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Extracurricular engagement and its influence on positive youth development among Vietnamese university students

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ABSTRACT

Extracurricular activities (ECAs) play an important role in shaping the developmental paths of university students, particularly in Vietnam, where higher education institutions increasingly emphasize holistic student development. This study investigates the effects of ECAs on Positive Youth Development (PYD) among Vietnamese university students by drawing on established theoretical frameworks, including Bundick's theory of meaningful participation, Lerner's developmental systems theory, and Benson's ecological model. Survey data were collected from 1,169 students. Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), and Structural Equation Modeling (SEM) were used to validate the measurement scales and test the proposed relationships. The results show that ECAs significantly contribute to PYD, although the strength of their effects differs across activity domains. Academic activities demonstrate the strongest and most consistent influence on life satisfaction, sense of purpose, and hope for the future. Arts-related activities particularly enhance optimism and hope, while sports activities produce stable developmental benefits across all outcomes regardless of participation duration. Volunteering improves life satisfaction and sense of purpose but does not significantly influence hope. Multi-group SEM analysis further indicates that greater time investment strengthens the developmental effects of academic and arts activities, while the effects of sports and volunteering remain stable over time. Overall, ten of the twelve direct hypotheses and two of the four moderation hypotheses were supported. These findings highlight the differentiated roles of ECAs in student development and emphasize the importance of both the type and duration of participation within the Vietnamese higher education context.

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1. Introduction

The importance of extracurricular activities (ECAs) for students' development in higher education has been widely recognized. Participation in ECAs has been associated with improved academic achievement, employability, personal growth, and social development (Eccles et al., 2003; Gardner et al., 2008; Bruner et al., 2023). Recent evidence further highlights the role of organized activities in fostering social capital, meaningful relationships, and positive youth development (Boat et al., 2024). These findings align with the broader Positive Youth Development (PYD) framework (Lerner, 2017; Lerner and Benson, 2003)

Numerous international studies consistently support the claim that ECAs can lead to various positive outcomes. Fredricks and Eccles (2006) found that students participating in ECAs felt more life satisfaction, purpose, and academic motivation when compared with others. Feldman and Matjasko (2005) recognized the role of sports and physical activities in promoting stress relief, self-confidence, and healthy living. They agree in the conclusion that ECAs promote transferable skills such as teamwork, adaptability, and analytical reasoning. Other positive effects of ECAs are broadening a student's social network, which offers opportunities for forging

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meaningful relationships and social capital (Logan and Scarborough, 2008).

The literature emphasizes that ECAs should be considered an essential element of educational systems rather than merely peripheral activities. According to Larson (2000), ECAs provide unique developmental environments wherein youth can exercise independence, explore interests, and practice leadership-unlike formal curricula that seldom compensate for their lack in these areas. Approximately three-quarters of students in the United States engage in some extracurricular activity (Feldman and Matjasko, 2005; Mahoney et al., 2002). Such behavior has a variety of positive effects on developmental outcomes such as improved academic achievement (Marsh, 1992), decreased dropout rates, decreased substance abuse, and decreased delinquency (Mahoney and Stattin, 2000).

The PYD framework serves as a conceptual framework for understanding these results. Rather than concentrating on the absence of detrimental behavior, PYD focuses on promoting positive qualities such as hope, resilience, and purpose in life (Damon, 2004; Bundick et al., 2010). Benson and Scales (2009) argued that the education system should not prevent negative behaviors that indicate depression, self-harm, or delinquency but, instead, should actively encourage development indicators such as self-confidence, optimism, and future orientation. ECAs particularly serve this purpose, as they offer structured opportunities for participation, reflection, and the working together of youth.

Despite the extensive international literature, empirical evidence on the role of ECAs in fostering positive youth development within the Vietnamese context remains limited. While Vietnam has undergone significant educational reforms over the past three decades, with an emphasis on expanding curricula and aligning with global standards, extracurricular programming in universities has not received commensurate attention. Many students participate in ECAs in a spontaneous or trend-driven manner, without a clear understanding of their developmental value. As a result, the potential benefits of ECAs are often underutilized.

Moreover, existing studies in Vietnam focused narrowly on academic outcomes or have treated ECAs as supplementary rather than integral to student development. There is a limited amount of comprehensive research that simultaneously examines multiple types of ECAs and their differentiated impacts on various dimensions of positive development. Internationally, some studies have investigated specific outcomes such as academic performance (Eccles and Barber, 1999), career success, or health behaviors (Palen and Coatsworth, 2007). However, few studies have adopted a holistic approach that integrates multiple developmental indicators—such as life satisfaction, purpose in life, hope for the future, and realization of personal potential—within a single analytical framework. Another central gap concerns contextual factors. In the developed world, ECAs are usually embedded within institutionalized structures and supported by robust policy frameworks. In Vietnam, by contrast, the organization and quality of ECAs vary inversely from one educational institution to another, and social norms, peer groups, and resource availability all influence student participation. Internationally, studies are in their early stages to investigate possible moderator variables, including socioeconomic status or parental involvement, but little is known about how the very time commitment of an ECA in itself affects its developmental outcome in Vietnam. Moreover, considering that undergrad students would certainly spend a good chunk of their noninstructional time away from formal instruction (Larson and Verma, 1999), the role played by time allocation surely cannot be overlooked.

Finally, most existing research has been conducted in Western contexts such as the United States, the United Kingdom, Australia, and Canada. The cultural, social, and institutional differences between these settings and Vietnam limit the generalizability of findings. For instance, while extracurricular achievements are often a prerequisite for admission to elite universities in the United States, Vietnamese students may not perceive ECAs as equally valuable, leading to lower levels of engagement or misaligned expectations. This underscores the need for context-specific research that not only documents the benefits of ECAs but also examines how they operate within the unique socio-cultural and educational landscape of Vietnam.

Further, the extant research in Vietnam has tended to focus on just academic dimensions or treat ECAs as occasions for the student rather than a platform for supportive development. A lacuna in the literature exists for comprehensive research investigating multiple subtypes of ECA simultaneously and their differentiated impact on diverse facets of positive development. Internationally, researchers have delved into certain outcomes like academics (Eccles and Barber, 1999), career success, or health behaviors (Palen and Coatsworth, 2007). Yet, a few studies have taken a more holistic perspective with regard to integrating multiple developmental indicators like life satisfaction, purpose in life, hope for the future, and the realization of personal potential within one analytical framework.

Another important gap concerns contextual factors. In developed countries, these ECAs often become intertwined within institutional structures supported by well-established policy frameworks. The organization and quality of ECAs, meanwhile, have great variance across institutions in Vietnam, and participation among students is affected by social norms, peer groups, and resource availability. On the other hand, even as international research on moderated variables such as socioeconomic status or parental involvement has recently grown, theorizing on how the time commitment of ECAs shapes their developmental impact in the case of Vietnam is still missing. Given that university students spend so much of their time outside of formal instruction

(Larson and Verma, 1999), the role of time allocation becomes very salient.

Thirdly, much of the extant research has been within Western contexts: The United States, the United Kingdom, Australia, and Canada. The cultural, social, and institutional differences that exist between these settings and Vietnam have, hence, posed a limitation to the generalizability of the findings. For instance, while extracurricular achievements are often a prerequisite for admission to elite universities in the United States, Vietnamese students may not perceive ECAs as equally valuable, leading to lower levels of engagement or misaligned expectations. This underscores the need for context-specific research that not only documents the benefits of ECAs but also examines how they operate within the unique socio-cultural and educational landscape of Vietnam.

In response to these gaps, the present study aims to systematically investigate the impact of extracurricular engagement on the positive development of Vietnamese university students. Specifically, the study pursues the following objectives: 1) Theoretical Foundation: To systematize and elaborate the theoretical basis of positive youth development and its relationship with extracurricular activities, thereby situating the study within established frameworks such as those proposed by Bundick (2011), Lerner (2017), and Lerner and Benson (2003). 2) Model Development and Hypothesis Testing: To construct and empirically test a theoretical model that examines the relationships between four categories of extracurricular activities—sports, volunteering, arts, and academic activities—and multiple dimensions of positive development, including life satisfaction, purpose in life, hope for the future, and realization of personal potential. 3) Moderating Role of Time Commitment: To explore whether the amount of time students devote to extracurricular activities per week moderates the relationship between participation and positive development outcomes. This analysis will provide insights into whether intensity of engagement enhances or diminishes developmental benefits. 4) Practical Implications: To generate evidence-based recommendations for universities, policymakers, and student organizations in Vietnam. By identifying which types of ECAs are most strongly associated with positive outcomes, and under what conditions, the study seeks to inform the design and implementation of extracurricular programming that is both meaningful and effective.

2. Methodology

The quantitative research design is employed by this study to investigate the impact that extracurricular engagement has on positive youth development among Vietnamese university students. Both secondary and primary data were engaged in the process. Secondary data were sourced from previous studies published in international and domestic journals to build the theoretical framework. The primary data were gathered using a structured questionnaire survey administered to undergraduates from three regions of Vietnam (i.e., North, Central, and South).

Consisting of full-time undergraduate students aged from 18 to 22 years, the target population includes first-year to fourth-year students. A total of 1,250 questionnaires were distributed using a stratified convenience sampling technique. Out of the 1,250 distributed questionnaires, a total of 1,169 responded after eliminating incomplete and low-quality responses, bearing a response rate of 97.4%. This sample size well exceeds the minimum required cases for structural equation modeling (SEM), giving utmost statistical power to the study.

The survey instrument was developed based on an extensive literature review of extracurricular activities (ECAs) and positive youth development (PYD). Established scales from prior studies were adapted to the Vietnamese context. The questionnaire was initially drafted in English, translated into Vietnamese, and then back-translated to ensure semantic equivalence.

A pilot test with 10 students was conducted to refine wording and eliminate ambiguities. The final instrument consisted of three sections: (1) demographic information, (2) participation in ECAs, and (3) measures of positive development outcomes. All items were measured using a seven-point Likert scale, with anchors ranging from 1 = “strongly disagree” to 7 = “strongly agree,” except for the arts participation frequency scale (1 = “never” to 7 = “daily”) and importance scale (1 = “not important at all” to 7 = “extremely important”).

Data were coded and analyzed using SPSS and AMOS. The analysis followed a multi-step procedure:

1. Reliability testing: Cronbach’s Alpha was used to assess internal consistency. Items with corrected item–total correlations below 0.30 were removed. Alpha values above 0.70 were considered acceptable, with values above 0.80 indicating strong reliability.
2. Exploratory factor analysis (EFA): Conducted to identify underlying factor structures and eliminate items with low factor loadings (< 0.50). Suitability was assessed using the Kaiser-Meyer-Olkin (KMO) measure (> 0.50) and Bartlett’s test of sphericity ($p < 0.05$).
3. Confirmatory factor analysis (CFA): Used to validate the measurement model, testing for convergent and discriminant validity. Model fit was assessed using indices such as CFI, TLI, GFI (≥ 0.90), RMSEA (≤ 0.08), and CMIN/df (≤ 2).
4. Structural equation modeling (SEM): Applied to test hypothesized relationships between ECAs and PYD outcomes. SEM allows simultaneous estimation of latent constructs and observed variables while accounting for measurement error.
5. Multi-group SEM: Conducted to examine the moderating role of weekly time commitment to ECAs.

The constructs measured in this study included four categories of extracurricular activities (sports, volunteering, arts, and academic activities) and four dimensions of positive youth development (life satisfaction, purpose in life, hope for the future, and realization of personal potential). Table 1 summarizes the constructs, number of items, example items, and sources.

3. Results

3.1. Sample characteristics

After the data refining step, a total of 1,169 valid responses were retained. Table 2 shows the distribution of respondents by their year of study. Most were in their first year (58.2%), followed by students in their third year (19.9%), second-year students (14.1%), and those in their fourth year (7.8%). Such a skewing was mostly because of first-year students being more willing to participate, together with the survey administration being done in general education classes. Although this distribution gives a broad representation, it also indicates that the findings may be influenced by the views of younger students, who are still in the early years of university life. With respect to hours devoted to extracurricular activities on a weekly basis, most students across all domains, including sports, volunteering, arts, and academia, reported less than two hours of active engagement. In particular, the numbers reporting less than 2 hours were: 62.1% for sports, 60.3% for volunteering, 67.6% for arts, and 61.1% for academic activities. Only about 10 to 15% of students said they spend more than 6 hours per week on any domain (Table 3). This pattern indicates minimal intensity of extracurricular activity among Vietnamese students.

An exploratory factor analysis (EFA) was performed on 38 observed variables, resulting in the extraction of 8 factors. The variables Volunteer 1, Potential 1, and Potential 2 were found to have low factor loadings and were subsequently removed from the measurement scale.

3.2. Reliability analysis

Cronbach's Alpha coefficients demonstrated favorable internal consistency for all the scales. The sports, volunteering, arts, and academic activities considered had values of 0.851, 0.903, 0.889, and 0.966, respectively, all beyond the 0.70 threshold, bearing an excellent coefficient of reliability (Table 4). Likewise, the dependent variables exhibited equally good reliability values of 0.924 for life satisfaction, 0.886 for purpose in life, 0.761 for hope for the future, and 0.620 for personal potential. Yet, the alpha value for the two-item scale of personal potential was comparatively lower, but it was retained because of theoretical relevance and acceptable item-total correlations. These results confirm that the measurement instruments are sufficiently reliable for further factor analysis.

3.3. Exploratory factor analysis (EFA)

EFA included 38 observed variables. After the third iteration, six items with low loadings were removed, giving the final solution of 32 items loading on seven factors. Each loading value was above 0.50, with no problematic cross-loadings.

The KMO = 0.942 and Bartlett's test (χ^2 = 29,453.666, $p < 0.001$) confirmed the sampling adequacy. The seven-factor solution accounted for 68.27% of total variance, thus better than the 50% that is conventionally accepted by social sciences.

The implication is that the EFA findings articulate separate latent constructs for sports, volunteering, arts, academic activities, life satisfaction, purpose in life, and hope for the future. These constructs are in turn well represented by the observed items (Fig. 1).

Table 1: Measurement scales

Construct	Number of items	Example items	Source
Sports activities	8	"Participating in sports helps me improve my health"; "I feel more confident when I engage in sports activities"	Eccles et al. (2003) and Gardner et al. (2008)
Volunteering activities	7	"I volunteer because I care about disadvantaged people"; "I believe volunteering benefits both personal and career development"	Fredricks and Eccles (2006) and Logan and Scarborough (2008)
Arts activities	8 (4 frequency, 4 importance)	"How often do you sing, play an instrument, or join a band?"; "How important is painting to you?"	Larson (2000) and Feldman and Matjasko (2005)
Academic activities	9	"Academic extracurricular activities at my university are useful"; "I am satisfied with the academic extracurricular activities organized by my university"	Eccles and Barber (1999) and Marsh (1992)
Life satisfaction	5	"In most ways my life is close to ideal"; "I am satisfied with my life"	Diener et al. (1985)
Purpose in life	5	"I actively pursue the plans I set for myself"; "I enjoy making plans for the future and working to realize them"	Ryff (1989) and Bundick et al. (2010)
Hope for the future	3	"I am confident that my future will be good"; "I think my future plans will be realized"	Snyder et al. (1991)
Realization of personal potential	2	"I am living up to my full potential"	Benson and Scales (2009) and Bundick (2011)

Table 2: Sample characteristics (year of study)

Year of study	Frequency	Percentage (%)
First year	680	58.2
Second year	165	14.1
Third year	233	19.9
Fourth year	91	7.8
Total	1169	100

Table 3: Weekly time commitment to ECAs

Activity type	< 2h/week	2–6h/week	> 6h/week
Sports	62.1%	25.3%	12.6%
Volunteering	60.3%	28.1%	11.5%
Arts	67.6%	21.6%	10.8%
Academic	61.1%	24.3%	14.6%

Table 4: Reliability analysis of measurement scales

Construct	Number of items	Cronbach's alpha (α)	Reliability assessment
Sports activities	8	0.851	Good
Volunteering activities	7	0.903	Excellent
Arts activities	8	0.889	Good
Academic activities	9	0.966	Excellent
Life satisfaction	5	0.924	Excellent
Purpose in life	5	0.886	Good
Hope for the future	3	0.761	Acceptable
Personal potential	2	0.620	Marginal but retained

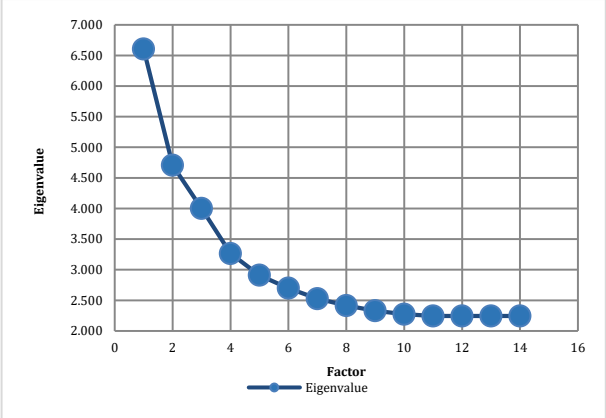


Fig. 1: Scree plot of eigenvalues from EFA indicating a seven-factor solution

3.4. Confirmatory factor analysis (CFA)

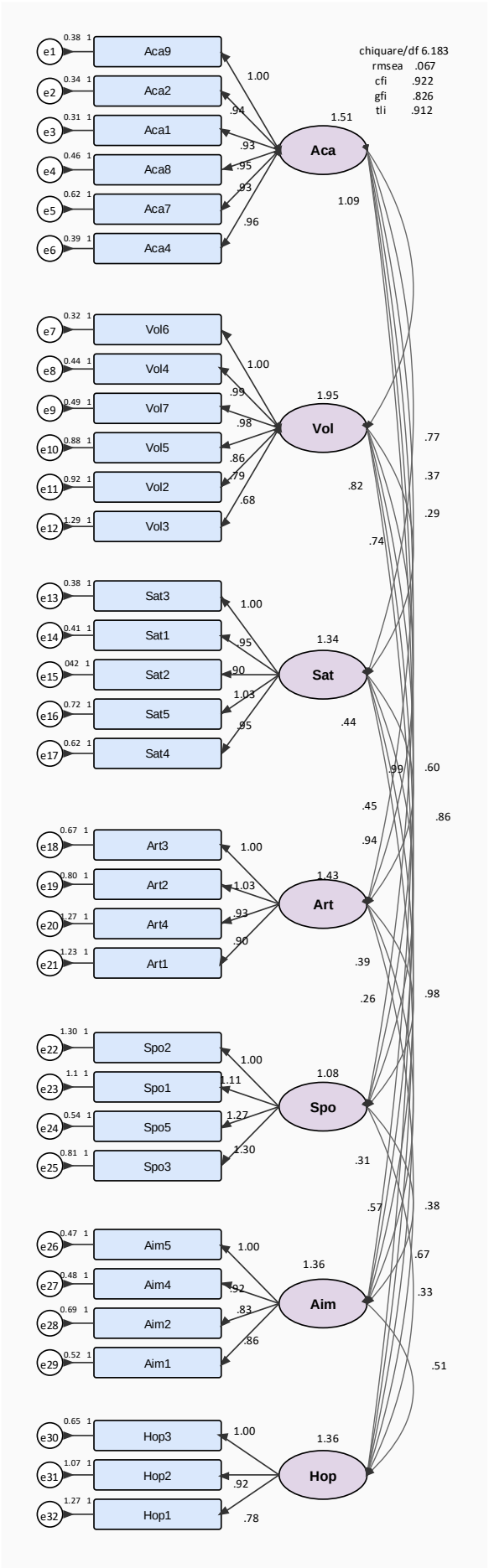
CFA validated the measurement model. All standardized factor loadings were significant ($p < 0.001$) and above 0.50, confirming convergent validity. Composite Reliability (CR) values ranged from 0.770 to 0.952, and Average Variance Extracted (AVE) values ranged from 0.530 to 0.769 (Table 5), surpassing recommended thresholds.

Table 5: CFA results: CR and AVE for constructs

Construct	CR	AVE
Purpose in life	0.891	0.671
Academic	0.952	0.769
Volunteering	0.926	0.678
Life satisfaction	0.925	0.713
Arts	0.850	0.587
Sports	0.863	0.615
Hope	0.770	0.530

Model fit indices indicated good fit: χ^2 = 2738.863, df = 443, $p < 0.001$; CMIN/df = 6.183; GFI = 0.856; TLI = 0.912; CFI = 0.922; RMSEA = 0.067. Although GFI was slightly below the conventional 0.90 threshold, other indices indicated a strong fit, suggesting the model is acceptable.

The findings of the CFA analysis (Fig. 2) indicate a Chi-square value of 2738.863, with 443 degrees of freedom and a P-value of 0.000. Simultaneously, all other model criteria meet the specifications (CMIN/df = 6.183; GFI = 0.856; TLI = 0.912; CFI = 0.922; and RMSEA = 0.067). This demonstrates that the research model, which includes components elucidating the aspects of extracurricular activities influencing positive student development, is appropriate for the data set.



Academic as Aca; Volunteer as Vol; Satisfaction as Sat; Arts as Art; Sports as Spo; Hope as Hop; Aim for living as Aim

Fig. 2: Measurement model (CFA path diagram)

3.5. Structural equation modeling (SEM)

The structural model tested the hypothesized relationships between four types of ECAs (sports, volunteering, arts, academic) and three PYD outcomes (life satisfaction, purpose in life, hope for the future). Model fit was acceptable: $\chi^2/df = 6.896$, $p < 0.001$; TLI = 0.900; CFI = 0.910; GFI = 0.844; RMSEA = 0.071.

A comprehensive literature review was conducted based on prior research by Feldman and Matjasko (2005), Eccles et al. (2003), Bundick (2011), Barber et al. (2001), and Bartkus et al. (2012), from which 16 hypotheses were derived regarding the impact of extracurricular activities (ECAs) on positive youth development (PYD). Of the 16 hypotheses, 15 posit positive effects of ECAs on PYD; only the hypothesis concerning art-related ECAs was proposed to potentially exert negative effects on PYD. Based on the work of Barber et al. (2001) and Bundick (2011), youth participation in art-related extracurricular activities may generate psychological difficulties. It was argued by Barber et al. (2001) that art-related ECAs may reduce the need for social connection among students, thereby increasing independence and fostering individualistic orientations. As a result, students could become isolated socially and, therefore, less motivated to form friendships with their fellow students. This is the only theory that indicates a possible negative impact of extracurricular activities on positive youth development.

Out of the twelve direct hypotheses tested, ten received support as shown in Table 6 and Fig. 3. The academic activities had the strongest and most stable effects, which were reflected in the largest standardized coefficients for life satisfaction (β = 0.261), purpose in life (β = 0.320), and hope for the future (β = 0.187). This means that active participation in academic extracurricular activities directly increases students' cognitive and motivational resources, thus improving their well-being. The results are consistent with the previous studies that have connected academic ECAs with life satisfaction and soft skill development.

Sports participation also demonstrated positive effects, significantly predicting life satisfaction (β = 0.222), purpose (β = 0.239), and hope (β = 0.144). These results provide evidence that physical activities contribute to psychological well-being and social connectedness, though the effect sizes were somewhat smaller than those for academic activities, indicating that sports may operate more through social-affective pathways.

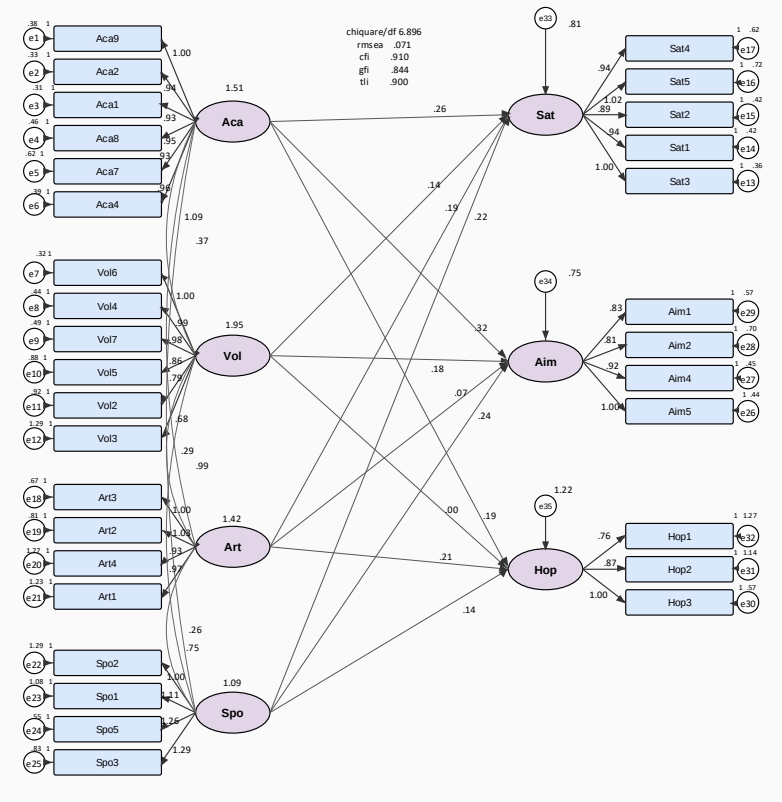


Fig. 3: Structural model (SEM path diagram)

Volunteering activities positively predicted life satisfaction (β = 0.141) and purpose (β = 0.177), but had no significant effect on hope (β = −0.003, p = 0.937). This pattern suggests that prosocial engagement enhances meaning and evaluative judgments of life, while not necessarily fostering future-oriented optimism. Arts activities were positively associated with life satisfaction (β = 0.187) and hope (β = 0.209). However, their effect on purpose was small but positive (β = 0.073), opposite to the hypothesized negative direction. This indicates a more complex role for arts, which may nurture emotional and aspirational dimensions rather than directly shaping purpose formation.

Table 6: SEM results – standardized regression weights

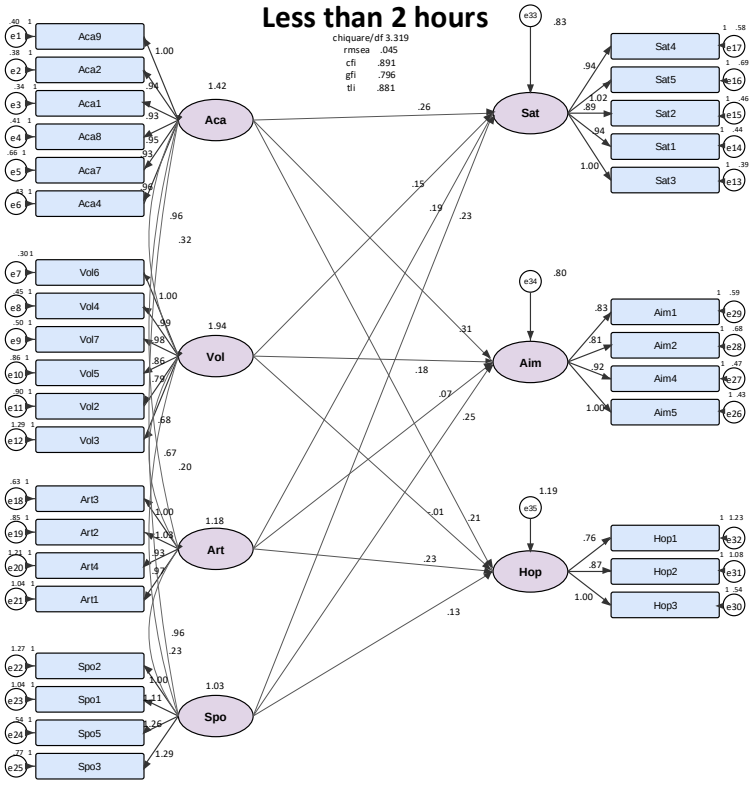
Path	β	p-value	Result
Sports → Life satisfaction	0.222	< 0.001	Supported
Sports → Purpose	0.239	< 0.001	Supported
Sports → Hope	0.144	0.013	Supported
Volunteering → Life	0.141	< 0.001	Supported
Volunteering → Purpose	0.177	< 0.001	Supported
Volunteering → Hope	-0.003	0.937	Rejected
Academic → Life	0.261	< 0.001	Supported
Academic → Purpose	0.320	< 0.001	Supported
Academic → Hope	0.187	< 0.001	Supported
Arts → Life	0.187	< 0.001	Supported
Arts → Purpose	0.073	0.006	Rejected
Arts → Hope	0.209	< 0.001	Supported

3.6. Multi-group SEM: Moderating role of time commitment

To further examine whether the intensity of participation moderates the effects of extracurricular activities (ECAs) on positive youth development (PYD), multi-group SEM was conducted. Students were divided into three groups based on weekly hours of participation: less than 2 hours, 2–6 hours, and more than 6 hours. Both unconstrained (variant) and constrained (invariant) models were estimated, and chi-square difference tests were used to determine whether the relationships differed significantly across groups.

Academic activities: The chi-square difference test was significant ($\Delta\chi^2$ = 36.71, df = 24, p = 0.05) (Table 7 and Fig. 4). This indicates that the unconstrained model fits better, suggesting that the effects of academic activities on PYD differ across time groups. In other words, students who spent more time in academic ECAs experienced stronger positive effects on life satisfaction, purpose in life, and hope for the future. Arts activities: The chi-square difference test was also significant ($\Delta\chi^2$ = 71.023, df = 24, p < 0.001) (Table 7 and Fig. 4). This result confirms that the developmental benefits of arts activities vary depending on the intensity of participation. Students who engaged more frequently in arts-related ECAs reported stronger gains in life satisfaction and hope for the future.

Sports activities: The chi-square difference test was not significant ($\Delta\chi^2$ = 32.606, df = 24, p = 0.11) (Table 7 and Fig. 4). This suggests that the effects of sports activities on PYD are stable across different levels of time commitment. Whether students participated less than 2 hours or more than 6 hours per week, the positive effects of sports remained consistent. Volunteering activities: Similarly, the chi-square difference test was not significant ($\Delta\chi^2$ = 26.837, df = 24, p = 0.31) (Table 7 and Fig. 4). This indicates that the developmental benefits of volunteering do not depend on the number of hours invested. Volunteering enhanced life satisfaction and purpose in life, but its effects were not amplified by greater time commitment.



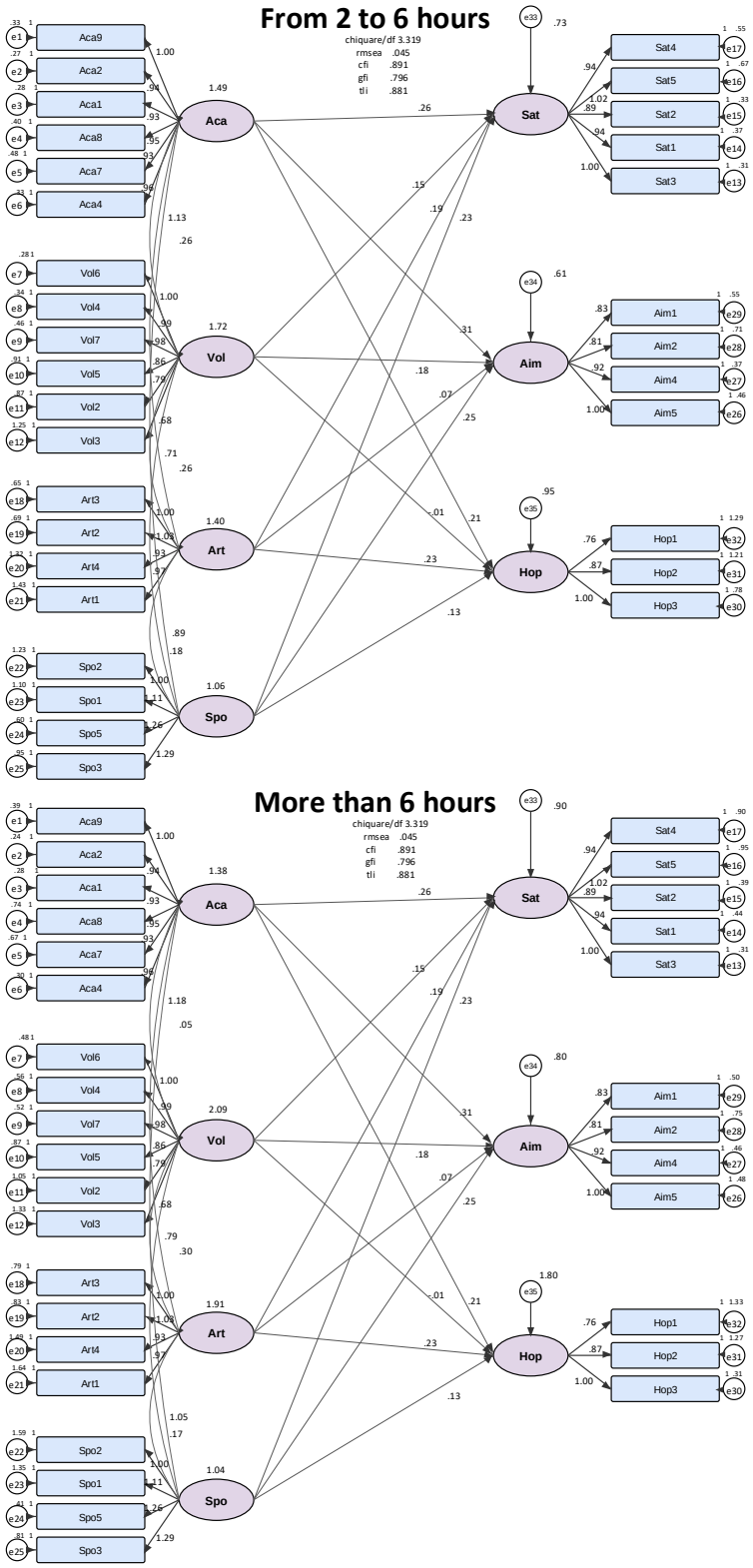


Fig. 4: Multi-panel SEM results by time commitment (academic, arts, sports, volunteering)

Table 7: Multi-group SEM results (Chi-square difference tests)

Activity type	$\Delta\chi^2$	df	p-value	Moderation effect
Academic	36.71	24	0.05	Significant
Arts	71.02	24	< 0.001	Significant
Sports	32.61	24	0.11	Not significant
Volunteering	26.84	24	0.31	Not significant

4. Discussion

Rooted in positive youth development theories (Bundick, 2011; Lerner and Benson, 2003), this study examines the contributions of various domains of extracurricular activities (ECAs) to the overall development of Vietnamese university students. Findings revealed that ECAs have a considerable influence on life satisfaction, purpose in life, and hope for the future, even though the nature and

magnitude of these effects depend on the type of ECAs.

Academic interventions scored higher in importance. They have a strong positive effect on life satisfaction and purpose in life and are somewhat less attributable to hope. This finding echoes views of Eccles et al. (2003) and Marsh (1992), who stated that academic clubs and competitions encourage stronger engagement in education and a sense of belonging at schools. In the Vietnamese context, academic ECAs are one channel for students to gain knowledge and problem-solving skills, reinforcing their identities and confidence. Those involved in academic ECAs tend to connect with their institutions more, shoot for longer-term goals, and look positively ahead in their journey.

Arts activities showed a clear-cut effect for hope for the future. Yet they demonstrated weaker and contrary effects on matters such as purpose in life. This would mean that outlets for creative expression in music, dance, and theater help release emotions and serve as a source of ideas for students to envision positive scenarios. Arts participation promotes cooperation, abstract thinking, and adaptability—the very skill sets that enhance belief and satisfaction. Weakness in purpose results could imply a weakness in arts education in Vietnamese secondary schools, where students are not being equipped enough with the arts knowledge for them to appreciate or practice any arts engagement.

Sports improved life pleasure, meaning, and hope regardless of time commitment. As indicated by Marsh and Kleitman (2003), sports have physical, psychological, social, and educational benefits. In sedentary classrooms, Vietnamese kids use athletics to build resilience and socialize. Even small engagement might trigger major development.

The outcomes of volunteering were varied. They had a life-satisfaction and purpose-of-life perspective, but it had no effect on hope for the future, contradicting existing perspectives that emphasize volunteering as a learning experience that promotes civic issues, leadership, and interpersonal skills. Because volunteering in Vietnam often involves short-term tasks or symbolic points and is dominated by first- and second-year students, who may not be thinking long-term, the future may be discouraged. Volunteering boosts happiness and social awareness, but building optimism may take longer

The moderation analysis indicated that time commitment operates with respect to type. For academic and arts activities, the greater the time investment, the greater the benefits, suggesting that sustained engagement in these domains yields stronger developmental outcomes. In contrast, the benefits sport and volunteering bestow upon the livelihood of a student remain constant irrespective of intensity. This distinction brings into the limelight the critical factor of intensity-weighted program design alongside program type.

Overall, the study confirmed 10 out of 12 direct hypotheses and 2 out of 4 moderation hypotheses, highlighting the differentiated roles of ECAs in shaping distinct aspects of positive youth development.

4.1. Theoretical implications

Thus, this study contributes to the literature in three ways. First, it demonstrated that distinct ECA domains exert contrasting effects on youth development, thus enriching the existing theories that placed the greatest emphasis on academic activities for purposes and satisfaction, thereby only making arts activities special for hope. Second, it places these interrelationships into the Vietnamese context of higher education and explains why earlier studies seemed to report inconsistent findings. The fact that time commitment mattered for academic and arts activities but did not matter for sports or volunteering speaks loud and clear about the key roles of cultural and institutional contexts. Third, the study improves the methodology by simultaneously testing for all four ECA domains in one SEM model so that relative impacts can be directly compared.

4.2. Practical implications

Universities and policy are also affected by the findings. The substantial effects of academic activities may encourage institutions to invest in and establish academic groups, contests, and research possibilities. Second, because arts activities are unique, structured creative expression must be offered as necessary for full development. Third, while sports and volunteering showed steady advantages, program design might improve their outcomes by encouraging frequent participation in sports and deep and long-term commitment in volunteering. Finally, moderation findings highlight balance. To benefit from academic and arts activities, students should set aside enough time without overcommitting to activities they may feel are a burden on other duties.

There are still some limitations. First, the sample was skewed toward first-year students, implying a certain limitation in the generality of findings across cohorts. Second, it is a cross-sectional design and, therefore, does not allow one to determine causality; hence, it should be complemented by longitudinal designs that allow capturing developmental effects over a long timeframe. Third, the study primarily relied on self-report measures, which might be susceptible to social desirability biases. Future research should include a more extensive longitudinal design, objective performance indicators, and samples more balanced across academic years. Qualitative research can also delve deeper into students' perceptions of the contribution of different ECAs, specifically volunteering and arts, towards shaping students' aspirations for the future.

List of abbreviations

Aca	Academic

Art	Arts
AVE	Average variance extracted
CFA	Confirmatory factor analysis
CFI	Comparative fit index
CMIN/df	Chi-square divided by degrees of freedom
CR	Composite reliability
ECA	Extracurricular activity
ECAs	Extracurricular activities
EFA	Exploratory factor analysis
GFI	Goodness-of-fit index
Hop	Hope
KMO	Kaiser–Meyer–Olkin
PYD	Positive youth development
RMSEA	Root mean square error of approximation
Sat	Satisfaction
SEM	Structural equation modeling
Spo	Sports
TLI	Tucker–Lewis index
Vol	Volunteer
β	Standardized regression coefficient
χ^2	Chi-square statistic

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Compliance with ethical standards

Ethical considerations

Participation was voluntary, and informed consent was obtained from all participants prior to data collection. All responses were collected anonymously, and the data were kept confidential in accordance with institutional and international ethical guidelines.

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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