

FLOURISHING AND TIME USE AMONG UNIVERSITY STUDENTS: PRELIMINARY EVIDENCE FROM AD HOC SURVEY DATA

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Abstract. This study examines the relationship between university students' time use and psychological flourishing, focusing on the mediating role of leisure. Using cross-sectional survey data from the University of Messina (spring 2024) analysed with post-stratification weights, a Generalized Structural Equation Model disentangle direct and indirect associations between sociodemographic, attitudinal, and behavioural factors and eudaimonic well-being. Active forms of leisure (volunteering, sport, and general leisure), are positively associated with flourishing, whereas passive media use shows a negative link. Commuting indirectly reduces flourishing by limiting participation in active leisure. Students with more traditional gender-role attitudes report higher flourishing, possibly due to cultural value alignment. The findings underscore the importance of promoting inclusive and meaningful leisure opportunities to foster student well-being in higher education.

1. Introduction

In recent years, the well-being (WB) of university students has attracted growing scholarly and policy attention, reflecting concerns over mental health challenges, academic pressure, and socioeconomic precarity in higher education (Bewick *et al.*, 2010; Stallman, 2010; Busetta *et al.*, 2024). The university experience requires balancing academic demands, social adjustment, and often unstable living arrangements, all of which may affect students' psychological functioning (Bakker and Mostert, 2024). Among the various dimensions of WB, flourishing, a state of eudaimonic WB encompassing meaning, purpose, engagement, self-acceptance, and positive relationships, has gained increasing prominence (Ryff, 1989; Diener *et al.*, 2010; Seligman, 2011). However, most studies focus on adult or occupational populations, leaving limited evidence on the behavioural and contextual antecedents of flourishing among university students. Leisure time (defined as time free from compulsory academic or work obligations) can either support or hinder psychological well-being (PWB) depending on the nature of activities pursued. Active forms of leisure, such as volunteering, sport, and creative engagement, are typically linked to more favourable outcomes, whereas passive activities like television viewing, streaming, or social media use may offer only temporary relief

and sometimes relate negatively to long-term flourishing (Robinson and Godbey, 1997; Kuper *et al.*, 2023).

Drawing on leisure studies, positive psychology, and time use research this study examines how different types of leisure contribute to students' flourishing. Combining a time-use approach with the eudaimonic perspective on WB (Huta and Waterman, 2014), it examines the relationship between time use and psychological flourishing among a sample of students from the University of Messina, using data from an ad hoc online survey conducted in spring 2024. The analysis focuses on four domains of leisure activity: volunteering, sport, general leisure, and mass media use. Flourishing is measured using the validated Flourishing Scale–FS (Diener *et al.*, 2010), and a range of sociodemographic and attitudinal covariates are included, such as gender, age, perceived economic condition, gender-role values, and housing status. Three hypotheses guide the empirical analysis:

H1: Active forms of leisure are positively associated with flourishing, while passive forms are negatively associated (Newman *et al.*, 2014).

H2: Students' sociodemographic and attitudinal factors influence flourishing directly and indirectly through time use. (Diener *et al.*, 2010).

H3: Students who live off-site or commute daily engage differently in leisure activities compared to on-site residents, and these differences partially mediate disparities in flourishing outcomes (Martin and Kilgo, 2015).

The analysis combines weighted Ordinary Least Squares (OLS) regressions and Structural Equation Modelling (SEM) to assess both direct and mediated link between time use and flourishing. This two-step approach offers a comprehensive analytical framework, though the cross-sectional design limits causal inference and the possibility of reverse causality, where flourishing promotes greater leisure engagement, cannot be excluded. By exploring how students spend their time and how these behaviours relate to psychological flourishing, this study contributes to a deeper understanding of the behavioural and structural correlates of WB in higher education. The findings offer insights for the design of student-centred policies and extracurricular initiatives aimed at fostering meaningful and autonomy-supportive engagement. The following sections outline the theoretical framework, data and methods (Section 3), results (Section 4), and discussion with policy implications (Section 5).

2. Theoretical Framework

Flourishing represents an optimal state of human functioning that goes beyond momentary happiness to encompass meaning, growth, and positive engagement. Contemporary models converge on this multidimensional view: Ryff's (1989) six

dimensions of PWB (e.g., self-acceptance, personal growth, purpose in life), Keyes's (2002) tripartite model encompassing emotional, psychological, and social WB, and Seligman's (2011) PERMA framework all emphasise purpose, autonomy, and social connectedness as core component. Empirical research links flourishing to better health, academic success, and civic participation (e.g. Huppert, 2009). In this study, flourishing is measured through the FS (Diener *et al.*, 2010), which captures eudaimonic aspects particularly relevant to university students undergoing identity formation and goal setting.

Time use is a key behavioural channel through which individuals cultivate or compromise WB. For university students, discretionary time outside academic or work responsibilities is especially consequential. Leisure can both reflect and foster psychological health, but its effects vary. Robinson and Godbey (1997) distinguish between active and passive leisure. Active leisure involves intentional, effortful engagement in cognitively, physically, or socially stimulating activities (e.g., sports, volunteering, artistic pursuits), typically linked to intrinsic motivation and the satisfaction of psychological needs for autonomy, mastery, and relatedness. Passive leisure, by contrast, includes low-effort, consumption-oriented behaviours such as watching television or social media use; while relaxing, it often yields short-term gratification with limited long-term benefits (Kuper *et al.*, 2023). Access to leisure is not purely individual choices but is shaped by structural conditions.

In geographically peripheral universities such as Messina, students' living arrangements significantly influence their leisure practices. On-site residents benefit from easier access to university life, while off-site and commuters may face logistical and time-related constraints that limit engagement in restorative or meaningful leisure activities. The University of Messina, located at the northeastern tip of Sicily, provides a particularly relevant case: its student population includes on-site residents, off-site renters, and daily commuters across the Strait, whose living arrangements shape time autonomy, access to leisure, and overall WB. Adopting a bottom-up theoretical perspective on WB (Diener, 1984), the study conceptualises leisure as a potential mediator linking upstream factors, such as gender, socioeconomic status, and living situation, to eudaimonic outcomes. While reciprocal influences are possible, the empirical strategy follows the bottom-up logic of behavioural accumulation.

3. Data and methods

3.1. The data

This study draws on an online survey administered in spring 2024 among students at the University of Messina, a public university in southern Italy. The institutional

EU-Survey platform yielded 869 valid responses, of which a subsample of 548 students enrolled in bachelor's and master's programmes was analysed for the present study. To address potential selection bias due to voluntary participation, post-stratification weights were applied using administrative data on students' gender and field of study. Nonetheless, self-selection may persist, as more engaged or WB-oriented students could have been more likely to respond; therefore, findings should be interpreted as indicative of within-sample relationships rather than representative population estimates. The weighted sample has an average age of 26.6 years, with women representing 59%. Two thirds (66%) are enrolled in undergraduate degree programs, and nearly half (48%) report being in a stable romantic relationship. The mean household size is 3.9 individuals. In terms of housing status, 17% of respondents are on-site residents, 28.5% as off-site renters (living in Messina during term-time but registered elsewhere), and 54.7% commuters (traveling daily, often from Calabria or rural areas in Sicily). These living arrangements are analytically meaningful as they influence time use and access to leisure activities. With respect to economic self-evaluation, 46% describe their situation as satisfactory, 30% as poor, 21% as good, while less than 3% report very poor and 0.6% excellent financial conditions. The distribution across disciplinary macro-areas is as follows: 34% in Humanities, 34% in Life Sciences, 23% in Social Sciences, and 9% in STEM fields. This academic diversity enables the investigation of possible cultural or structural differences in student time use and flourishing.

PWB is assessed using the FS, an eight-item, 7-point Likert instrument (from 1=strongly disagree to 7=strongly agree), assessing purpose in life, engagement, competence, optimism, and social contribution (Diener *et al.*, 2010). The total score ranging from 8 to 56, with higher scores indicating greater flourishing. The scale shows excellent psychometric properties, with high internal consistency (Cronbach's $\alpha = 0.87$) and strong convergent validity. The weighted mean FS score is 43.0 (SE=1.29), indicating generally high levels of flourishing among respondents. Average FS scores vary slightly by housing status: 43.8 for on-site residents, 42.9 for off-site renters, and 42.9 for commuters. Regarding leisure behaviours, Students devote, on average, 81 minutes per day to general leisure, 63 to mass media, 11 to volunteering, and 31 to sport or physical activity (Table 1).

Table 1 – Weighted Average Daily Minutes by Housing Status and Flourishing Score.

Housing Status	Mass Media	Leisure	Volunteering	Sport	FS
Off-site renters	67	84	11	32	42.86
On-site residents	71	84	14	44	43.82
Commuters	59	79	10	26	42.90

Notes: Respondents reported their average daily time spent on several activities using a dropdown menu with predefined intervals (from 0 to 90 minutes in 10-minute steps, then grouped into categories beyond 90 minutes).

3.2. *The model*

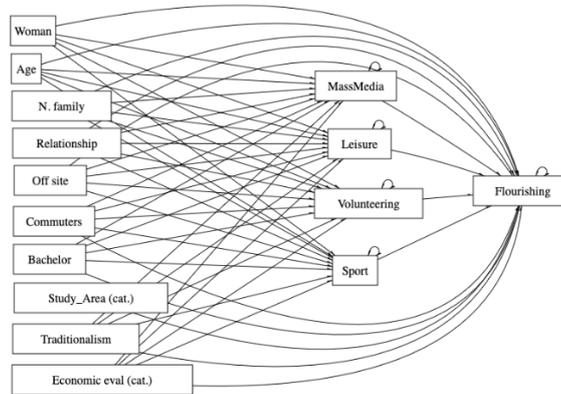
This study adopts a bottom-up theoretical perspective on WB (Diener, 1984), positing that accumulated experiences in specific life domains, such as leisure, contribute to overall flourishing. In this framework, leisure acts as a mediator between sociodemographic and attitudinal factors and eudaimonic outcomes. While reciprocal influences cannot be ruled out, the empirical strategy follows the logic of behavioural accumulation, focusing on how daily time allocation relates to WB rather than assuming causal directionality. To empirically test this framework, two complementary models were estimated. First, a weighted OLS regression of FS on the same set of predictors, including the four time-use variables, was estimated to assess direct associations between daily time use and WB. The model includes both active and passive leisure domains while controlling for gender, age, household size, romantic relationship status, degree cycle, disciplinary area, housing arrangement, perceived economic condition, and gender-role attitudes. Survey post-stratification weights are applied to adjust for sampling imbalance due to self-selection and stratification by gender and disciplinary field. Second, a GSEM extends this specification by jointly estimating the equations for the four observed time-use variables and flourishing. The model is estimated jointly (single likelihood), with correlated residuals among the time-use equations but no feedback from FS to time use. Thus, there is no causal simultaneity; rather, the joint estimation captures residual interdependence across time-use domains and permits a coherent decomposition of indirect effects. Direct effects on FS are comparable to weighted OLS given the identical functional form and Gaussian identity links. While the OLS and GSEM share identical exogenous predictors and yield very similar direct effects, the GSEM provides a more comprehensive representation of behavioural interdependencies. Specifically, it treats the time-use variables as observed endogenous variables that mediate the relationship between structural and attitudinal factors and flourishing, while allowing the residuals of their equations to covary. This specification recognises that unobserved individual characteristic may simultaneously influence several time-use domains. By accounting for these interdependencies, the model better captures how different forms of activity co-occur and jointly shape students' flourishing. Conceptually, time use mediates the effects of sociodemographic and attitudinal factors on flourishing, consistent with bottom-up models of WB that link engagement in meaningful, autonomy-supportive activities to psychological functioning. However, causal interpretations are avoided. Given the cross-sectional nature of the data, results are interpreted as associative rather than causal; reverse causality remains plausible (for instance, higher flourishing may itself encourage greater leisure engagement). Both models include a synthetic index of gender-role traditionalism, derived from seven 5-point Likert-

scale items on family responsibilities and gender equality (e.g., “A preschool child is likely to suffer if the mother works”; “Housework should be equally divided between partners”). Items reflecting egalitarian views were reverse-coded so that higher scores indicate more traditional attitudes. A Principal Component Analysis was applied, and the first component, explaining a substantial share of variance, was used as a synthetic index of gender traditionalism (range ≈ -1.5 more egalitarian to $+6$ more traditionalist). Although internal consistency is moderate ($\alpha=0.69$), this level of reliability is considered acceptable for exploratory research and for attitudinal constructs that are conceptually broad or heterogeneous. As discussed by Nunnally and Bernstein (1994), coefficients around 0.70 are generally adequate in early-stage or theory-building studies, while higher thresholds are required mainly in applied or diagnostic contexts. Similarly, Cortina (1993) emphasises that coefficient alpha depends on the number of items and the heterogeneity of their content and therefore should not be treated as a fixed standard of quality. The use of the first principal component is justified by its clear dominance in the eigenvalue structure and by its conceptual coherence, capturing a single underlying dimension of gender-role traditionalism across items. While further psychometric refinements could be explored in future research, the current specification provides a transparent and theoretically grounded summary indicator suitable for exploratory analysis¹. This index is included in all regression models as a key attitudinal covariate, given the relevance of gender ideology in shaping time use patterns and subjective WB.

All paths in the GSEM are theoretically specified and estimated using Stata 18 with robust standard errors and post-stratification weights. Full Information Maximum Likelihood (FIML) was not used due to the presence of complex survey weights. The combined use of OLS and GSEM offers a rigorous analytical framework to explore how different patterns of time investment relate to students’ WB, while accounting for structural, demographic, and attitudinal heterogeneity.

Figure 1 illustrates the hypothesized relationships in the model. The model includes four time-use variables as mediators between exogenous factors (e.g., commuting status, age, gender,) and the outcome variable, flourishing. Arrows represent hypothesized directional relationships, specified based on theoretical expectations. The model accounts for observed covariates and was estimated using probability weights and robust standard errors.

¹ To assess the robustness of the operationalization, we conducted a supplementary analysis using a simple additive score based on the original items. The structural model was re-estimated using this alternative specification, and the results remained substantively unchanged. This reinforces the validity of the findings and supports the methodological transparency of the study. Full estimation results for the robustness analysis are available upon request.

Figure 1 – Path diagram of the Structural Equation Model.

4. The results

As a preliminary step, weighted OLS regression was estimated to assess the direct associations between time-use patterns and psychological flourishing. The findings reveal that active forms of leisure are positively and significantly associated with higher FS scores, whereas passive media consumption is negatively associated with flourishing. These results align with theoretical expectations from the eudaimonic WB literature and provide initial empirical support for the mediating role of leisure time, as further investigated in the GSEM. The OLS and GSEM estimates are highly consistent in both direction and magnitude, confirming the robustness of the findings across estimation methods (Tab. 2). However, the two approaches differ in their interpretive scope, the GSEM approach offers a more comprehensive analytical framework by simultaneously modelling the mediating role of time-use variables and the interrelations among sociodemographic and attitudinal factors. This allows for the identification of both direct and indirect pathways linking students' characteristics and behaviours to psychological flourishing, providing a richer interpretation of the mechanisms underlying WB outcomes. Gender, age, household composition, and relationship status show expected associations with students' time use and flourishing. Female students engage significantly less in sport ($p \leq 0.001$) but do not differ from men in overall flourishing. Older students report slightly higher flourishing ($p \leq 0.01$) and spend less time on leisure and mass media ($p \leq 0.001$). Larger households are modestly associated with lower flourishing, suggesting reduced autonomy or emotional resources, while being in a stable relationship predicts less volunteering ($p \leq 0.001$).

Table 2 – GSEM and OLS weighted estimation results.

	Generalized Structural Equation Model (GSEM)								OLS weighted			
	Mediators								Outcome			
	MassMedia		Leisure		Volunteering		Sport		Flourishing		Flourishing	
	coef	p	coef	p	coef	p	coef	p	coef	p	coef	p
MassMedia									-0.04	***	-0.04	***
Leisure									0.03	***	0.03	***
Volunteering									0.04	***	0.04	***
Sport									0.02	*	0.02	*
Housing status (Ref. On site)												
Off_site	-0.36		-1.47		-5.85		-13.07	*	0.51		0.51	
Commuter	-19.48	*	-7.45		-5.41		-16.23	**	0.04		0.04	
Woman	-27.61		6.08		2.08		-18.73	***	0.36		0.36	
Age	-1.99	***	-1.85	***	0.75	*	0.11		0.14		0.14	
Relationship	-17.18		-13.57		-9.70	***	-7.67		1.67		1.67	
N. family	-2.83		-11.40		0.05		-2.38		-1.22	*	-1.22	*
Bachelor	-0.23		-8.11		1.09		4.05		-1.22		-1.22	
Economic Evaluation (Ref. Very Poor)												
Poor	5.78		1.82		-24.63		-30.76	*	3.98		3.98	
Satisfactory	-17.37		11.70		-30.31	*	-21.08		5.62	*	5.62	*
Good	-6.88		13.01		-35.63	*	-10.20		9.86	***	9.86	***
Excellent	-15.42		72.76		-36.86	*	55.89		4.91		4.91	
Tradisionalism	-9.32		-1.17		0.90		-1.03		1.20	**	1.20	**
Study Area (Ref. = STEM)												
Social Sciences	-11.42		7.26		-2.20		4.30		-0.15		-0.15	
Life Sciences	-18.66		-7.36		5.74		-6.07		1.04		1.04	
Humanities	26.60		18.76		-6.08		-7.80		2.36		2.36	
Constant	173.62	***	173.18	***	27.08		86.58	***	35.02	***	35.02	***

Table notes. *** $p \leq 0.001$, ** $p \leq 0.01$, * $p \leq 0.05$

Housing arrangements affect behaviour but not WB directly. Off-site students devote less time to sport ($p \leq 0.05$), while commuters report significantly lower involvement in both sport (and mass media ($p \leq 0.05$)). However, these time-use differences do not translate into significant overall gaps in flourishing. Subjective economic evaluation emerges as a robust predictor of WB: students with “good” financial self-evaluation report significantly higher FS ($p \leq 0.001$). Yet better economic status is also associated with lower participation in sport and volunteering, potentially reflecting different leisure preferences or opportunity costs. Traditional gender-role attitudes are positively related to FS ($p \leq 0.01$), even after controlling for sociodemographic and behavioural factors. This unexpected result may reflect value-behaviour consistency or psychological alignment with dominant cultural norms in more traditional settings. Regarding mediating mechanisms, active forms of leisure are positively and significantly associated with FS, while time spent on

mass media use shows a negative association. These results confirm that active and meaningful engagement contributes more to PWB than passive activities.

Table 3 summarises the direct and indirect associations of housing status with flourishing. Both commuters and off-site students differ from on-site peers mainly through their patterns of time use. For commuters, the total indirect association with flourishing is slightly negative ($b = -0.07$), suggesting that their daily routines modestly counterbalance the small positive direct association ($b = 0.04$). Among specific mediators, time spent on mass media contributes marginally to a positive direction ($b = 0.71$), whereas leisure, volunteering, and sport show negative indirect associations. For off-site students, the total indirect association is stronger and more negative ($b = -0.55$), largely driven by lower participation in volunteering and sport ($b = -0.25$ and -0.27). Although the direct association with flourishing is positive ($b = 0.51$), it does not offset these negative pathways, resulting in a small overall negative total association ($b = -0.03$). Taken together, the results indicate that living away from campus tends to limit engagement in active and social forms of leisure, which indirectly relates to lower levels of flourishing compared to on-site peers.

Table 3 – Indirect, direct, and total associations of housing status with flourishing (GSEM mediation model).

Indirect effect via:	mass media	leisure	volunteering	sport	Total indirect	Direct	Total
Group (ref: <i>on-site students</i>)							
Commuter	0.71	-0.22	-0.23	-0.34	-0.07	0.04	-0.03
Off-site	0.01	-0.04	-0.25	-0.27	-0.55	0.51	-0.03

Table notes. Values are unstandardized path coefficients estimated from the GSEM mediation model. Coefficients for commuter and off-site therefore represent effects relative to on-site students

5. Discussion and conclusion

This study examined the relationship between students' time use and eudaimonic WB, as measured by the FS, using data from a survey conducted at the University of Messina. Consistent with our hypotheses, the results show that engagement in active forms of leisure was positively associated with flourishing, while passive mass media consumption shows a negative association (H1). These findings support a bottom-up perspective of WB, where meaningful and socially enriching activities contribute to psychological functioning. However, we also acknowledge the possibility of reverse or reciprocal effects, as posited by top-down models (Diener *et al.*, 1984). Students with higher WB may be more inclined to participate in active leisure or experience everyday activities more positively. Given the cross-sectional nature of our data, causal direction cannot be established. Supporting H2, the GSEM

indicates that sociodemographic and attitudinal factors influence flourishing both directly and indirectly through time use. Age is positively associated with well-being but negatively with leisure and media time. Women engage less in sport yet report similar flourishing to men. Better economic conditions predict higher well-being but lower participation in volunteering and sport, possibly reflecting opportunity costs or leisure preferences. Consistent with H3, housing status affects flourishing indirectly via time allocation: off-site and commuting students spend less time in sport, volunteering, and leisure, and slightly more in passive media use, generating negative indirect effects—stronger for off-site students and modest for commuters. Overall, living away from campus indirectly reduces flourishing by limiting engagement in active and social leisure. An unexpected but theoretically intriguing finding is the positive association between traditional gender-role attitudes and flourishing. Students endorsing more traditional gender values report higher levels of flourishing, even after controlling for sociodemographic and behavioural factors. Although counterintuitive in a university setting, this may reflect value congruence, whereby alignment between personal beliefs and prevailing cultural norms enhances psychological adjustment (Schwartz and Sortheix, 2018; Inglehart and Baker, 2000). In contexts where traditional norms remain salient, such value coherence may foster a sense of belonging, predictability, and social approval, thereby sustaining PWB. Alternatively, the observed association might reflect adaptive coping or compensatory mechanisms, whereby conformity to prevailing expectations provides a structured framework that reduces uncertainty during transitional life stages such as university years. Future research should explore these dynamics further by incorporating measures of value orientation and cultural context to disentangle normative alignment from individual or situational factors. Importantly, leisure opportunities are shaped by students' structural factors: housing status, economic resources, and gender influence both time availability and types of engagement. For instance, commuter students and women report lower involvement in sport, suggesting unequal access to WB-promoting activities. These results underscore the psychological relevance of time-use patterns in students' WB. While causality remains indeterminate, the results highlight how active and socially engaging forms of leisure contribute to flourishing, whereas passive or isolating behaviours may hinder it. The study thus adds to the literature on student WB by linking structural conditions, personal values, and behavioural choices within a coherent framework of eudaimonic functioning. Nevertheless, these findings should be interpreted with caution due to several limitations. The cross-sectional design prevents causal inference and cannot capture dynamic or reciprocal effects over time. Self-reported data could be affected by social desirability or recall bias. The gender-role attitudes index shows moderate reliability ($\alpha = 0.69$), which is acceptable in exploratory studies using heterogeneous attitudinal items, and robustness checks confirm the

stability of results. Finally, external validity is limited, as data were collected from a single university via an online survey, possibly overrepresenting students with higher digital access or intrinsic interest in WB. Differences in response propensity, may have introduced self-selection bias, which is a key concern in studies of this nature. This could distort the observed estimates in either direction. Future research should adopt multi-site or probabilistic sampling and longitudinal designs to better identify causal mechanisms.

Despite these caveats, the study offers meaningful policy insights. Universities should invest in inclusive and accessible leisure infrastructures, particularly for commuter students and women, to reduce structural barriers to participation. Promoting equitable access to sport, volunteering, and culturally enriching activities can support students' psychological flourishing and foster a more balanced university experience beyond academic achievement.

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