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Ewa Jarosz

To cite this article: Ewa Jarosz (2021): What makes life enjoyable at an older age? Experiential wellbeing, daily activities, and satisfaction with life in general, *Aging & Mental Health*, DOI: [10.1080/13607863.2021.1916879](https://doi.org/10.1080/13607863.2021.1916879)

To link to this article: <https://doi.org/10.1080/13607863.2021.1916879>



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What makes life enjoyable at an older age? Experiential wellbeing, daily activities, and satisfaction with life in general

Ewa Jarosz^{a,b} 

^aInstitute of Philosophy and Sociology, Polish Academy of Sciences, Warsaw, Poland; ^bSYNYO, Vienna, Austria

ABSTRACT

Objectives: This study uses a broad range of activities to examine how the type of activity, its social context, associated stress, importance, and the level of effort required are linked with activity enjoyment. Using aggregated data from all activities, it analyses the association between the experiential wellbeing of individuals and their satisfaction with life in general.

Method: The data set included 1809 activities, reported by 200 non-institutionalised adults, aged 65 and above, living in Poland. Activity data were collected using the experience sampling method. Multilevel mixed effects models examined what makes an activity enjoyable for older adults. Linear regression models examined the relationship between aggregated subjective activity characteristics and satisfaction with life in general.

Results: The most enjoyable activities were religious practice, childcare, and socialising. Enjoyment was positively associated with perceived activity importance, inversely associated with stress, and formed a U-shaped association with effort. On the aggregated level, a higher mean enjoyment predicted a higher satisfaction with life in general, whereas the opposite was the case for the mean importance. However, having greater variance in importance was associated with higher satisfaction with life.

Conclusions: Enjoyable daily activities may boost the global wellbeing of older adults. Balancing high-effort and low-effort activities may provide additional benefits. This study points to new directions for research and shows that activities rarely studied in the existing literature have significant effects on the wellbeing of older adults.

ARTICLE HISTORY

Received 27 November 2020
Accepted 7 April 2021

KEYWORDS

Enjoyment; wellbeing; activities; experience sampling method; satisfaction with life

Introduction

Older individuals face unique challenges with regard to their use of time. On the one hand, they tend to have more spare time at their disposal than working-age adults and are likely to allocate it to activities maximising their emotional experience (Carstensen, Fung, & Charles, 2003; Moreno-Agostino et al., 2020). On the other hand, they face increasing functional or social limitations that constrain them in their activity choices (Agahi & Parker, 2008; Vos et al., 2020). Ultimately, what they do on a daily basis affects how long they want to live (Moss, et al., 2007) and whether they find their lives worthwhile (Steptoe & Fancourt, 2019).

The two main theoretical approaches to investigating individual differences in satisfaction with life are the top-down and the bottom-up perspective. The top-down approach assumes that stable personality traits determine individuals' satisfaction with life (DeNeve & Cooper, 1998; Steel, Schmidt, & Shultz, 2008). The bottom-up approach points to the importance of the situational context and sees life satisfaction as derived from different domains of everyday life, including work, leisure, or social life (Pavot & Diener, 2008; Veenhoven, 1996). There is empirical evidence for both directions of influence, and it is likely bidirectional (Lance, Lautenschlager, Sloan, & Varca, 1989). Nonetheless, in studies examining both dimensions together, the effects of different life domains remain significant and their association with general satisfaction with life is diverse and domain-dependent (Heller, Watson, & Ilies, 2004;

Lance et al., 1989). Studies with older adults find that while ageing lowers satisfaction in some areas of life, this decline is usually balanced by enhanced satisfaction in other domains, which explains the overall high satisfaction with life at an older age (McAdams, Lucas, & Donnellan, 2012).

The significance of daily activities for the global wellbeing of older adults has been recognised in the gerontological theory, primarily in the activity theory of ageing (Havighurst, 1961; Lemon, Bengtson, & Peterson, 1972). It stresses the importance for older adults to remain actively involved in daily life, at the same time acknowledging that their priorities in later life may shift towards other activities. Remaining actively engaged is seen as essential for the wellbeing of older individuals as it allows them to foster social connectedness and replace social roles lost due to retirement and other life transitions. This view has shaped the classic conceptualisation of successful ageing (SA) which sees individuals' active engagement with life as one of the main indicators of SA (Rowe & Kahn, 1997).

A number of studies investigating the links between the daily activities of older adults and their satisfaction with life have provided empirical evidence of such association (see Adams, Leibbrandt, & Moon, 2011 for review). As noted by Steptoe and Fancourt, '[t]he feeling that life is filled with worthwhile activities may promote healthy ageing and help sustain meaningful social relationships and optimal use of time at an older age' (2019, p. 1207). It should be emphasised that different activities may be endorsed by older adults to maintain a positive outlook at different stages of ageing (Jopp, Rott, &

Oswald, 2008). Ultimately, it is not just specific activities, but the enjoyment of important possibilities in individuals' lives and the amount of pleasure they experience that promotes their well-being at an older age (Kane, 2001; Raphael, et al., 1997). The importance of subjective value that individuals attach to their experiences is further evidenced by the fact that empirical studies have established an association between higher levels of positive emotions during the day and individuals' global well-being (Kahneman, Diener, & Schwarz, 1999).

Newman et al. (2014) offer a useful analytical framework for analysing the link between activity-related emotions experienced over the course of the day and the overall wellbeing of individuals. In this perspective, wellbeing is shaped by accumulated positive or negative experiences. The important advantage of this framework is that it focuses on the processes that influence evaluative wellbeing (Bardo & Yamashita, 2014). Yet, to date, knowledge of the underlying processes promoting an individual's positive assessment of their quality of life is limited (Whitehead & Blaxton, 2017). While the original scope of this approach was limited to leisure activities, essentially any activity may promote global wellbeing if it is experienced as positive and meaningful. By contrast, accumulation of negative experiences may lead to lower global wellbeing. This framework is useful for the present study as it falls within the bottom-up approach to analysing global wellbeing, yet emphasises the subjective meaning of each experience.

This study had two objectives. First, it has investigated what makes older adults enjoy what they are doing. To do so, it has examined an association between activity enjoyment and a broad range of daily activities, including their social context and their subjective assessment by individuals in terms of experienced stress, activity importance, and the level of effort involved. In this way, the study has attempted to link experiential wellbeing with both objective and subjective activity characteristics for a sample of older adults aged 65 and above. Second, this study has explored the associations between an accumulated emotional load of daily experiences (how enjoyable, stressful, effortful, and important the activities were on average) and an individual's global wellbeing, represented by satisfaction with life in general.

The meaning of daily activities

Several studies have reported an association between the daily behaviours of older adults and their subjective wellbeing or satisfaction with life in general. With notable exceptions (Oerlemans, Bakker, & Veenhoven, 2011), the association between daily activities and subjective wellbeing has been investigated by using a limited set of pre-coded activities (Adams et al., 2011), or by focusing exclusively on selected types of activity, primarily physical activity (Dunton, Tscherne, & Rodriguez, 2009; Lampinen, Heikkinen, Kauppinen, & Heikkinen, 2006; Mullen et al., 2011), socialising (Talmage et al., 2020) or leisure (Heo, Lee, McCormick, & Pedersen, 2010). As a result, many highly meaningful activities, such as caring for one's grandchildren (Drew & Silverstein, 2007; Goodman & Silverstein, 2002), or spiritual practice (Smith et al., 2020; Yoon & Lee, 2006), have rarely received similar consideration. Furthermore, the categorisation of activities used in these studies has typically been narrow, such as differentiating only between 'active' or 'passive' leisure (Adams et al., 2011). As a result, highly distinctive activities, such as socialising or reading, have often been

clustered together in the same broad category, which has not allowed for detailed analyses of the effects of each specific type of activity (Yamashita, Bardo, & Liu, 2019).

It has been estimated that the type of activity accounts for over 40% of the difference in experiential wellbeing between working and retired adults (Moreno-Agostino et al., 2020). The latter means that there are other aspects of activities that may affect individuals' momentary wellbeing besides the nature of an activity itself. The activity theory of ageing points to the importance of informal social activity for the wellbeing of older adults (Lemon et al., 1972). Social isolation and loneliness are common in the older adult population (van Tilburg, Havens, & de Jong Gierveld, 2004). The presence of familiar others offers emotional and instrumental support (Aquino, Russell, Cutrona, & Altmaier, 1996), and may lower stress levels (Lazarus & Folkman, 1984). Some types of social activities may help to slow down cognitive decline (Kim, Arai, & Kim, 2017). Presence of others may also affect the individuals' time use patterns, for example, it may encourage older adults to engage in physical exercise which was shown to improve wellbeing (Orsega-Smith, Payne, Mowen, Ho, & Godbey, 2007; Sasidharan, Payne, Orsega-Smith, & Godbey, 2006). Overall, it is likely that activities for which the presence of others is reported might be associated with greater enjoyment, regardless of the activity type.

Engaging in physically demanding activities, such as exercise, has been positively associated with a greater sense of self-efficacy and wellbeing (McAuley et al., 2005). While physical activity has been the sole focus of most studies investigating the link between activity, self-efficacy, and wellbeing (e.g. Whitehead & Blaxton, 2017), the benefits of being positively challenged are not unique to this activity. Carrying out effortful cognitive activities also requires a high sense of self-efficacy (Bandura, 2010). The level of effort, controlling for activity type, is associated with happiness in the older population in a study using the Day Reconstruction Method (Oerlemans et al., 2011). In relation to this, engagement in intellectually challenging activities, such as crosswords, DIY and others, may also promote wellbeing in older individuals.

In the case of older adults, the association between activity-related effort and enjoyment may, however, not be a linear one. Earlier studies have pointed to the positive effect on wellbeing in the case of restful, low-effort activities, such as watching TV, which provide respite in the daily lives of older adults (Ku, Fox, & Chen, 2016). The few studies on the topic suggest that combining effortful and restful activities might boost older adults' happiness (Oerlemans et al., 2011). It is therefore expected that activities requiring the most and least amount of effort might bring greater experiential wellbeing than those requiring a moderate amount of effort – regardless of the type of activity.

The cognitive assessment and the emotional value of an activity were also shown to depend on whether it is considered meaningful, that is, whether it is seen as important in the context of an individual's daily life or long-term objectives (Maruta et al., 2020). An activity seen as meaningful may be part of a personal project, that is any purposeful personal endeavour including, among others, home planning, leisure, and spiritual activities (Lawton, Moss, Winter, & Hoffman, 2002). Having meaning in life is associated with lower rates of depressive symptoms among older adults (Van der Heyden, Dezutter, & Beyers, 2015). Older adults are very aware of which activities are meaningful to them, and engaging in those activities is seen by them as an important component of their successful ageing (Reichstadt, Sengupta, Depp, Palinkas, & Jeste, 2010). For

example, religious and spiritual activities are of high importance to older adults, as they provide meaning and comfort and contribute to their overall wellbeing (Fry, 2000). Satisfaction with any activities perceived as meaningful is associated with fewer depressive symptoms in older adults (Maruta et al., 2020). It can be expected that highly meaningful activities will promote greater momentary wellbeing regardless of the type of activity.

Among the factors negatively affecting experiential wellbeing, stress has received substantial research attention. Older adults report lower subjective enjoyment of otherwise enjoyable activities, such as childcare, when it is accompanied by stress (Sands, Goldberg-Glen, & Thornton, 2005). Stress may be linked with both activity characteristics and factors external to an activity. Some daily experiences seem particularly likely to involve increased stress and lower wellbeing, the primary example being the commute to and from work (Stone & Schneider, 2016), which, however, is more relevant for younger age groups. One of the activities generating very high levels of stress among older individuals is adult caregiving (Bevans & Sternberg, 2012).

In studies on situational stress in younger age groups greater stress during an activity has been associated with lower emotional wellbeing (Offer & Schneider, 2011) and lower activity enjoyment (Ajibewa et al., 2021). Similar evidence for older adults is limited, but based on the existing research, stress is expected to be negatively associated with activity enjoyment in this age group as well. Noteworthy, the record of daily behaviours may also reflect individuals' coping strategies. Some activities were shown to help lower stress and improve wellbeing, including on the global level. Older adults who use certain behavioural strategies, such as religious practice, to reduce stress, were shown to report better overall wellbeing (Koenig, George, & Siegler, 1988). Likewise, social activities and exercise has been shown to lower psychological distress in this group (McHugh & Lawlor, 2012).

When analysing the impact of accumulated experiential wellbeing on satisfaction with life in general, an additional factor worth considering is the variety of individuals' emotions. Emodiversity is a relatively new concept that represents the variety of emotional experiences, with greater emodiversity being theorised to indicate a healthier emotional life (Quoidbach et al., 2014). Emodiversity may pertain to positive or negative emotions, and greater positive emodiversity has been associated with better health and lower levels of depression (Quoidbach et al., 2014; Urban-Wojcik et al., 2020). The few studies on the topic did not find a significant association between positive or negative emodiversity and wellbeing (Urban-Wojcik et al., 2020), but an individuals' awareness of the variety of emotions they experience has been positively associated with wellbeing (Ryan, LaGuardia, & Rawsthorne, 2005). In this present study emodiversity is considered as a potential covariate of individuals' overall wellbeing.

Materials and methods

The data have come from a study of 200 non-institutionalised individuals aged 65 and above, living in Poland. The survey was conducted between January and April 2020. Recruitment was carried out by trained recruiters over the phone, using a Polish telephone directory (Polska książka telefoniczna), or via face-to-face contact in public spaces frequented by older adults. Randomly selected individuals were screened to make sure they met the recruitment criteria. Individuals were sampled according to quotas

for age, gender, and the size of their place of residence. The [supplementary material](#) provides information on the sample composition of respondents' age and gender (Table 1S), and of the size of their place of residence (Table 2S). One individual was excluded from the analyses due to a large number of missing values for the affect measures, which resulted in the final sample of 199 individuals. The overall survey response rate was 25%.¹ Individuals who were more likely to refuse participation or to drop out of the study² were men living in rural areas, over the age of 75.

The experience sampling method (ESM) was employed to collect data on experiences and accompanying affective states, in real time. Time-based methods capture daily fluctuations in wellbeing or changes related to subjective attributes of activities (Kahneman et al., 2004). The ESM allows for the greatest accuracy of measurement, in particular with regard to sensations or feelings (Csikszentmihalyi & Hunter, 2003; Larson & Csikszentmihalyi, 2014). The method has been applied to targeted samples of individuals to gain more insight into their daily lives (van Knippenberg et al., 2017), and to record the fluctuations in their physical and emotional states (Badr, Basen-Engquist, Taylor, & de Moor, 2006). One of the important benefits of real-time assessment of activities and feelings is that it does not rely on respondents' memory, which may lead to distortions, especially in older populations (Nashiro, Sakaki, Huffman, & Mather, 2013).

Data about daily activities were collected in real time using short (around 3 min long) telephone interviews. While using portable devices, in particular respondents' own smartphones, to collect activity reports has become a common practice in ESM studies, this data collection technique is problematic in the population of older adults (Mohadisududis & Ali, 2014). All respondents received two calls per day, at random (from a respondent's perspective) times between 8 am and 9 pm. The calls were scheduled to allow for a balanced representation of different times of the day for each person, as well as equally balanced for different weekdays. Each respondent provided accounts of, at minimum, nine activities within five days. Altogether, respondents provided reports on 1809 activities. Respondents were instructed not to pick up their phones if that would compromise their safety (e.g. when driving). Besides the ESM interviews, respondents provided detailed background information during face-to-face individual interviews. Prior to the beginning of the study, all respondents provided written informed consent. The study has received ethical clearance from the University of Warsaw Rector's Committee for the Ethics of Research Involving Human Participants (ethics approval number: 44/2019).

Activity-level measures

Respondents' answers to the question about what they were doing at a given time were coded verbatim. All activities were then recoded into broader activity categories in line with the guidelines provided in the Multinational Time Use Survey (MTUS; Fisher, Gershuny, & Gauthier, 2012) which is the largest multi-national harmonised database of time use surveys in the world. The final number of 20 categories is much lower than that of spontaneously reported activities, but reflects their diversity and uniqueness of activities in the sample of older adults. This required that some activities not typically coded as separate group in broad categorisations used in general surveys (such as MTUS), be preserved as distinct category. Those activities included visiting a cemetery and using medical services.

Presence of others recorded who else was present during an activity. The original variable describing detailed categories has been recoded as a measure differentiating between: (i) solitary activities, (ii) activities accompanied by a family member/a relative, and (iii) activities accompanied by a friend, or other person not living in the same household.

Reported activity enjoyment is assumed to represent positive emotions accompanying an activity, and it has been used in this role in earlier ESM studies (Csikszentmihalyi & Hunter, 2003; Heo et al., 2010) as well as in national-level time use studies (Stone et al., 2018). Enjoyment is the key subjective measure used in the study. Other subjective measures collected through the ESM included stress and perceived importance. In addition to that, the effort required to carry out an activity was reported. Activity importance was used to account for how meaningful the activity was. It is a simpler concept for respondents to grasp than meaningfulness, which typically requires complex measurement scales that may, nonetheless, yield biased results (Schnell, 2009). The measures of enjoyment and stress use 7-point scales, with the value 1 representing the lowest value of a given measure, and the value 7 standing for its highest value. Activity importance is coded using a 5-point scale, with 1 standing for completely unimportant and 5 standing for important (originally the scale was the opposite way around and has been recoded for the purpose of this study). Effort required by an activity is measured using a 7-point Likert scale, with 1 standing for no effort at all, and 7 standing for great effort.

Individual-level measures

Satisfaction with life in general is used to represent the global or evaluative wellbeing of individuals (Moreno-Agostino et al., 2020). It is measured on a scale between 1 and 7, in which 1 corresponds to very low satisfaction, and 7 to very high. Additional individual-level control variables are included in the analyses because of their potentially confounding effect on the association between activity enjoyment and global wellbeing. Covariates of individuals' wellbeing include basic demographic characteristics: age, and gender, as well as a set of additional socioeconomic indicators: individuals' health, income, marital status, parenthood status, and area of residence. Individuals' health, area of residence, and income represent opportunities for, or constraints on, engagement in activities, and may impact activity enjoyment. Older adults in poorer health, or with fewer resources, have limited activity options (Agahi & Parker, 2008; Alexandris, Barkoukis, Tsorbatzoudis, & Grouios, 2003; Angner, Gandhi, Williams Purvis, Amante, & Allison, 2013). Health also forms an independent and strong association with wellbeing (Fillenbaum & WHO, 1984). Recording of health originally used 5-point Likert scale answers. These are collapsed into three categories differentiating between those in (i) good health, (ii) neither good nor bad, and (iii) in poor health. For the original income variable, the following four categories were used: money is (i) not enough for basic needs such as food or bills; (ii) enough for basic needs, but not enough for anything else; (iii) enough for basic needs and occasionally for something else; and (iv) enough for basic needs and other things. These are recoded into a binary variable denoting: (i) income not enough, or only enough for basic purchases and (ii) income enough for purchases beyond basic ones. Individual's marital status and having children accounts for the potential family support. Loneliness negatively affects wellbeing in older adults, with its

effect being more pronounced in widowed individuals (Golden et al., 2009). Being married has been associated with greater wellbeing in older adults in some studies (Marks & Lambert, 1998), but not in others (Bennett, 2005). Interacting with one's own adult children was shown to contribute to individuals' satisfaction later in life (Pinquart & Sörensen, 2000). Lastly, area of residence has been associated with different time use patterns, with it also being closely linked to the intensity of the social life and wellbeing of older adults (Dahlberg & McKee, 2018). The original variable representing the area of residence is recoded into a binary variable differentiating between (i) urban and (ii) rural. Frequencies for all control variables are given in the [supplementary materials \(Table 3S\)](#).

In addition to the sociodemographic measures, individual variance in reported activity enjoyment was included in the individual-level models to account for emodiversity. It is computed for each respondent in terms of the square of the deviation of enjoyment values from an individual's mean enjoyment.

Analytical approach

First, the study looks at the frequency of different activities in the sample and provides mean levels of enjoyment, stress, and importance for those activities. Next, it examines the association between enjoyment and the other variables representing subjective assessment of an activity: stress, importance, and effort.

Multilevel mixed effects regression models are used to examine what makes an activity enjoyable. Reported activity enjoyment is used as the outcome variable at level one. Individual-level control variables at level two include: age, gender, self-reported health, subjective assessment of income, marital status, having children, and area of residence. Satisfaction with life in general is added to account for its possible top-down effect on experiential wellbeing. Activity-level explanatory variables include: type of activity, presence of others, reported stress, importance, and effort³. Eating is chosen as a reference category for activity type, as it was one of the most frequent activities, carried out by everyone regardless of their health status, and associated with a medium level of enjoyment (Figure 1). Model 1 includes only objective activity characteristics. Model 2 adds their subjective assessment. Model 3 accounts for the individual-level variance in the subjective parameters. In addition to the main three models, the [supplementary materials](#) include Model 4: a three-level model accounting for the activity-level variance in the reported levels of stress, importance, and effort.

The relationship between aggregated activity enjoyment from all activities and the global wellbeing of individuals is examined using a linear regression model. In the model, satisfaction with life in general is used as the outcome variable, with mean activity enjoyment being the explanatory variable. The following covariates are derived from activity data: individuals' variance in enjoyment (emodiversity), mean stress, mean importance, mean effort, and the number of activities with reported co-presence. Control variables include age, gender, self-reported health, marital status, having children, assessment of income, and area of residence.

Results

Descriptive analyses

The most frequently reported activities in the sample were different types of unpaid work (mostly housework and food

Table 1. Objective characteristics of activities.

a. Activity type stacked according to frequency in the sample		
	N	Percent
Unpaid work: housework, preparing food, repairs	310	17
Eating, drinking, snacking	270	15
Watching TV	195	11
Solitary games, hobbies, informal learning, reading	181	10
Passive leisure, resting, relaxation	151	8
Social life, conversations, celebrations	137	8
Walks, including walking a dog	91	5
Selfcare, washing, grooming	82	4
Shopping	67	4
Travel, getting ready to go out, coming back home	59	3
Paid work and related activities	45	2
Religious activities, prayers, mass attendance, and related	43	2
Outdoor work around the house, gardening	40	2
Pet and animal care	28	2
Childcare	27	1
Using medical services, medical appointments and related	26	1
Visiting a cemetery, grave care	18	1
Using personal and other services (except medical)	15	<1
Exercise, active leisure	14	<1
Adultcare	10	<1
Total	1809	
b. Co-presence during activity		
	N	Percent
Alone	963	53
With family member	690	38
With a friend/ acquaintance or someone else	154	9
Missing	2	<1
Total	1809	

preparation), and eating. The third most frequent and at the same time the most common leisure activity was TV viewing (Table 1a). The majority of activities were carried out alone (Table 1b).

As regards to the subjective activity assessment, the mean reported enjoyment in the sample was 5.01 (SD 0.12). The mean reported stress was 1.87 (SD 0.10); mean importance stood at 4.15 (SD 0.06), and mean effort was 2.06 (SD 0.11). This indicates that respondents on average enjoyed what they were doing, and perceived it as important. They tended to be involved in low-effort activities and experienced low stress. The mean value of satisfaction with life in general was 5.05 (SD: 0.09), and the distribution was close to normal. This is in line with reports on the overall high levels of satisfaction later in life (McAdams et al., 2012).

Activities that brought the greatest enjoyment were those fostering social or spiritual connectedness, such as religious activities, socialising, or childcare (Figure 1). Walks, and pet or animal care, complete the list of the five most enjoyable activities in the sample. The least enjoyable activities were errands, using medical services, and caring for adults. Those activities were also associated with high levels of stress. Overall, activities did not differ much in terms of their perceived importance.

Activity enjoyment was associated with all other subjective measures: stress, perceived importance, and effort (Figure 2). While the association between enjoyment and stress, or enjoyment and importance were linear, the association between enjoyment and effort was U-shaped implying that the least and most intense activities in terms of effort were also the most enjoyable.

Multilevel analyses

Multilevel linear models examined the covariates of activity enjoyment, accounting for individual-level and activity-level

variables (Table 2). Activities having the greatest positive effect on the momentary wellbeing of older adults were roughly the same as outlined in the descriptive analyses; that is religious practice, childcare, socialising, and walks. Least enjoyable activities also remained unchanged and included adultcare, using medical services, and shopping. Regardless of the type of activity, it was enjoyed more if a friend or an acquaintance (often a neighbour) was present. The co-presence of a family or household member, which was far more common in the data than the co-presence of friends or acquaintances, did not affect the activity enjoyment compared to activities carried out alone.

All subjective measures were significantly associated with activity enjoyment. Activities seen as more important brought greater enjoyment – a one-point increase in importance was associated with a nearly 0.5 point increase in enjoyment. Conversely, experiencing higher levels of stress was linked with lower enjoyment. The association between the level of effort required to carry out a given activity and derived enjoyment was curvilinear. Activities requiring the least and most effort brought the greatest joy. It is noteworthy that there was no single dominant category among the most effort-intensive activities in the dataset. They included a broad scope of activities including, among others: learning a foreign language, paid work, games and hobbies, physical exercise, food preparation, repairs, and childcare. In other words, it is not the case that only a certain type of effort (e.g. cognitive or physical) was linked with greater enjoyment.

Noteworthy, the effects of some activities such as passive rest and games/hobbies/reading, became significant when subjective characteristics were added to the model (Model 2 and Model 3). These are quite particular activities as they are typically rather enjoyable for older adults but not for younger individuals (Fortuijn et al., 2006). They also do not seem to be seen as important, as their score on this dimension is below average for this sample (Figure 1). Indeed, when importance is removed from the model, their effects become non-significant again (supplementary material, Table 4S).

As regards individual-level variables, those in poor health report lower enjoyment while holding all else constant. As opposed to that, higher satisfaction with life in general was positively associated with activity enjoyment in all models, with its effects remaining largely unchanged, including in Model 3 which accounted for individual-level variance in the subjective activity assessment. The significant effect of satisfaction with life in general may be indicative of its top-down influence on momentary wellbeing. Other statistically significant individual-level variables included marital status and income. Single individuals reported higher average enjoyment levels and so did those with lower income. Women reported higher enjoyment in Model 1, yet this effect became non-significant in the other models which was due to the inclusion of perceived importance (see Table 4S in the supplementary material).

Table 5S in the supplementary material presents an additional three-level multilevel model (Model 2S) which was run to account for the activity-level variance in subjective characteristics. The effects of the subjective assessment remained virtually unchanged compared to the two-level models.

Individual-level analyses

Individual-level linear regression models showed a negative association between both average and poor health and

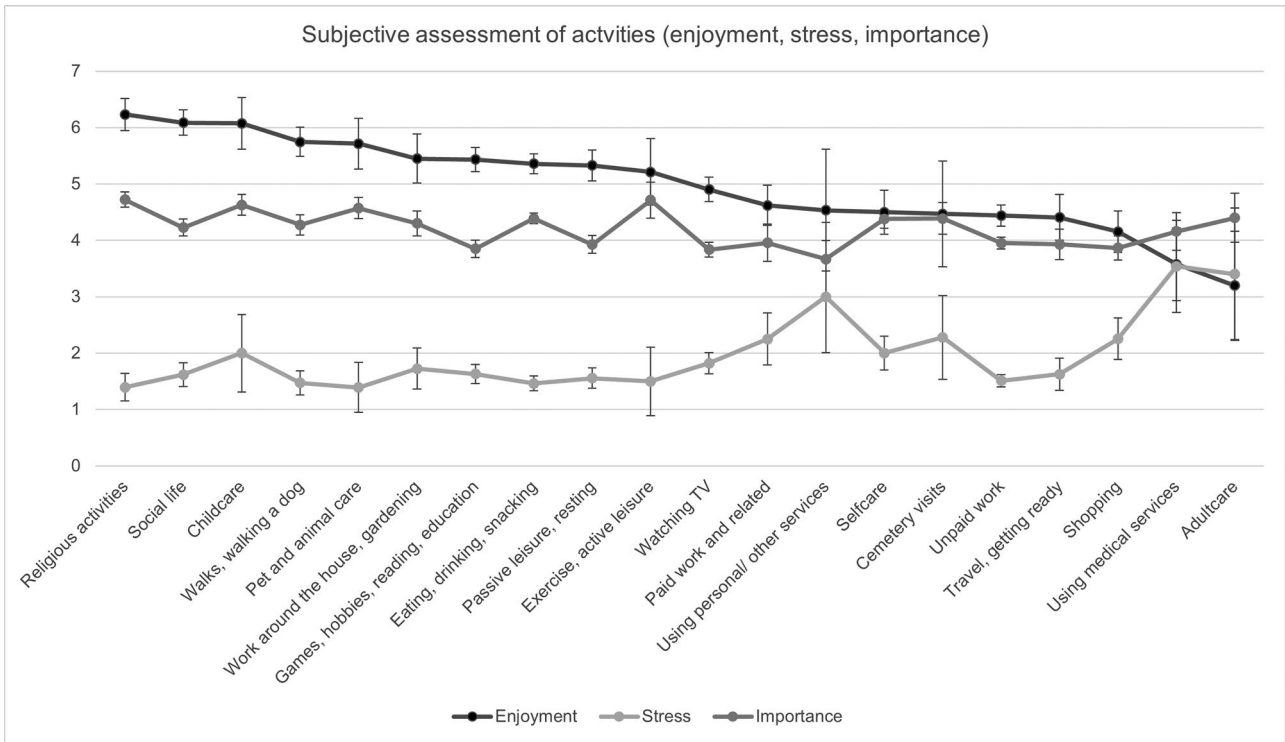


Figure 1. Mean enjoyment, importance, and effort by activity. Activities are ranked by enjoyment level. Note: Error bars represent CI 95%.

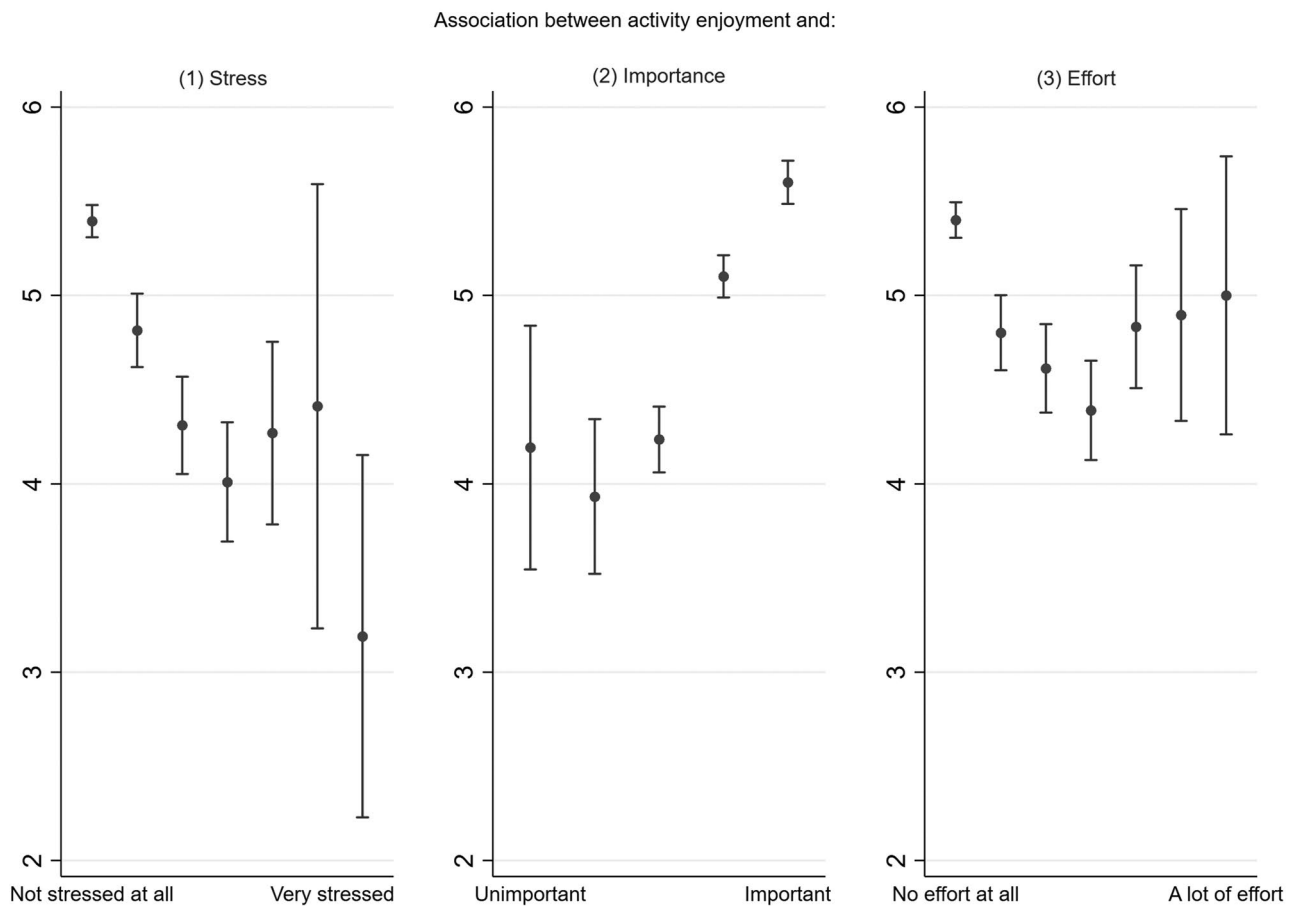


Figure 2. Association between selected subjective characteristics of an activity. Note: Error bars represent CI 95%.

satisfaction with life in general (Model 4, Table 3). None of the other individual-level characteristics were associated with the outcome variable. As regards activity-related measures, the

mean enjoyment showed a positive association with global wellbeing, whereas the mean importance had a negative effect. Variance in enjoyment, while falling under the threshold for

Table 2. Multilevel linear two-level models with activity enjoyment as outcome variable.

	Model 1	Model 2	Model 3
	Coef. (SE)	Coef. (SE)	Coef. (SE)
Sex (ref. male)			
Female	0.29* (0.12)	0.19 (0.10)	0.18 (0.11)
Age	0.00 (0.01)	0.01 (0.01)	0.01 (0.01)
Health (ref. good)			
Neither good nor bad	-0.12 (0.14)	-0.11 (0.12)	-0.10 (0.13)
Poor	-0.61** (0.21)	-.389* (0.18)	-0.45* (0.19)
Marital status (ref. single)			
Married	-0.97** (0.31)	-0.79** (0.27)	-0.85** (.279)
Widowed	-0.96** (0.31)	-0.84** (0.27)	-0.91** (.281)
Divorced/Separated	-1.02** (0.38)	-0.98** (0.32)	-0.92** (.341)
Having children (ref. yes)			
No	-0.24 (0.30)	-0.12 (0.26)	-0.13 (0.27)
Other (e.g. child died)	-0.53 (0.66)	-0.55 (0.57)	-0.92 (0.60)
Income (ref. enough only for essentials)			
Enough for purchases beyond essential	-0.42** (0.13)	-0.29* (0.12)	-0.30* (0.12)
Area of residence (ref. rural)			
Urban	-0.18 (0.12)	-0.17 (0.11)	-0.197 (0.11)
Activity (ref. eating)			
Selfcare	-0.74*** (0.18)	-0.55*** (0.16)	-0.54*** (0.16)
Paid work	-0.58* (0.25)	-0.12 (0.24)	-0.06 (0.25)
Unpaid work/ housework	-0.812*** (0.12)	-0.46*** (0.12)	-0.44*** (0.12)
Shopping	-1.22*** (0.19)	-0.61*** (0.18)	-0.61*** (0.18)
Using services (non-med.)	-0.903* (0.37)	-0.03 (0.34)	-0.01 (0.35)
Using medical services	-1.74*** (0.29)	-0.99*** (0.28)	-1.00*** (0.28)
Pet and animal care	0.43 (0.28)	0.49 (0.26)	0.55* (0.26)
Childcare	0.97*** (0.29)	1.15*** (0.27)	1.09*** (0.27)
Adultcare	-2.37*** (0.49)	-2.00*** (0.46)	-2.02*** (0.50)
Religious activities	0.89*** (0.23)	0.72*** (0.21)	0.74*** (0.21)
Walks, walking the dog	0.40* (0.17)	0.60*** (0.16)	0.61*** (0.16)
Social life	0.66*** (0.15)	0.800*** (0.14)	0.81*** (0.14)
Passive leisure, rest	0.12 (0.14)	0.31* (0.13)	0.32* (0.13)
Games and hobbies	0.23 (0.14)	0.50*** (0.13)	0.51*** (0.12)
Watching TV	-0.30* (0.13)	0.04 (0.12)	0.06 (0.12)
Travel and related	-0.80*** (0.20)	-0.39* (0.19)	-0.38* (0.19)
Co-presence (ref. alone)			
A family member	0.08 (0.09)	0.11 (0.08)	0.12 (0.08)
A friend/ acquaintance	0.32* (0.14)	0.39** (0.13)	0.42** (0.13)
Satisfaction with life	0.12* (0.05)	0.12** (0.04)	0.10* (0.05)
Effort		-0.50*** (0.00)	-0.52*** (0.09)
Effort squared		0.07*** (0.01)	0.08*** (0.01)
Importance		0.48*** (0.04)	0.48*** (0.04)
Stress		-0.28*** (0.03)	-0.27*** (0.03)
Intercept	5.84*** (0.83)	4.02*** (0.74)	4.35*** (0.78)
Variance (individual)	0.64 (0.05)	0.54 (0.04)	0.42 (0.09)
Effort			0.07 (0.04)
Importance			0.07 (0.03)
Stress			0.15 (0.03)
Bryk/Raudenbush Adj R2 (activities):	0.18	0.29	0.29
Bryk/Raudenbush Adj R2 (individuals)	0.33	0.53	0.53
ICC	0.19 (0.02)	0.16 (0.02)	0.12 (0.05)
Activities	1774	1763	1763
Individuals	199	199	199

Notes: The model controlled for all types of activities but only activities with significant effects were preserved in the model. Model 3 controls for individual-level variance in subjective activity characteristics. Standard errors in parentheses *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

reporting significance at 0.05 level in the table, was significant at 0.1 level. While a positive effect of the mean enjoyment was expected, the negative effect of the mean importance comes as a surprise. To investigate this finding, an additional model was run using variance in perceived activity importance instead of the mean importance. The reason for doing so was that typically most activities in the sample received relatively high importance scores, which means that individuals did not differentiate much between the fairly enjoyable and highly enjoyable activities in terms of their importance. There is virtually no research on how older adults prioritise their activities and whether valuing some activities significantly more than others may affect their overall wellbeing. Yet, importance formed a significant association with enjoyment in the multilevel models,

and perhaps having some highly important and enjoyable experiences that stand out from the other daily activities may make life feel richer.

In the additional model (Model 5, Table 3) the individual-level variance in importance formed a positive association with the global wellbeing of individuals. The positive effect of enjoyment on wellbeing remained significant. In a model including both the mean importance and the variance in importance, both variables had non-significant effects (results not shown) suggesting their effects are opposite and cancel each other out. Overall, the models in Table 3 suggest that having many enjoyable activities, and seeing some activities as more meaningful than others, or having clear priorities regarding different activities, contributes to better global wellbeing.

Table 3. Individual-level covariates of satisfaction with life in general.

	Model 4	Model 5
	Coef. (SE)	Coef. (SE)
<i>Individual's characteristics</i>		
Sex (ref. male)		
Female	0.02 (0.17)	0.01 (0.17)
Age	-0.01 (0.01)	-0.01 (0.01)
Health (ref. good)		
Neither good nor bad	-0.52** (0.20)	-0.51** (0.20)
Poor	-1.40*** (0.29)	-1.36*** (0.29)
Marital status (ref. single)		
Married	-0.13 (0.46)	-0.11 (0.46)
Widowed	-0.19 (0.45)	-0.20 (0.46)
Divorced or separated	0.09 (0.55)	0.04 (0.55)
Having children (ref. yes)		
No children	-0.14 (0.42)	-0.12 (0.42)
Other, e.g. a child died	-1.53 (0.92)	-1.71 (0.93)
Income (ref. not enough or enough only for essentials)		
Enough for purchases beyond essentials	0.17 (0.19)	0.21 (0.19)
Area of residence (ref. rural)		
Urban	0.11 (0.18)	0.08 (0.18)
<i>Aggregated activities' characteristics</i>		
Mean activity enjoyment	0.33** (0.11)	0.27** (0.10)
Variance in activity enjoyment	0.10 (0.06)	0.08 (0.06)
Mean stress during activities	0.01 (0.14)	-0.01 (0.14)
Mean activity importance	-0.39* (0.17)	-
Mean effort	-0.10 (0.11)	-0.15 (0.12)
Number of episodes with reported co-presence	0.03 (0.04)	0.03 (0.04)
Variance in activity importance	-	0.32* (0.15)
Intercept	6.03*** (1.34)	4.75*** (1.29)
Adjusted R2	0.27	0.26
Individuals	199	199

Notes: Missing values are preserved to maintain the sample size, but not reported in the models. Standard errors in parentheses *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Discussion

There is strong evidence regarding the relationship between daily activities and the subjective wellbeing of older adults. However, thus far, most studies have focused on a limited set of activities: primarily physical activity and leisure. This research has employed a bottom-up approach and has demonstrated that, first of all, both objective and subjective activity characteristics affect activity enjoyment, and that, second, accumulated mean enjoyment from all activities is positively associated with the global wellbeing of individuals or satisfaction with life in general. It is noteworthy that both of these associations are significant even after controlling for individuals' health status and other sociodemographic characteristics. The greatest enjoyment was associated with spiritual or religious practice, socialising, and childcare, while leisure and physical activity were moderately enjoyable. Adultcare, medical appointments and instrumental activities of daily living, such as housework, travel, and shopping, were the least enjoyable, and were associated with increased stress. The association between the type of activity and the levels of enjoyment largely did not change in the multilevel models (using eating as the reference), including when accounting for the activity-level variance in the subjective assessment. This implies certain universality with regard to what older adults in the sample found enjoyable.

This study highlights the relationship of enjoyment with other subjective activity characteristics: stress, importance, and effort. While negative association with stress does not come as a surprise, the curvilinear association with effort is worthy of attention. Results suggest that activities that challenge older adults may have a potential to improve their wellbeing, perhaps by increasing their sense of self-efficacy. As lowest-effort activities are also more enjoyable, these findings provide evidence for earlier claims that combining low and high effort activities may promote wellbeing in later life (Oerlemans et al., 2011). Lastly, the role of

perceived activity importance for momentary and global wellbeing is also worth noting, though certainly this topic has been least explored. On the activity level, greater importance was associated with higher enjoyment, yet on the aggregated level, greater variance in importance was positively associated with better wellbeing, whereas assigning high importance to many activities had an opposite effect. These findings may suggest that, for example, assigning greater importance to more enjoyable activities may have a positive effect on the overall wellbeing, but seeing all daily activities as highly important does not. The topic is worth further research which may investigate how daily activities are prioritised by older adults as well as to explain the processes underlying the associations between activity importance, enjoyment, and satisfaction with life in general.

Limitations

This study has its limitations. It has adopted a bottom-up perspective on the relationship between momentary and global wellbeing, but the actual relationship is likely more complex. Longitudinal studies have generally supported the claim that the relationship between activities and wellbeing is reciprocal (Adams et al., 2011). While the findings suggest that the association between experiential wellbeing may be bidirectional, the presented analysis is cross-sectional and does not allow determination of whether or not some personal characteristics, such as how a positive outlook on life may affect activity enjoyment, or if having enjoyable routines would result in overall greater satisfaction with life. Likewise, it is not possible to determine if perceived activity importance precedes enjoyment, or if activities that bring joy appear as more important to older adults. Differentiating between these two directions of causality would lead to substantially different implications, but it is not possible to make definitive statements with the present data.

While this study makes no claims of being representative for the entire population of older adults, the sample size in terms of the number of respondents was limiting. It needs to be noted that the sample is large compared to other studies using the experience sampling method. Most resort to smaller samples because of the ESM's substantial organisational and personal burden for respondents. Nonetheless, a larger sample would allow for more detailed analyses and yield lower measures of uncertainty for derived estimates, especially on the individual level. Relatedly, it would be worthwhile to investigate the role of emodiversity for overall wellbeing using a larger sample of individuals.

The fact that a share (21%) of the sample completed their reports after the lockdown was introduced is unlikely to have implications for the associations reported in the study. There was no difference in the mean enjoyment or satisfaction with life in the sample depending on when the data was collected. That is likely because lockdown was not long-lasting at the time of the study. An interesting direction for future studies would be to investigate whether long-term isolation could impact individuals' valuation or enjoyment of different activities.

Implications

Having in mind the described limitations, this study has some practical implications. With regard to the possible scope of future research it is advisable to investigate the effects of a broader range of activities, not only physical activity or leisure, on the wellbeing of older adults. In particular, it seems that there are many other ways to boost wellbeing, not just by being physically active, which is often not possible for older adults with functional impairment. Some earlier studies have pointed out that, with regard to physical health, certain non-physical activities provide an 'important point of leverage for helping older adults forestall decreases in physical activity' (Talmage et al., 2020, p.61). Relatedly, it seems that enjoyment derived from certain activities might boost one's mood in a similar way that exercise does.

The second implication concerns the importance of the subjective aspects of activities for the wellbeing of older adults and the need to record such information in studies on activities. This is not a common practice in national time use surveys, and targeted studies using the ESM might be a better option. Using a broader range of affective measures might yield new results. Likewise, the topic of prioritising certain activities over others and its implications is worth investigating. This study showed that more enjoyable activities are as also seen as more important, and that greater variance in importance may provide additional benefits to wellbeing, beyond accumulated enjoyment. That suggests that prioritising highly enjoyable activities, or at least perceiving them as the most important part of daily routine, may boost individuals' global wellbeing.

One of the key findings of the study is that, as it seems, even in the case of loss of health (or being in poor health), one can still derive enjoyment from daily activities, and this enjoyment is likely to contribute to their overall wellbeing. There are also ways to boost enjoyment on an activity level, for example by carrying out an activity in the presence of friends, or by interweaving challenging and restful activities.

This study takes a new perspective on one of the major topics in gerontological theory: that is the link between what older adults do during the course of their day and their global wellbeing. It highlights the role of activities that are not typically investigated in this context, and points to the complex

associations between individuals' wellbeing and their daily experiences. This includes looking at the subjective meaning of different activities and how it may affect individuals' self-perception or foster a sense of connectedness and belonging.

Notes

1. Studies using ESM are burdensome to respondents, which results in the low overall response rate. The recruitment process was also severely impacted by the beginning of the COVID-19 pandemic and the national lockdown introduced in Poland in March 2020.
2. The most prevalent reason for refusal was a concern about sharing one's mobile phone number with strangers (recruiters). Many individuals worried that their number would later be passed on to marketing companies. The main reason for dropping out of the study was due to annoyance with receiving daily calls and with the questions being repetitive (the same set of questions every day). Few individuals resigned due to health or personal reasons.
3. While the fieldwork overlapped with the introduction of the pandemic and the national lockdown in Poland, activity enjoyment did not significantly differ with the month of the study; thus, the month was not included in the models. It is noteworthy that respondents reported elevated stress levels, e.g. when watching news about COVID-19, and sometimes their fears were explicitly expressed in their *verbatim* responses.

Acknowledgements

I am deeply grateful to all Respondents, many of whom were frail and at an advanced age, without whose dedication and commitment this study would not have been possible. I also thank three anonymous Reviewers whose comments helped improve this manuscript.

Disclosure statement

No potential conflict of interest was reported by the authors.

Ethics

The study received ethics clearance from the University of Warsaw Rector's Committee for the Ethics of Research Involving Human Participants. Ethics approval number: 44/2019. Written informed consent was obtained from all respondents.

Funding

This work was supported by the European Union's Horizon 2020 Research and Innovation Programme under the Grant Agreement No 840113.

ORCID

Ewa Jarosz  <http://orcid.org/http://orcid.org/0000-0001-9455-0334>

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