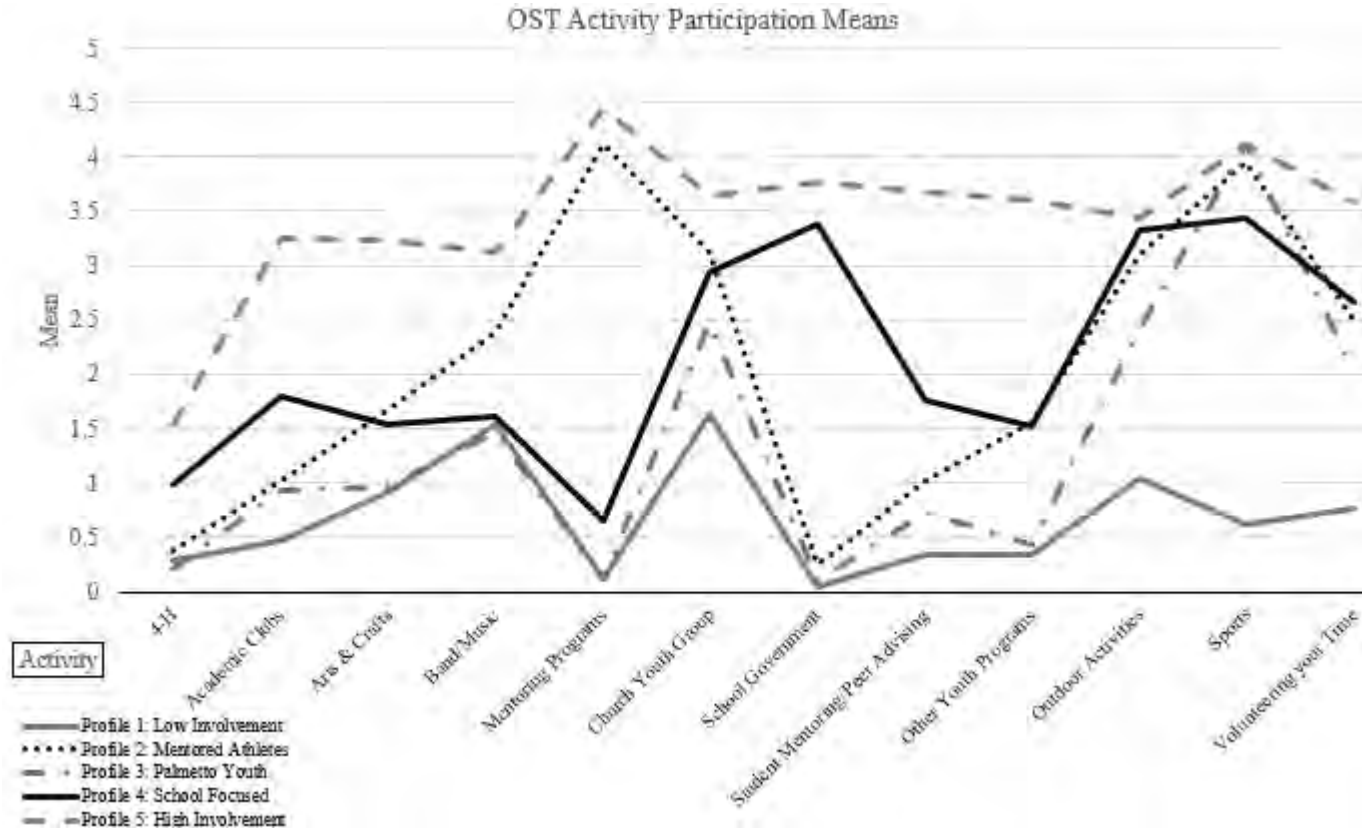
Note. Dashes indicate criterion was not applicable. Bold font indicated selected model. AIC is Akaike information criteria, BIC is Bayesian information criterion, SABIC is sample-adjusted BIC, LMR is Lo-Mendell-Rubin Test, BLRT is bootstrap likelihood ratio test.

Table 4. *Five-Profile Model Results*

	Profile 1	**Profile 2**	**Profile 3**	**Profile 4**	**Profile 5**
Activity	*Low Involvement* (N = 136)	*Mentored Athletes* (N = 34)	*Palmetto Youth* (N = 233)	*School Focused* (N = 39)	*High Involvement* (N = 20)
4-H	0.287 (.077)	0.372 (.162)	0.211 (.211)	0.979 (.214)	1.54 (.466)
Academic Clubs	0.469 (.094)	1.025 (.303)	0.937 (.091)	1.801 (.249)	3.248 (.292)
Arts and Crafts	0.914 (.149)	1.672 (.293)	0.97 (.111)	1.54 (.247)	3.227 (.362)
Band/Music	1.532 (.192)	2.39 (.398)	1.461 (.145)	1.611 (.331)	3.126 (.448)
Big Brother/Big Sister or Other Mentoring Program	0.123 (.040)	4.114 (.166)	0.117 (.027)	0.651 (.173)	4.442 (.337)
Church Youth Group	1.637 (1.54)	3.124 (.290)	2.4 (.111)	2.941 (.257)	3.643 (.372)
School Government	0.048 (.020)	0.25 (.110)	0.098 (.029)	3.371 (.236)	3.776 (.362)
Mentoring other students/Peer advising	0.349 (.085)	1.015 (.289)	0.719 (.092)	1.761 (.295)	3.682 (.358)
Other youth Programs (Boy Scouts, Girl Scouts, Boys and Girls Club, YMCA)	0.337 (.076)	1.556 (.364)	0.44 (.072)	1.519 (.317)	3.607 (.325)
Outdoor Activities in parks and other natural areas	1.048 (.131)	3.102 (.349)	2.422 (.134)	3.316 (.275)	3.436 (.304)
Sports	0.623 (.090)	3.952 (.256)	4.115 (.083)	3.433 (.269)	4.117 (.301)
Volunteering your time	0.773 (.122)	2.501 (.267)	2.02 (.111)	2.665 (.280)	3.588 (.325)

Note. Values representing highest positive response are all included in the Highly Involved group.

Figure 1. *OST Activity Participation Means Graphed by Profile*



Profile 1 contains, on average, youth with the lowest level of participation in OST activities, with 136 youth identified as "Low Involvement" youth. Profile 2 contains 34 youth who were the only group who mentioned high participation in mentoring programs as well as being slightly involved with most OST activities—with the exception of 4-H and school government, and are identified as Mentored Athletes due to their relatively high rate of participation in Sports and Big Brother/Big Sister or Other Mentoring Program. Profile 3 included 233 youth who showed high levels of participation in Sports, Church Youth Group, and Outdoor Activities in Parks and Other Natural Areas. Because Profile 3 is the largest and most representative of the most typical activities participated in by South Carolina youth from this sample, this profile was identified as Palmetto Youth. The Palmetto tree has been historically used to represent the state, is the official state tree of South Carolina, and is even nicknamed The Palmetto State (Johnson, 2021). Profile 4 included 39 youth who reported high levels of sports, church youth groups, and outdoor activities, but had the highest level of involvement in school government and the second highest involvement in academic clubs, and thus were identified as School Focused youth. Profile 5 included 20 youth who reported that they were actively participating in most OST activities and are identified as Highly Involved Youth. It is important to note that the Highly Involved group may consist of youth who may not have actually participated in all the OST activity options and could also be considered high responders for this survey question (i.e., selecting a response of 5 = *every day* for OST activity participation options in this survey question; see Table 4 and Figure 1 for more information).

To evaluate the association between OST activity participation profiles and academic achievement and character and whether those relations are moderated by youth race and gender, four 2 x 5 ANOVAs were conducted. The four ANOVAS consisted of (a) race X profile membership predicting academic competence, (b) gender X profile membership predicting academic competence, (c) race X profile

membership predicting character, and (d) gender X profile membership predicting character. To account for the multiple comparisons conducted, a Bonferroni correction was applied to control for a family-wise error rate of α = .05. An adjusted alpha level of .0125 (.05/4) was used to evaluate the significance of the predictors (OST profile membership, gender, race) and their interactions. The results from these ANOVAs are presented in Tables 5 and 6.

Table 5. *Two 2x5 ANOVAs Examining the Effects of Race, Gender, and OST Program Participation Profile on Academic Competence*

Academic Competence	Sum of Squares	Mean Square	*df*	*F*	*p*	η2
Intercept	3188.089	3188.089	1	7634.588	.000	.945
Profile	11.118	2.779	4	6.656	.000	.056
Race	.081	.081	1	.194	.660	.000
Profile*Race	1.785	.081	4	1.069	.372	.009
Intercept	3176.672	3176.672	1	7640.120	.000	.945
Profile	9.421	2.355	4	5.665	.000	.048
Gender	.411	.411	1	.989	.321	.002
Profile*Gender	2.085	.521	4	1.254	.288	.011

Note. Significance at the $p \leq .0125$ level.

Table 6. *Two 2x5 ANOVAs Examining the Effects of Race, Gender, and OST Program Participation Profile on Character*

Character	Sum of Squares	Mean Square	*df*	*F*	*p*	η2
Intercept	3061.784	3061.784	1	7325.003	.000	.941
Profile	4.062	1.015	4	2.399	.049	.021
Race	.015	.015	1	.036	.850	.000
Profile*Race	3.560	.890	4	2.103	.079	.018
Intercept	3090.401	3090.401	1	7213.180	.000	.941
Profile	6.882	4	1.721	4.016	.003	.034
Gender	.006	1	.006	.015	.903	.000
Profile*Gender	1.933	4	.483	1.128	.343	.010

Note. Significance at the $p \leq .0125$ level.

A significant main effect was found for OST participation profile membership on academic competence, with $F(4, 456) = 6.656$, $p < .0125$, indicating that different OST profiles were linked to academic competence. There was no significant interaction between OST participation profile membership and race regarding academic competence ($F(4, 456) = 1.069$, $p = .372$), suggesting that race does not significantly modify the relationship of OST participation profiles to academic competence. Similarly, no significant interaction was observed between OST participation profile membership and gender on academic competence ($F(4,$

456) = 1.254, p = .288). However, the main effect for OST participation profile membership was significant (F(4, 456) = 5.665, p < .0125), highlighting the connection between different OST profiles and academic competence irrespective of gender.

The interaction between OST participation profile membership and race on character was not significant (F(4, 456) = 1.128, p = .343). Additionally, after applying the Bonferroni correction, the main effect of OST participation profile membership on character was not significant (F(4, 456) = 2.399, p = .049), indicating that OST profiles do not substantially impact character when adjusted for multiple comparisons. There was no significant interaction between OST participation profile membership and gender on character (F(4, 456) = 2.103, p = .079). Nonetheless, the main effect of OST participation profile membership on character was significant (F(4, 456) = 4.016, p < .0125), suggesting that different OST profiles were linked to character.

To summarize the findings from the ANOVAs, the latent OST participation profiles identified through these analyses are significantly associated with academic competence and character (significant main effects). The relations of OST participation profiles to these PYD outcomes are not moderated by race or gender (nonsignificant interaction effects).

To determine which OST program participation profile membership groups differed from each other based on their main effects, we examined Tukey's HSD multiple comparisons post-hoc test. As can be seen in Table 7, the Low Involvement group significantly differed from the Palmetto Youth group, the School Focused group, and the Highly Involved group for academic achievement. For character, the Low Involvement group was only significantly different from the Palmetto Youth group.

Table 7. *Post Hoc Tukey's HSD Multiple Comparison Results*

	Academic Achievement						Character				
	1	**2**	**3**	**4**	**5**		**1**	**2**	**3**	**4**	**5**
1						1					
2	-.139 (.126)					2	-.235 (.126)				
3	-.307* (.070)	-.168 (.120)				3	-.235* (.071)	-.001 (.120)			
4	-.412* (.118)	-.273 (.153)	-.105 (.112)			4	-.179 (.119)	.055 (.154)	.056 (.113)		
5	-.478* (.155)	-.339 (.344)	-.172 (.151)	-.067 (.178)		5	-.358 (.157)	-.124 (.184)	-.123 (.153	-.179 (.119)	

Note. 1 = *Low Involvement*, 2 = *Mentored Athletes*, 3 = *Palmetto Youth*, 4 = *School Focused*, 5 = *Highly Involved*. * Denotes p < .05.

Discussion

Historically, OST research has found that different types of activities provide different experiences for youth and those experiences may relate to different developmental outcomes (Fredricks & Eccles, 2005; Hansen et al., 2003). This study aimed to apply the specificity principle (Bornstein, 2017) to shed light on these relations for diverse youth on diverse outcomes. We used a pattern-centered approach to explore the links between OST activity participation and academic competence and character for a cross-sectional sample of middle school youth, with consideration of race and gender as moderators of the relations between OST participation and these PYD outcomes.

In our first research question, we identified what activities were most participated in by youth. We found that youth on average took part in just over five activities, with the most frequent participation being in three activities of Sports, Church Youth Group, and Outdoor Activities in Parks and Other Natural Areas. Pattern-centered analyses then told us a subset of youth also commonly take part in these three activities jointly (i.e., the Palmetto Youth). In addition to Palmetto Youth, profiles were created for youth with high participation in mentoring programs (Mentored Athletes) and youth with high participation in school government and academic clubs (School Focused). Profile analysis also created groupings of youth who participated in many OST activities (Highly Involved) and youth with limited to no participation in OST activities (Low Involvement).

These OST participation profile patterns suggest that youth are indeed participating in a variety of activities. The finding that youth were involved in five or more activities suggests that youth are participating in an even greater number and variety of OST activities than reported in prior studies (e.g., Zarrett et al., 2009), which must be taken into consideration whenever assessing the impact of individual programs. Viewing activity participation from the lens of the specificity principle allows researchers to understand more fully how participating in certain combinations of OST activities may be associated with beneficial outcomes, such as contributing to the well-being of their community, building positive relationships with different adults and peers, and developing a buffer from negative experiences that may take place in different aspects of their lives (Hansen et al., 2003; Larson et al., 2006; Zarrett et al., 2009).

This study builds upon prior research that addresses multiple participation in OST activities. Both Linver and colleagues (2009) and Zarrett and colleagues (2009) found that the majority of youth indicated that they either participated in sports and other additional OST activities, or had overall low participation rates for all the OST activity options (Linver et al., 2009; Zarrett et al., 2009). In our study, participating youth also reported that they are highly involved in sports as well as other activities (church/youth group and outdoor nature activities; i.e., Palmetto Youth, 50.4%), or are not involved in any OST activities at all (i.e., Low Involvement group, 29.4%).

The findings from these and other pattern-centered approaches to OST participation suggest the importance of engaging in a variety of activities for youth to be developmentally well-rounded. For example, Larson and colleagues (2006) found that sports and arts programs may provide more experiences relating to taking initiative, although sports were also reported to be higher stress for participating youth. However, participation in service-related OST activities provided youth with opportunities to develop aspects of teamwork, positive relationship, and social capital (Larson et al., 2006). Without a basic level of participation in *any* OST activities, youth may lack the necessary life experiences for successful transitions from childhood to adulthood (Larson, 2001).

Prior research in OST programming indicated that different profiles of OST participation were linked to attainment of PYD outcomes for youth (e.g., Zarrett et al., 2009). Our findings did indicate that as long as youth were involved in OST activities, they reported more favorable outcomes in terms of academic competence and character. Only Low Involved youth reported lower outcomes as compared to the other profiles. The Low Involvement group differed from the Mentored Athletes, the Palmetto Youth, and the School Focused group for academic competence, and the Low Involvement group differed from the Palmetto Youth group for character. These findings support those of both Linver and colleagues' (2009) and Zarrett and colleagues' (2009) work where youth in the less engaged group for OST activity participation were less likely to see increases in their PYD.

We were surprised to find only main effects between the relations between OST participation profiles and PYD outcomes of academic competence and character. We considered moderating variables of race and gender for OST activity participation's relations to PYD outcome, but there were no significant differences across participant groups based on these factors. We expected to find variation by race and gender, given extant research on OST programming that finds race and gender differences in OST participation and outcomes (Krishnamurthi et al., 2014; Liang, et al. 2014; Lynch et al., 2016; Williams & Deutsch, 2016).

The lack of differences related to race and gender may indicate that a youth in this sample having been recruited from low-income regions of the state of South Carolina may have had similar experiences in OST programs that would be conducive to positive development of academic competence and character. Future work should consider whether these relations also hold across socioeconomic differences. Concerns about power also limited our ability to consider intersectionality (Crenshaw, 1990) and examining the relations among constructs based on gender and race/ethnicity obscuring the potential differentiated experiences of youth.

These findings on the link between OST activities on PYD outcomes are important to youth development practitioners, as they are often on the front line of offering quality experiences for young people. There is not one single activity that can provide youth with all-inclusive experience to gain the necessary outcomes for growth. The findings from this study, as well as previous findings in multiple OST activity participation (Linver et al., 2009 and Zarrett et al., 2009) emphasize that activities and contexts are interrelated (Lenze et al., 2023) and thus must be studied in a way that allows for assessing multiple predictors or variables at one time.

Limitations & Recommendations for Future Research

Although this study set out to observe differences in OST activity selections and PYD outcomes using a "diverse" sample, the final convenience sample derived from the larger South Carolina study of PYD sample was limited in its diversity. This study asked for youth to select OST activities in which they participated; however, this particular survey question only provided 12 options for youth to select. OST participation effects are limited in their generalizability due to being conducted using limited measurements or averages of breath and depth of OST participation (Eccles & Bartko, 2002; Mueller et al., 2011; Zarrett et al., 2009). The lack of additional differences between the other profiles identified in previous studies may be that these studies included comprehensive measures of PYD, including items such as the Five Cs and contribution, whereas this study only focused on the outcomes of academic competence and character.

Additionally, this study aimed to also assess the complexity of OST activity participation; however, the questionnaire used for this evaluation did not include questions regarding length of time that youth spend in each activity or level of youth interest in the activity, making duration and engagement out of the scope of this study. Our focus on breadth of participation would benefit in future studies from an even wider array of youth activities, with questionnaires designed to capture specifics regarding their duration.

Although this study focused on positive youth developmental characteristics, it may be beneficial to also assess the impact of maladaptive outcomes on youth development, especially given that surveyed youth in this study indicated participating in an average of more than five OST activities. Factors such as overscheduling and stress may be associated with higher OST activity participation and may be linked to changes in development (Brown et al., 2011; Wimer et al., 2008). By assessing the maladaptive outcomes in conjunction with PYD, a more holistic assessment of adolescent development may be achieved.

Only seventh and eighth graders who denoted being either Black or White were examined in this study, which makes it difficult to generalize across a wide array of youth. However, given the limitations of the sample's diversity, the study sample does appear to closely represent the racial breakdown of South Carolinian youth, with 87% being considered White or Black in 2019 (Kidscount.org, 2021). Because youth of color are under-researched, particularly from a strengths-based perspective, it is important that more studies centering on youth of color are conducted (Cabrera, 2013; Sánchez et al., 2016). Research focused on these aims may provide more information on which programs benefit which groups, in ways that can be useful to youth programmers in promoting positive outcomes.

Because race, poverty, and inequality are commonly researched together in the social sciences, the need for focused research examining attributes individually is important for further understanding how these challenges expose themselves in a youth's life (Fryer & Levitt, 2004; Hynes & Sanders, 2011). Research that untangles these predictors suggests that future research takes precautions against describing minority

youth as a homogenous group. For example, using data from a sample of high achieving minority youth attending a selective urban high school, researchers found that high levels of participation in organized activities (i.e., overscheduling) had a negative effect of low-income, but not high-income youth (Randall & Bohnert, 2012). Differences within ethnic groups, such as cultural orientation and immigration status among Latinx ethnic groups or variations in socioeconomic status within an ethnic group are emerging as important contextual factors to consider when studying ethnic groups (Fredricks & Simpkins, 2012).

The study was also limited in its consideration of intersectionality (Crenshaw, 1990) and examining the relations among constructs within subgroups of youth based on gender and race/ethnicity, obscuring the diversity of experiences of these youth. Consistent with RDS metatheory, intersectional perspectives posit that multiple overlapping systems of injustice and oppression lead to differentiated experiences for individuals marginalized across diverse dimensions (Crenshaw, 1990). Concepts of intersectionality guiding current research have highlighted the need for reconceptualizing the social categories that we employ as measures of difference and disadvantage, taking into consideration diversity within these categories and in their relation to developmental outcomes (Cole, 2009; Williams & Deutsch, 2016). The use of a pattern-centered approach in our study considers some of the contextual factors that are associated with youth behaviors, but we fall short of understanding the range and depth of the social processes that link patterns of participation to developmental outcomes for diverse youth. Future research that explores the contours of shared experience and perhaps employs longitudinal methods could significantly contribute to understanding of these processes (Cikara et al., 2022). Future research on outcomes related to program participation must consider the multiple overlapping systems of injustice and oppression that lead to differentiated experiences of individuals (Crenshaw, 1990; Godfrey & Burson, 2018).

Overall, research evidence suggests that OST programming has been found to be beneficial for youth and can help bridge the gap academically and socially for youth who do not receive the necessary supports at home (Lauer et al., 2006; Tirrell et al., 2019). The linkages between OST programming and positive outcomes are important to explore since OST programming has been found to provide unique opportunities for youth to developmentally excel (Larson, 2000; Roth & Brooks-Gunn, 2003). However, although our research has found support for these linkages, it is still unclear *how* these positive outcomes are achieved from youth development programs. This issue is referred to as the "black box" effect of youth programming, whereby research offers limited understanding into how outcomes are achieved in high-quality youth programming (Yohalem & Wilson-Ahlstrom, 2010). Although the "how" of gains in beneficial outcomes is still somewhat unclear at the end of this study, our person-centered methodology can significantly inform future OST activity-specific research. More diverse samples observed over time and more detailed activity information can help to eventually break down the proverbial black box of OST participation effects and learn "what works for whom."

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