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Activity Patterns among Young Women: A Time Budget Perspective

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ABSTRACT

Objective: In this article, our aim is to identify and assess changes in the behaviour of young women taking into account the changes regarding gender and cultural roles.
Research Design & Methods: Analysing seven-day diary data (N = 139), we examined the average duration of the 12 evaluated categories of activity and their percentage contribution to the structure of young women's daily time budget. A hierarchy of women's activities in each of the five survey editions was established (2018–2022).
Findings: By comparing the time budget structures across editions, trends in women's activity levels, and an existing dependence between specific categories of activity in each edition were identified.
Implications/Recommendations: The withdrawal of young women from physical activity (limiting the time they devote to it) may be associated with significant health consequences for them in the future. The confirmed changes in the lifestyle of successive years of young (post-adolescent) women might signal a change in their comprehension of social expectations assigned to the roles fulfilled by women, and thus their level of involvement in support, care, and voluntary activities. Some limitations related to this study were recognised. Female students from a single

university were surveyed, so results are not non-generalisable. In terms of place, cultural factors could be taken into account. Therefore, the authors suggest undertaking research among university students in not only in other locations but also in other countries.

Contribution: The study reveals trends in young women's activity levels and an existing dependence between specific categories of their activity.

Article type: original article.

Keywords: young women, young adults, daily activity, time budget, social change.

JEL Classification: J11, J22, M59.

1. Introduction

According to gender schema theory (Bem, 1981), every culture associates certain social expectations with the roles performed by women and men. Depending on the gender, these expectations shape both the way individuals think about themselves and what social behaviour they present (Bem, 1974, 1981; Cross & Markus, 1993). We find confirmation of this in the area of current research in psychology, sociology, and management among others (Tolley, 2017, Codina & Pestana, 2019; Adams & Almahmoud, 2020; Bullough *et al*., 2022; Bustelo & Salido, 2024; González & Benge, 2024).

In most cultures, women's roles are associated with expectations regarding a lower level of professional activity and a higher level of involvement in household chores, including childcare and caring for other dependent family members.

Please note that the role concepts currently operating in a given culture might not only be incoherent, but also, for a variety of reasons, clash with the changing reality. Therefore, it has long been pointed out that the current definitions of gender roles should be redefined (to be a better fit), taking into account the current situation. This would enable the reconciliation of the private and public roles of men and women, at the same time broadening (rather than restricting) their individual life choices (Bem, Martyna & Watson, 1976).

An example of real action in this area was feminism, understood as a set of movements, ideologies, and doctrines that focus on legal, political, and sociocultural equality and freedom for both women and men. In the formal sphere, this has been reflected, among other things, in the establishment of international instruments relating to gender equality. Providing access to education, granting active and passive suffrage, allowing married women to hold public office and retain their citizenship, seeking to reduce forms of discrimination in employment, requiring consent to marry, and setting a minimum age for marriage have changed not only women's living conditions but also the way they think about themselves. This is because the behavioural changes described under institutionalised conditions are subject to

cognitive regulation, according to social learning theory (Bandura, 1986). Increased expectations of self-efficacy lead to the adoption and intensification of behaviours against which this efficacy has been measured. Changes in women's living conditions, altering their perceptions of the range of activities they can perform and their assessments of their self-efficacy with respect to these activities, should therefore be translated into changes in their behaviour (Galinsky, Aumann & Bond, 2013; Agree, 2017; Moreno & Urraco, 2018), including disposition of the time (Evenson, 1982; Sayer, 2016; Rubiano-Matulevich & Viollaz, 2019; Román & Gracia, 2024).

The assessment of how the time budget (i.e. a list of time periods allocated for life activities) of individuals is shaped can allow for optimisation of both business operations focused on meeting customer needs commercially, and for designing functional solutions in terms of public policy. Hence, what seems particularly interesting and valuable is to determine the structure of the time budget in the context of factors which simultaneously significantly determine the ultimate shape of this structure for larger groups of people. Differences in the structure of the time budget within the population are explained, e.g., by respondents' age (current stage in their life cycle), their gender (i.e., demography), health status (biological factor), value structure (psychological factor), professional activity (social factor), or the level of income (economic factor).

In relation to the European Union countries, most studies highlight both issues related to the gender structure (the predominance of women as a consequence of their longer life expectancy) and the age structure of the EU population (related to the aging of society). At the same time, socio-economic changes caused the period of adolescence to be treated as a separate phase of life (Przetacznik-Gierowska & Tyszkowa, 2002; Boyd & Bee, 2008). This phase affects people between the ages of 20–23 and 35–40 and as a transition stage between youth and adulthood is referred to as post-adolescence (Vaskovics, 2001; Galland, 2003; Ikiz & Houssier, 2023), early adulthood (Gurba, 2011; Bastian, Bian & Grogger, 2022), or also postponed adulthood (Brzezińska *et al*., 2011; Trzop & Zielińska, 2021). This period, characterised by many changes, not only turns out to be essential from the point of view the professional career of individuals and their ultimate economic status, but it is also to a large extent (especially for women) decisive for their reproduction plans (whether to have children, or not, and how many). In the context of the projected depopulation of the EU we consider the analysis of the time structure in the first stage of early adulthood of women cognitively valuable. This seems significant because the EU actively supports increasing the percentage of people with higher education. And in most of the Member States, there are more women with higher education than men. Furthermore, it was statistically confirmed that the higher the level of education of women, the lower the number of children they have.

Taking into account the described changes in gender and cultural roles and in the context of the projected depopulation of the EU, we define the aim of the article as the identification of the directions in which the structure is starting to change of the women's time budget in the first stage of their early adulthood.[1] We therefore adopt the following structure for the article. We first present the structures of women's time budgets as described in the literature and point to the directions of the research conducted. In order to assess the current state of women's time budgets, we decided to carry out a systematic review of the literature (SRL) in this field. We also point out the knowledge gap regarding the time budget of young women (women in the first stage of early adulthood). We then describe the methodology of our own research and present the results. Finally, based on the identified structure of young women's time budgets, we indicate changes in activity and time spent on it.

2. Literature Review

In light of the data collected by Chang and Chung (2018), it can be stated that gender is statistically significant for leisure identity, meaning that gender is an important factor in explaining why individuals participate and continue to participate in certain leisure activities. What deserves particular attention is the fact that women, regardless of their life stage, are characterised by a higher level of leisure identity than men (Chang & Chung, 2018). At the same time, it is important to emphasise that – as confirmed by the extensive research by Fransson *et al*. (2012) – the odds of being physically inactive are 21% and 20% higher for those with highly stressful and passive jobs, respectively.

It is evident that men spend more time per week being physically active than women, and women spend more time per week on domestic activities than men. These regularities are confirmed by the research of Moschny *et al*. (2011). According to the researchers, the observed differences cannot only be explained by factors relating to the hormonal environment and differences in body composition between men and women. The contribution of cultural factors should also be taken into account. For example, the social expectations that are assigned to the roles played by women and men. In many cultures, the role of women is associated with less active behaviours, higher involvement in domestic, childcare, or caring for other dependent family members. In this context, it is worth noting that Ikezoe *et al*. (2013) document that institutionalised elderly women spend much time in inactive positions such as sitting and lying, even in the daytime. Successively, the results of the extensive research by Giurge, Whillans and Yemiscigil (2021) show that during COVID-19 women spent more time on household chores and caring tasks than men. Importantly, these differences were stronger for parents. The need for

[1] Directions in which it is evolving.

women to measure themselves against societal expectations, i.e. a significant role in caregiving, was also observed by De Simone *et al*. (2021). Taking into account that women experience greater conflict between work and family roles than men, the researchers conclude that the pandemic period has widened this gap (particularly in terms of personal fulfilment). As noted by Carvalho and Santiago (2008), academics generally work around 10 hours per day. As part of their work, they carry out activities in the following areas: teaching, research, administration and service to society. Both men and women devote more time to teaching in the early stages of their careers and more time to research towards the end of their careers. However – and this seems to us to be particularly noteworthy – at the end of their careers (as full professors), women spend on average four hours more on administration than men of the same academic rank.

An interesting fact is also highlighted in the research by Choi and Haeri (2021). Their findings reveal patterns of social integration through leisure. Although the opportunities for Vietnamese married migrant women to meet Korean natives extensively through leisure are limited, it is a fact that this kind of opportunity is an important factor in their socialisation. In the context of the above-mentioned cultural factors, it should be taken into account that the free time of pregnant teenagers is largely focused on preparing for the birth of a child, partly as a result of social pressure (Clark & Anderson, 2014).

It is worth noting that the analysis, based on a systematic review of 324 full texts spanning the past four decades of academic literature, substantiates five dominant meta-narrative explanations for the gender gap in STEM majors (Kanny, Sax & Riggers-Piehl, 2014): individual background characteristics; structural barriers in education; psychological factors, values, and preferences; family influences and expectations; and perceptions of STEM fields. It is also worth taking this into account when evaluating the results of research and analyses, which indicate that young women take recreational walks more often (Pollard & Wagnild, 2017) and also take advantage of organised forms of recreation significantly more often than men (Kim & Beck, 2009). In particular, the later authors arrived at an interesting research conclusion that, for young women, the motivational factors of leisure trips that should be taken into account include: getaway, risk-taking and exploration, education, friends, relations, and enjoyment. On the other hand, the pull factors include convenience, climate and atmosphere, recreation, attractions and connection, surroundings, and family and awareness.

In summary, it can be seen that the research conducted addresses differences in time budgets between men and women. Social determinants (gender-based role expectations) are highlighted. Age is the focus of research in relation to specific issues, i.e. pregnant teenagers and travel preferences of female students. It is also written about in the case of an interesting research outcome (association with

a particular form of spending time). It can therefore be pointed out that there is a cognitive gap in relation to women's budgets in the first stage of their early adulthood.

3. Methodology

Preparing a time budget requires compiling the results of measured time intervals used by specific social groups within a selected period of time (day, week, month, or year). The necessary data can be obtained using a questionnaire, a questionnaire combined with an interview, a diary of activities, or a snapshot of the day or week (Harvey, 2002; Robinson, 2002; Bombol, 2008; Harms & Gershuny, 2009). The material is analysed statistically and descriptively explained (Pisarska, 2015).

In this study analysis, a diary form was used, including the following 12 categories: 1) physiological needs, 2) chores and housework, 3) professional work, 4) voluntary work, 5) education, 6) social life and entertainment, 7) commute related to education and work, 8) other trips not related to education and work, 9) sports and recreation, 10) personal hobbies, 11) using mass media, 12) using social media. The specified set of categories (except 8 and 12) was adopted from the research conducted by the Central Statistical Office of Poland (GUS, 2015, p. 20; GUS, 2016). Categories 9 and 10 were developed by us (cf. Winkler & Karna, 2020). Each of the categories listed in the diary had a supplementary description (Table 1).

The thus-developed diary forms were used in two ways. First, they served as overview material each year during lectures in the course "Leisure time sociology" in terms of the content of the tools used to build budgets. Secondly, they were used as material for the analysis and assessment of the structure of time budgets in a given year. Due to the purpose of the study (which was the identification of the directions in which the structure of women's time budgets in the first stage of their early adulthood is starting to change), unmarried, childless female, first-year graduate students were invited to participate (purposive sampling).

4. Data Analysis

The surveys were conducted over seven consecutive days at the turn of November and December, of the academic years: 2017/2018, 2018/2019, 2019/2020, 2020/2021, and 2021/2022. Diary forms were provided to each student electronically (online access). Students filled them in daily, noting the duration (in minutes) of the indicated 12 categories of activities.

After completing, each form was verified and any doubts were clarified during individual consultations. The time budget based on the collected data was constructed separately for each edition of the study. In total, 203 respondents filled in the forms, including 139 young, childless Polish women (category numbers in

the following academic years 2017 – 38, 2018 – 29, 2019 – 30, 2020 – 22, 2021 – 20).[2] The analysis covered both the structure of their daily time budget (i.e., shares of individual categories in the budget), as well as the average duration of specific categories of activities in individual editions of the study, taking into account data for women performing a given activity.

Table 1. The Categories of Activities Included in the Diary Form

Number	Category of Activities	
1	Physiological needs	sleep[a], meals, personal hygiene, using the toilet, taking medication or injections
2	Chores and housework	food processing, keeping order, preparing clothes, gardening and pet care, caring for children and adults, construction, renovation, repair
3	Professional work	profit-making activities (own business, contract of employment, commission or contract of mandate)
4	Voluntary work	including volunteering in NGOs
5	Education	university classes and breaks between them, homework (preparing assigned projects)
6	Social life	including individual and group video calls (group remote simultaneous games)
7	Commuting related to education/work	on foot, by private or public transport (car, tram, train, bus), using sports vehicles or equipment (motor, moped, traditional/electric bicycle, traditional/electric scooter, skateboard, roller skates)
8	Other trips not related to education/ work	on foot, by private or public transport (car, tram, train, bus), using sports vehicles or equipment (motor, moped, traditional/electric bicycle, traditional/electric scooter, skateboard, roller skates)
9	Sports and recreation	all activities related to physical activity and active leisure
10	Personal hobbies	recreational (leisure and entertainment), developmental (educational and cognitive), integration (bonding), cultural, tutorial (facilitating the assimilation of certain ideological principles), compensatory (i.e. "releasing"), other
11	Mass media	TV (public, cable), press, cinema, radio, VOD services
12	Social media	Facebook, Flickr, GoldenLine, Google+, Instagram, LinkedIn, MySpace, Odnoklassniki, Pinterest, Qzone, Reddit, Twitter, VK, Weibo, Youtube, online news sites, dating sites, other

[a] Sleep, as the category between days, should be considered as the time from falling asleep to waking up.

Source: the authors.

[2] The number of students at the tourism and recreation faculty in each year with the number of female students of Polish origin in the total number of women: 2017 – 74 people (including 38 Polish women out of 61 women), 2018 – 46 people (including 32 Polish women out of 39 women), 2019 – 43 people (including 38 Polish women out of 41 women, 2020 – 33 people (including 25 Polish women out of 27 women, 2021 – 22 people (including 20 Polish women out of 21 women).

In the context of the results of the literature review (including the indicated dependence of the structure of leisure time on cultural conditions and social expectations towards women in terms of fulfilling the caretaking roles), changes in time budget patterns were expected to affect categories such as *physical activity*, *voluntary work*, *personal hobbies*, and *social media*. Concerning these categories, it was assumed that:

1. Physical activity among respondents in individual editions of the survey will remain at a similar level.
2. In the structure of the respondents' time budget, the share of the voluntary work in each subsequent edition will be lower.
3. In the structure of the respondents' time budget, the share of personal hobbies in each subsequent edition will be higher.
4. The share of the social media category in each subsequent edition will be higher.

The assumptions were made following the results of the literature review. At the same time, since the respondents in the study are students majoring in tourism and recreation, it was concluded that, due to the selected profile of the studies, the decreasing trend in the level of activity among women observed in the literature on the subject should not be reflected among the students. Pearson's linear correlation coefficient was used to assess the correlation between the time spent by female respondents performing specific categories of activities in each edition.

5. Results

Based on the collected data, the average duration of the analysed categories of activity in individual editions of the study was determined, as well as the percentage share of each of the categories analysed in the structure of the women's daily time budget (Table 2).

Table 2. Average Duration of Activities (in %), Their Share and Place in the Time Budget Structure (2017–2021 Editions)

Category of Activity	2017	No.[a]	2018	No.[a]	2019	No.[a]	2020	No.[a]	2021
Physiological needs	38.22	1	37.09	1	35.22	1	36.78	1	37.90
Chores and housework	7.68	6	5.46	6	5.65	8	6.18	7	6.27
Professional work	11.46	3	9.60	4	9.06	4	9.99	1	10.93
Voluntary work	0.85	11	0.72	12	0.34	12	1.74	11	0.00
Education	10.74	4	9.84	3	9.67	3	8.37	5	12.55
Social life	8.46	5	6.84	5	10.01	2	9.38	4	4.72

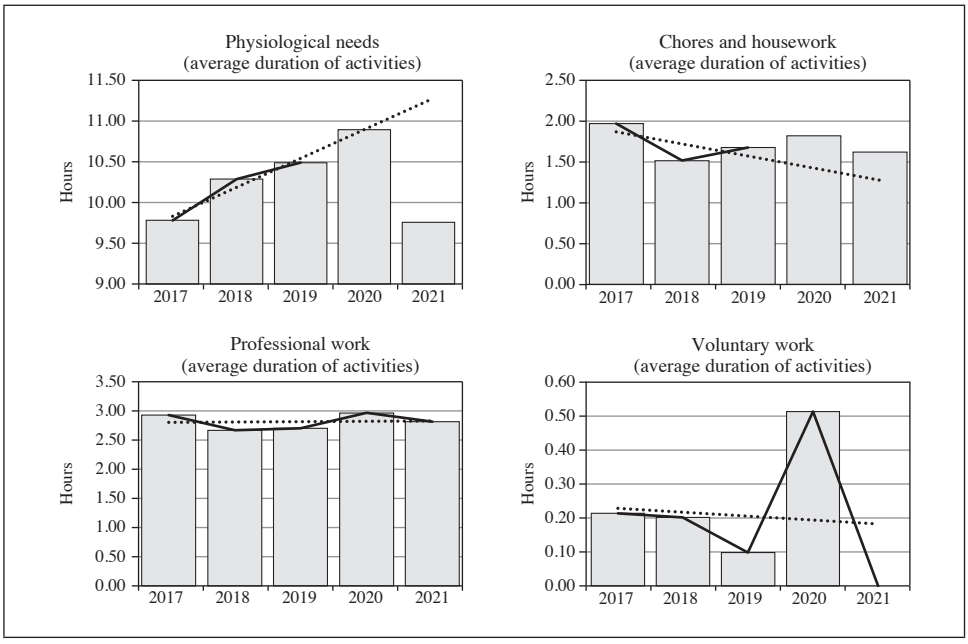
Table 2 cnt'd

Category of Activity		2017	No.[a]	2018	No.[a]	2019	No.[a]	2020	No.[a]	2021
Commuting related to education/work		3.39	8	3.48	10	2.74	11	0.79	12	0.91
Other trips not related to education/work		2.21	9	2.52	11	2.91	10	2.25	10	1.88
Sports and recreation		1.56	10	3.72	9	3.30	9	2.36	9	1.62
Personal hobbies		3.84	7	5.22	8	6.09	7	4.21	8	6.40
Media	mass media	multi-media 11.59	2	5.46	7	6.43	6	8.25	6	9.18
	social media			10.02	2	8.61	5	9.71	3	7.63
Total		100		100		100		100		100

[a] Position in the time budget structure.

Source: the authors.

The values of the average time dedicated to participating in each category of activity in subsequent editions of the study are presented in the bar charts (Fig. 1).



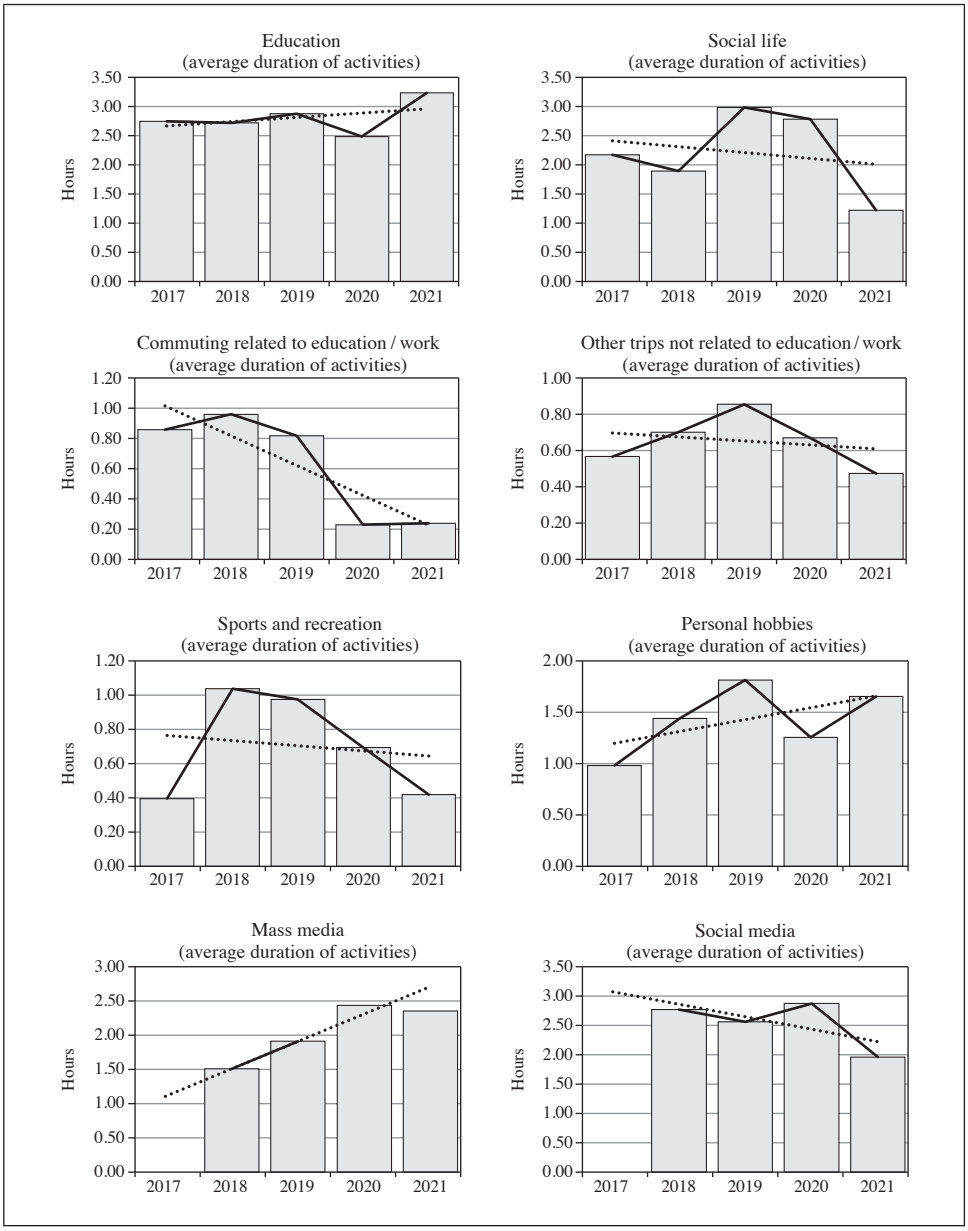


Fig. 1. The Changes in the Amount of Time Allocated to a Given Category
Source: the authors.

At the same time, it was recognised that it was necessary to take into account the fundamental differences in the data from the 2017, 2018 and 2019 editions of the

study (before the COVID-19 pandemic). Indeed, at that time (2020–2021), measures were taken on an international scale to prevent the spread of SARS-CoV-2 infections. They were mostly restrictions limiting socio-economic activity (for example: restricted freedom of movement and access to public space, mandatory online education, mandatory social distancing, limits on the number of people allowed in public spaces), which influenced time management (for example, the time spent on commuting, especially with regard to study and work, was significantly reduced) and could have resulted in changes in the time budget patterns. For the data from the 2017–2019 edition, an additional line graph (solid line) was developed. Based on data from these three years, a trend line (dashed line) was also drawn, which allows graphically highlighting the changes in the amount of time allocated to a given category, which occurred in 2020–2021 (during the pandemic period).

In light of the collected data, the results obtained in five of twelve categories were considered particularly interesting: *physiological needs*, *voluntary work*, *social life*, *social media*, and *mass media*.

Analysis of the Main Categories

Physiological needs. They have the largest share in the structure of the daily time budget of the respondents in each edition. Moreover, the average duration of activities related to *physiological needs* (sleep, meals, hygiene) in the period 2017–2019 showed a gradual upward trend. Interestingly, the increase in the average value of time dedicated to this category did not influence an increase in the percentage share of this category in the structure of the respondents' day. This share was decreasing until 2020. The most time allocated to physiological needs was observed in 2020 (10.92h), i.e. 36.78% of the daily time budget. In turn, the average time dedicated to this category in 2021 was reduced by as much as 69 minutes compared to 2020. At the same time, its share of the daily structure increased (37.90%).

Please note that in the 2017, 2018 and 2019 editions, a high level of dependence was observed (absolute values of the correlation coefficient greater than 0.7) between the time allocated to meeting physiological needs and the time dedicated to commuting (both related to work and study, as well as others), study, housework, and social life. In the 2020 and 2021 editions, the level of dependence of the average documented time dedicated to *education*, *housework*, and *social life* was maintained. As mentioned above, the restrictions in force during the lockdown period were related to personal mobility, which explains the lack of correlation between the time dedicated to the categories: *physiological needs* and *commuting*, both in 2020 and in 2021. Interestingly, within these editions, the correlation between the amount of time spent meeting physiological needs and the time spent using the mass media ($r = 0.79$ in 2020, $r = 0.78$ in 2021) and social media ($r = 0.73$ in 2020, $r = 0.86$ in 2021) turned out to be significant. Perhaps this explains the need to modify the

methods of performing some of the activities related to the broadly understood use of technology during the pandemic (e.g., the use of video calls to maintain social contacts). It also seems justified to consider the question of how the human body reacts to prolonged exposure to the blue light of mobile phones, laptops, tablets and computers, or the accompanying phenomenon of multitasking (cf. Xu, Kee & Mao, 2021; Kudesia, Pandey & Reina, 2022).

Voluntary work. In the context of the obtained data, attention was paid to changes in average time dedicated to this area in individual editions. In terms of data from the period before the pandemic, a gradual decrease in the time allocated to the category of *voluntary work* can be observed in the time budget of young childless Polish female students in second-degree studies. However, during the lockdown period (data for 2020), there was an over five-fold increase in the amount of time dedicated to this category compared to the values recorded in the previous year (31 minutes compared to 6 minutes). Thus, it seems interesting and significant that in the 2021 edition not a single respondent declared that they allocated even a minute of time to activities in this category. According to the authors, this could be mainly related to the end of the pandemic-related voluntary initiatives launched in 2020 (either as a consequence of reducing the need for support as certain formal solutions emerged or due to the execution of the vaccination programme). However, this category was present in the editions preceding the pandemic, although its share was the smallest in the structure of the daily time budget. Non-participation of respondents in activities qualifying for this category in the 2021 edition could also, to some extent, be a consequence of fatigue/overload with this type of activity. The reason could also be the need to stop (or the inability to continue) additional energy- and time-consuming activities, which were mostly carried out remotely in the 2020 edition when they were resumed in on-site.

Please note that *voluntary work* is the only category in which the allocated time was not significantly correlated with the time allocated to any of the other time categories, in any edition. What is more, it is also a category for which the values of the correlation coefficients in the 2020 edition turned out to be lower than those from previous editions, or took negative values.

Social life. In the case of the time budget for this category, two issues stand out. First, changes were observed in the time budget dedicated to this category in the 2020 and 2021 editions compared to the previous editions. Second, in the 2021 edition, this category showed a degree of dependence on the other categories.

In the 2020 edition, the average time dedicated to social life was 12 minutes less compared to the time declared in the 2019 edition. There was also a slight decrease in the percentage share of this category in the daily time budget (in 2019: 10.01%, and in 2020: 9.38%). However, it seems surprising that the time declared for this category in the time budget of the respondents is by less than half of what it was

in 2021. In this edition, the average time for social life was as much as 94 minutes shorter than in the 2020 edition (and 116 minutes shorter than in the 2019 edition). In 2021, this category's share of the daily time budget was only 4.72%, and although in the period 2017–2020 the category was among the five types of activities to which respondents dedicated the most time, it was only in 8th position in the 2020 edition. According to the authors, the results obtained in the 2021 edition could be a consequence of the eroding social bonds of the respondents in light of adopting remote-only forms of contact in the period preceding the survey. In each edition, the respondents were female students in their first semester of second--degree studies. Thus, the respondents in the 2021 edition completed the last stage of their first-degree studies online. In addition, they started the first semester of their second-degree studies online. The authors believe that this could be important both for the possibility of establishing new correlations and for deepening the already established relationships.

In the context of the above data, the values of the correlation coefficients for *social life* for the 2021 edition seem particularly interesting. Out of ten calculated correlations, in only two cases (*commuting* related to *education*/*professional work*) did the values of the correlation coefficient reach average values ($0.3 \leq r < 0.5$). In two other cases (*personal hobbies* and *social media*), the correlation should be considered high ($r = 0.69$) and in six cases ($0.7 \leq r < 0.9$) too high (*physiological needs*, *other trips not related to education*/*work*, *education*, *mass media*, *sports and recreation*, *chores and housework*). In none of the previous editions were such a large number of significant dependencies observed. Please note that strong correlations were observed primarily with regard to the categories in which taking actions is associated with the possibility of interacting either directly (face-to-face) or at least simultaneously.

Social media. This category was found interesting (excluding the 2020 edition) as it shows a decreasing tendency in both the average time spent by respondents on browsing social media (from 2.78h in 2018, to 1.97h in 2021), and in the share of this category in the respondents' daily budget (up to 7.63% in the 2021 edition). At the same time, however, this category was among the five categories with the highest share of the structure of the time budget in each edition.

What is also interesting is the high value of the correlation index between the time spent browsing social media platforms and the time dedicated to *physiological needs*, *education*, and *housework* ($r \geq 0.7$). This could indirectly prove the rather private nature of the activities undertaken in this area.

Regarding the last of the identified categories, i.e., the *mass media*, both the average time allocated to this category and its share of the household budget of young women are increasing significantly. Interestingly, in the 2020 edition, a very high correlation was observed between the time dedicated to this category and the

following: *physiological needs*, *education*, and *housework*. In the 2021 edition, *social life* was added to this group.

Notes on Other Categories

In relation to the other assessed categories, please note that:

– across the five editions, the average time dedicated by the respondents (young, childless, female students) to the execution of activities included in the category *housework* is at a similar level;

– in the category *professional work*, there were no significant fluctuations in both the average time dedicated to this category and its share of the daily budget;

– average time allocated to the category *studies* was shorter when remote learning was introduced. In each edition, the category *education* was among the five categories with the highest share of the time budget;

– data obtained for the category *sport and recreation* correspond to the trend of declining women's physical activity reported in the research of Reyes-Olavarría *et al*. (2020) and Aghababa *et al*. (2021);

– remote work and study has reduced commuting times. Interestingly, although some of the restrictions were lifted, the time spent on study- and work-related commuting remained at the same level in the 2021 edition as in the 2020 edition;

– the changes observed in the average duration of *other trips not related to work/education*, and the share of this category in the daily budget were smaller than in the category *commuting related to work and education*. The highest correlation coefficients were observed in the 2021 edition between this category and *social life* ($r = 0.79$), *sport and recreation* ($r = 0.71$), and *physiological needs* ($r = 0.70$);

– the share of the category *personal hobbies* in the daily budget of the respondents increased, although it was clearly limited in the 2020 edition. In the 2021 edition, it showed the highest dependence on the category *housework*.

Please note that changes in the average duration of certain categories of activity are reflected in the structure of the time budget for subsequent editions. However, changes in the share-percentage of individual categories within the budgets of consecutive editions usually hover below 2.22 percentage points (only in the 2021 edition did the categories *education* and *social life* exceed 4 percentage points). The dominant position in time budgets is occupied by activities related to the category *physiological needs*. Due to the shares specified in the structure of the daily budget, the following categories should also be considered significant: *education*, *professional work*, *social media* and *mass media*.

Concluding Remarks on Time Budgets

When analysing the time budgets from individual editions, the average duration of the categories of activities in the daily breakdown in individual editions, i.e., more

than 1,440 minutes, seem noteworthy. Simultaneous undertaking of certain activities (studying while traveling, or listening to music while doing housework, etc.) is completely natural. The observed "stretching out" of the day in subsequent editions in the above context (or due to increased multitasking) does not seem particularly surprising, although the shortening of the reported time dimension in the 2021 edition is puzzling.

6. Discussion

This article examines the issue of women's time budgeting. The focus was on young women, i.e. in the first stage of their early adulthood. The amount of time spent on 12 activities was identified. Assumptions were made about four of them: sports and recreation, voluntary work, personal hobbies, and using social media. The share of the physical activity category should decrease, taking into account the results of the analysis of Strain *et al*. (2024), Reyes-Olavarría *et al*. (2020) and Aghababa *et al*. (2021). However, we assumed that the situation would be different for female students of tourism and recreation and that the time spent in this category would remain unchanged. In our opinion, the share of voluntary work should decrease from edition to edition. In turn the share of the last two categories should increase.

Indeed, in the survey, the share of the voluntary work category was lower in each subsequent edition (except for the 2020 edition), with this category coming last in the 2017, 2018, 2019, and 2021 editions. In the 2020 edition, this share increased significantly, which may be related to the issue raised by Giles and Oncescu (2021) of the need for women (including single women) to measure themselves against societal expectations, i.e. a significant role in caring. It should be emphasised that no respondent in the 2021 edition reported taking action in this category.

Regarding personal hobbies, a continuous increase in this category's share of the time budget structure was observed in the 2017–2019 period. In 2020, the share of this category decreased significantly, but in 2021 it increased again. This may be related to the start of the pandemic and the time it took for women to "find themselves" in the new situation. As highlighted by Clark and Anderson (2014), social pressure played a role in the changes in leisure time behaviour of pregnant teenagers.

However, the average time devoted to social networking sites decreased, as did the share of this category in the structure of the time budget. Although it remained one of the five categories with the highest percentage share, the assumption of a continuous increase in share based on Scott *et al*. (2017) was not confirmed. Is this the result of an increased need for direct relationships at the stage of life that statistics consider the best for getting married (Aronson, 2008; Szukalski, 2017; Hochberg & Konner, 2020)? Or perhaps a growing need for privacy (Quan-Haase & Elueze, 2018; Chung *et al*., 2021)? The possibility that respondents use digital media not included in the study should also be taken into account.

Finally, the level of physical activity (average duration and percentage) among respondents in each edition of the study steadily decreased. In the 2017 edition, the percentage of physical activity in the daily time budget ranked 10th. In the 2018, 2019, and 2020 editions it was ranked 9th, and in the 2021 edition, it was ranked 10th again. Therefore, despite the specificity of the field of study, it seems to reflect the trend of decreasing physical activity among women reported by many authors (cf. Cerrato & Cifre, 2018; Eime *et al*., 2020; González & Benge, 2024; Strain *et al*., 2024).

Our predictions concern the aspects discussed above. In addition, the interesting results should be noted in relation to such categories as: physiological needs and social life. In relation to the first of these, the data from our research corresponded to the changes in the time budget of Poles (aged 15 and over) reported in the 1976, 1984, 1996, 2004, and 2013 editions of the Central Statistical Office surveys (cf. GUS, 2015, 2016; Kolny, 2016). In the case of the category of social life – the interpretation of the time dedicated to social life, the share of this category in the structure of the daily time budget, and the weight of the assessed dependencies from the 2021 edition is not fully possible without assessing the changes in the quantitative and qualitative aspect of the correlation between the respondents. However, it is worth considering potential recommendations/limitations in creating/maintaining relationships in the context of available forms of contact (cf. Tomczyk, Altweck & Schmidt, 2021).

7. Summary

The aim of the article was the identification of the directions in which the structure of women's time budgets is starting to change in the first stage of their early adulthood.

In each edition, the categories: education, professional work, social life, and multimedia were among the five categories with the highest share of the time budget.[3] Based on the description of the time budget in different editions and the comparison of the results, possible directions of change in the structure of the time use pattern were identified. It should be noted, of course, that some of the changes are clearly related to external factors that distinguish the period before the pandemic and the duration of the pandemic (e.g. a decrease in the share of commuting related to study and work, an increase in the share of voluntary work). Some of this seems to be cultural. At the same time, it can be noted that some of them may be related to changes in the lifestyles of subsequent generations of the older part of the younger generation that the respondents represent (e.g. media participation). It would be worthwhile to take this into account in future research.

[3] Obviously, the dominant category by default is the fulfilment of physiological needs.

Some limitations related to this study are recognised. Collecting data only from female students at one university means that the results cannot be generalised. In terms of place, cultural factors could be taken into account. Therefore, the authors suggest undertaking research among university students not only in other locations but also in other countries. Given the number of female students surveyed in each year, the outlined trends in time budgets also need to be confirmed. It is worth considering their confirmation based on a comparison with women of other ages.

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Authors' Contribution

The authors' individual contribution is as follows: Renata Winkler 65%, Marta Moczulska 35%.

Conflict of Interest

The authors declare no conflict of interest.

Appendix

A systematic literature review was conducted using the procedure proposed by Hensel (2020). The stages and the activities implemented in them are described in Table A.1.

Table A.1. The Systematic Literature Review Procedure Used

No.	Name of Stage			Description
1	Defining the subject of the review and the research question			**Subject:** The structure of the women's time budget in the light of contemporary time-budget research **Research question:** What do we know about the structure of the time budget as regards women's activity in light of the published literature reviews?
2	Setting search criteria and qualifying studies for review	In terms of	2A. Defining database	Databases covering multidisciplinary, peer-reviewed journals Selected bases: EBSCO[1], SCOPUS, WoS[2] [1] EBSCO hostWeb: Academic Search Ultimate, Business Source Ultimate, Academic Research Source eJournals, EconLit with Full Text, Environment Complete, Hospitality & Tourism Complete, Teacher Reference Center [2] Science Citation Index Expanded, Social Science Citation Index, Emerging Source Citation Index

Table A.1 cnt'd

No.	Name of Stage			Description
2		In terms of	2B. Defining content	**Subject area** I. EBSCO: (–) II. SCOPUS: *Business*, *Management and Accounting – Multidisciplinary – Psychology – Social Sciences* III. WoS: *Anthropology – Area Studies – Arts Humanities Other Topics – Behavioral Sciences – Business Economics – Cultural Studies – Demography – Development Studies – Education Educational Research – Entomology – Environmental Sciences Ecology – Family Studies – Health Care Sciences Services – International Relations – Life Sciences Biomedicine Other Topics – Psychology – Public Administration – Public Environmental Occupational Health – Science Technology Other Topics – Social Issues – Social Sciences Other Topics – Social Work Sociology – Sport Sciences – Telecommunications – Transportation – Urban Studies – Women's Studies* **Search terms relating to:** • time distribution (1): *time budget** or *budget** *time* or *time activity budget** or *allocation of time* or *activit** *patterns* or *daytime activit** or *spare time* or *use time* or *time-use* or *use of time* or *daily activit** or *activit** *of daily* or *use time survey* or *time-space diary* or *time-space questionnaires* or *activity diary data* or *leisure* • the scope of the study (2): *wom?n* or *female** or *gender differences* • the type of studies (3): *systematic review** or *meta-analys** or *metaanlys** or *exploratory study* or *exploratory research of analysis* **Defining fields and the search strings:** TI = (*terms relating to time distribution*) and TI = (*terms relating to the scope of the study*) and [TI = (*terms relating to the type of studies*) OR AB = (*terms relating to the type of studies*) OR TO = (*terms relating to the type of studies*)]
			2C. Defining the type of publication source	**Criteria for inclusion:** • white literature: articles published in academic journals • language: English • availability: full text of article
3	Finding publications in databases based on search criteria			To: see Table A.2
4	Qualification of publications based on titles and abstracts			
5	Qualification and analysis of studies based on full texts			
6	Preparation of a literature review report			

Source: the authors.

Table A.2. Report: A Compilation of the Results of the Systematic Literature Review

Specification		Database		
		EBSCO	SCOPUS	WoS
Finding publications in databases based on search criteria	TI = (selected *terms relating to time distribution*)	45,888	172,418	36,233
	AND TI = (*terms relating to the scope of the study*)	1,438	3,673	1,191
	AND *terms relating to the type of studies*	(TI) 4 / (AB) 5 duplicated items: 2 7	53	35
	white literature	6	45	31
	English language	6	41	30
	full text	6	16	18
Publications excluding duplicates		34		
Qualification of publications based on titles and abstracts		13		
Qualification and analysis of studies based on full texts		Carvalho & Santiago (2008), Kim & Beck (2009), Moschny *et al*. (2011), Fransson *et al*. (2012), Ikezoe *et al*. (2013), Pollard & Wagnild (2017), Clark & Anderson (2014), Kanny, Sax & Riggers-Piehl (2014), Chang & Chung (2018), Choi & Haeri (2021), De Simone *et al*. (2021), Giurge, Whillans & Yemiscigil (2021)		

Source: the authors.

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