Life as a Flourisher: An Experience Sampling Study Exploring the Association between Momentary Affect and Hedonic and Eudaimonic Behavior in Daily Life

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Abstract

Background: While hedonia and eudaimonia are frequently researched constructs in psychology, past research has either considered them as types of well-being or predominantly focused on motives and orientations of how individuals *typically* live. Such research, however, departs from eudaimonia's initial definition as being something that is *done* and not felt, and lacks practical relevance. To understand our behaviors' role in the path to mental well-being, the present study investigated actual hedonic and eudaimonic behaviors, positive and negative momentary affect, and their association in flourishers' and non-flourishers' daily lives.

Method: This Experience Sampling Method study, had a sample of 25 flourishers and 27 non-flourishers with a mean age of 32 and a majority of female participants (67.3%). Via an application on their smartphones, they reported on their behaviors and momentary affect levels for 12 consecutive days, three times each day. Generalized Linear Mixed Models and Linear Mixed Models were used to analyze the association between flourishing, momentary affect, and hedonic and eudaimonic behaviors.

Results: While flourishers were revealed to experience considerably higher positive and lower negative momentary affect over the course of the study, they were not found to engage notably more or less frequently in any activity type than non-flourishers. Whereas behaviors that were simultaneously hedonic and eudaimonic yielded the greatest benefits for momentary affect, behaviors that were neither hedonic nor eudaimonic were associated with the poorest mood in both flourishers and non-flourishers. However, compared to non-flourishers, flourishers had notably lower negative affect levels after engaging in behaviors that were neither hedonic nor eudaimonic.

Conclusion: These findings emphasize the importance of finding a balance in engaging in both hedonic and eudaimonic behaviors for their proposed individual benefits. Moreover, they underline that the question of whether best to pursue hedonia or eudaimonia might be oversimplified and the answer more nuanced and complicated. Future Experience Sampling studies are needed to further investigate the specific role of hedonic and eudaimonic behaviors in flourishers' and non-flourishers' daily lives.

Introduction

The promotion of our mental health and well-being is increasingly gaining attention and importance in today's society and health care (e.g., Forsman et al, 2015; Cieslik, 2014; WHO, 2013). Not least because of its benefits to individual health and society it became a central concern to governments worldwide (WHO, 2017). *Flourishing*, i.e. experiencing optimal levels of mental well-being (Keyes, 2007) has been associated with benefits such as better physical health (Park et al., 2016; Keyes, 2002, 2004, 2005a, 2005b, 2007; Lyubomirsky et al., 2005; Howell et al., 2007; Okely et al., 2017; Lamers et al., 2012; Keyes & Grzywacz, 2005), longevity (Keyes & Simoes, 2012; Fuller-Thomson et al., 2020; Chida & Steptoe, 2008; Veenhoven, 2008), lower incidences of mental disorders (Schotanus-Dijkstra et al., 2016a; Keyes et al., 2020; Grant et al., 2013; Lamers et al., 2015), and heightened resilience to challenging and stressful experiences (Fredrickson & Joiner, 2002; Trompetter et al., 2017) as well as a healthier lifestyle (Leibow et al., 2021; Sofija et al., 2020) and higher presence and productivity at work (Keyes, 2002, 2007). It therefore has been declared a "desirable condition that any community, cooperation, or government would want to protect or promote in its citizens" (Keyes et al., 2012, p. 104). Alarmingly, the majority of studies investigating the prevalence of flourishing found only or not even half of the general population to be flourishing in several countries (e.g., Hone et al., 2014; Schotanus-Dijkstra, 2016c; Keyes, 2002; Fonte et al., 2020; Karaś et al., 2014), although there are some exceptions (see Santini et al., 2020; Gilmour, 2014).

Accordingly, the field of positive psychology made it its vocation to understand and promote the factors that enable us to experience optimal levels of mental health and well-being, to thrive and flourish (Seligman & Csikszentmihalyi, 2000; Fredrickson, 2001). In investigating

the paths to mental health and well-being the field has taken two supposedly distinct but correlated approaches: the hedonic and the eudaimonic approach (Ryan & Deci, 2001; Thornsteinsen & Vittersø, 2019). Whilst there is general agreement that hedonia comprises subjective well-being and focuses on pleasure attainment and pain avoidance (e.g. Kahneman et al., 1999; Ryan & Deci, 2001) the concept of eudaimonia is still subject to much debate and in need of further clarification (e.g. Sheldon, 2018; Joshanloo & Weijers, 2019; Kashdan et al., 2008; Huta & Waterman, 2014; Vittersø, 2016). Its initial conceptualization, however, dates back to Aristoteles (2001), who determined it as the highest human good - not as a state of mind or outcome derived from certain activities but as these activities themselves. As such eudaimonia represents a virtuous life which focuses on meaning, authenticity, growth, and excellence (Huta & Waterman, 2014). The concept of *flourishing* as it was established by Keyes (2007) comprises both the hedonic and eudaimonic approach and thus offers a somewhat all-encompassing, holistic picture of well-being.

The Eudaimonic Activity Model

A large body of research in the field has investigated the benefits and risks of high and low hedonic and eudaimonic well-being (e.g. Joshanloo & Jovanović, 2021; Ryff et al., 2015; Zaslavsky et al., 2014; Sofija et al., 2020; Schwartz et al., 2011) as well as several factors that might enhance or diminish the two constructs (e.g. Cuignet et al., 2020; Houlden et al., 2018; Salavera et al, 2020; Eichstaedt et al., 2020; Lewis et al., 2013; Nelson et al., 2014). However, according to a recent, influential paper by Sheldon (2018), these prior studies made a crucial conceptual mistake and thereby deviated from Aristotle's initial definition of eudaimonia. Instead of understanding it as individuals' behaviors and ways of acting on their values, goals,

motivations, and orientations, contemporary positive psychology is accused of frequently mistaking eudaimonia for a psychological condition, feeling, or type of well-being. However, in line with its initial definition, eudaimonia should be understood as something that is *done* and not felt. Based on this critique, Sheldon (2018) developed a new model explaining the factors that enable us to flourish: the Eudaimonic Activity Model (EAM).

In line with Aristotle, the EAM proposes our behaviors to play a crucial role in the equation of mental health and well-being. As such, it distinguishes between the direct, hedonistic pursuit of pleasure and the indirect pursuit of well-being through eudaimonic actions. Specifically, it suggests flourishing to be achieved through a virtuous cycle in which individuals who engage in eudaimonic behaviors, have satisfying experiences. These satisfying experiences then both reinforce the engagement in eudaimonic behaviors itself but also enhance well-being. In contrast, the direct pursuit of pure pleasure and happiness, hedonia, is considered an ineffective path to long-term well-being (Sheldon, 2018; Joshanloo, 2020; Jia et al., 2021) i.e., flourishing. Thus, what distinguishes flourishers from those not flourishing might be the way they approach mental health and well-being. Flourishers are suggested to flourish because they take the indirect path through eudaimonic behaviors, striving to become the best possible version of themselves (Sheldon et al., 2019). Instead, those not flourishing are thought to fail in accomplishing the optimal state of well-being as they try to take short-cuts, i.e., they pursue the direct enhancement of pleasure and well-being through hedonic behaviors (Sheldon et al., 2019). In the end, the path we take, and the nature of our behavior might be crucial to the achievement and maintenance of flourishing.

Shifting the Focus to Behavior

Although several studies (Zuo et al., 2017; Schueller & Seligman, 2010; Steger et al., 2008; Huta & Ryan, 2010; Giuntoli et al., 2020; Tončić & Anić, 2015; Ortner et al., 2018; Peterson et al., 2005; Richter & Hunecke, 2021; Peiró et al., 2019; Chan, 2009; Park et al., 2009; Ruch et al., 2010) have investigated the relation between mental health related constructs and some form of hedonic and eudaimonic pursuits, the findings are inconsistent and their quality and methodology have been questioned for the three following reasons (Henderson et al., 2013a; Vittersø & Søholt, 2011; Henderson et al., 2013b). First, instead of focusing on participants' *actual* behaviors as proposed by the EAM, prior research instead investigated participants' motives or orientations of how they *typically* act and assumed this to reflect their actual behaviors (e.g., Huta & Ryan, 2010; Schueller & Seligman, 2010; Tončić, & Anić, 2015; Peterson et al., 2005; Richter & Hunecke, 2021; Park et al., 2009; Giuntoli et al., 2020; Zuo et al., 2017; Ortner et al., 2018). For instance, a commonly used measure in these studies, the Orientations to Happiness (OTH) Scale (Peterson et al., 2005), requires participants to rate to what extent example behaviors are characteristic of their typical behaviors. As it is, however, difficult to assume that this will truly reflect actual behaviors (Henderson, et al., 2013a) and prior research found a poor connection between the OTH and hedonia (Henderson et al., 2013b; Vittersø & Søholt, 2011) the accuracy and validity of such studies has been questioned. Furthermore, since actual behaviors are tangible, they could be prescribed in case they would prove helpful and are thus more practically useful than motives (Henderson et al., 2013a). Therefore, in line with the EAM, a shift in focus from motives to actual behaviors has been demanded (Henderson et al., 2013a). Second, the few studies that focused on actual behavior

failed to consider their subjective, idiosyncratic, and inclusive nature: individuals can have differing perceptions of the same activity (Huta & Ryan, 2010; Henderson et al., 2013a) as well as activities might be experienced as both hedonic and eudaimonic simultaneously (Zuo et al., 2017; Henderson et al., 2013a). For instance, while person A might experience gardening as enjoyable and relaxing, person B might not enjoy it at all but feel a sense of fulfillment in the process. Person C in contrast not only enjoys it but simultaneously finds meaning in taking care of the garden. Third, prior studies mostly used preset lists comprising only a small number of behaviors participants could choose from thus failing to incorporate possible other activities not mentioned on the list.

A study by Henderson and his colleagues (2013a) has addressed these shortcomings by investigating actual activities as well as allowing participants to rate any activity as either hedonic or eudaimonic, or hedonic and eudaimonic simultaneously. Furthermore, behaviors not mentioned on their preset list could be added manually. In their four days long daily diary study with a sample of 105 participants, Henderson and his colleagues (2013a) explored the relations between mental health and hedonic and eudaimonic behavior. However, contrary to the EAM, they found both hedonic and eudaimonic activities to be associated with mental health related constructs and thus proposed each pursuit to uniquely contribute to an overall sense of well-being. Specifically, they theorized that eudaimonic activities rather function as a means to an end and found them to be related to long-term goals, morals, values, or spiritual beliefs. In contrast, hedonic activities were thought to be purely engaged in for the positive momentary affect they elicit and the negative momentary affect they reduce, thus functioning as an immediate emotion regulation. However, although the study successfully addressed the aforementioned pitfalls, it

was only of short duration and heavily relied on participants' memories asking them to recollect their activities from the prior day on the next morning. Furthermore, Henderson and his colleagues used Diener's flourishing scale (Diener et al., 2010) which arguably (Schotanus-Dijkstra et al., 2016b) misses to paint the whole picture of mental well-being as done by the holistic concept of *flourishing* defined by Keyes (2007).

Further research therefore has to investigate the relation between hedonic and eudaimonic behaviors and positive and negative momentary affect in flourishers. While preserving the positive aspects of Henderson et al.'s (2013a) prior research, the current study adds to the field by specifically considering the momentary subtle fluctuations that lie in the nature of our emotions and behaviors as they occur in everyday life (Myin-Germeys et al., 2018). This is only possible by means of the Experience Sampling Method (ESM) (Csikszentmihalyi & Larson, 1987). ESM is "a method of data collection in which participants respond to repeated assessments at moments over the course of time while functioning in their natural settings" (Scollon et al., 2003, p.5). As such it is distinctively suited to investigate temporal associations between experiences, behaviors, affects, and contexts (Myin-Germeys et al., 2018) as it repeatedly inquires individuals in their natural environment over a period of time (Scollon et al., 2003). It thereby allows "capturing the film rather than a snapshot of daily life reality" (Myin-Germeys et al., 2009, p. 1539). Due to technological developments such as smartphones and ESM applications, the reliability and possibilities of modern ESM studies have improved significantly (van Berkel et al., 2017). Thus, like no other method, modern ESM has the potential to get an insight into individuals' everyday lives and specifically into how they feel, behave and think in different contexts over time. Nevertheless, the large majority of studies in positive

psychology still investigated its concepts of interest only at the stable trait level relying on traditional cross-sectional or long-term longitudinal data (Anderson & Fowers, 2020). This, however, makes it impossible to assess the subtle fluctuations in emotions, behaviors, and cognitions in our everyday lives that might be so powerful. Although a few of the aforementioned studies did make use of ESM, none of them at the same time focused on actual hedonic and eudaimonic activities, flourishing, and the relation of these concepts with the subtle fluctuations in momentary affect. To my best knowledge, this is therefore the first study offering an insight into flourishers' everyday behaviors and affect in line with Sheldon's EAM and Keyes's all-encompassing concept of flourishing.

The Present Paper

The present study aimed to explore the role of hedonic and eudaimonic behaviors and positive and negative momentary affect in flourishers' and non-flourishers' daily lives. It was specifically considered that the experience of behavior is subjective and that an activity can be perceived as simultaneously hedonic and eudaimonic but also as neither hedonic nor eudaimonic. The present study examined 1) how positive and negative momentary affect fluctuates over time in flourishers and non-flourishers, 2) how frequently hedonic, eudaimonic, simultaneously hedonic and eudaimonic, and neither hedonic nor eudaimonic behaviors are engaged in over time in flourishers and non-flourishers, and 3) how the four behavior types are associated with momentary affect in the daily life in general as well as in flourishers and non-flourishers. As this was the first study to specifically investigate flourishers' daily lives and affect while considering the subjectivity of behaviors and the possibility that they can be experienced as simultaneously hedonic and eudaimonic but also neither, the nature of most inquiries was exploratory. However,

based on prior research (Henderson et al., 2013a; Huta & Ryan; Tončić & Anić, 2015; Giuntoli et al., 202) and the EAM (Sheldon, 2018) also two specific hypotheses were established. Firstly, it was hypothesized that flourishers engage notably more frequently in eudaimonic and less frequently in hedonic behaviors when compared to non-flourishers. Lastly, hedonic behaviors were expected to be associated with higher positive and lower negative affect levels compared to eudaimonic behaviors.

Methods

The present study was approved by the University of Twente Ethics Committee and registered in The Netherlands Trial Register (no. 210215). Before participating in this study, all participants gave their online informed consent.

Participants and Procedure

Participants were recruited using convenience sampling via social media (LinkedIn, Instagram, WhatsApp, and Facebook) as well as an email list with those interested in positive psychological research. Participants had to be at least 18 years old, German- or English-speaking, and own a smartphone. After being informed about the topic and duration of the study and expressing their willingness to participate, participants registered with their email address and a password. On the first day, all participants received an email with further information and instructions on how to download and operationalize The Incredible Intervention Machine (TIIM) app which was used to collect the experience sampling data. By logging into the TIIM app, the baseline questionnaire assessing demographics and levels of mental well-being i.e., flourishing became available.

Experience Sampling Method

In this ESM study, a random sampling schedule was adopted. For 12 consecutive days participants were inquired about their positive and negative momentary affect and hedonic and eudaimonic behaviors. Based on guidelines and recommendations for ESM studies (van Berkel et al., 2017; Eisele et al., 2020), between 9 am and 11 pm participants received three push notifications each day (thus, in total 36 inquiries) on their own smartphones asking them to complete a brief survey (ca. 2 minutes) via the TIIM application. Notifications expired after forty-five minutes, and the inter-notification time was set to a minimum of two hours. The data collection took place between the 28th of April and the 12th of May 2021 with all participants participating from day one.

Measurement Instruments

Mental well-being

Participants' mental well-being was assessed with the 14-item MHC-SF developed by Keyes and his colleagues (2008). The questionnaire consists of three subscales: emotional well-being (e.g., during the past month, how often did you feel happy?), social (e.g., during the past month, how often did you feel that people are basically good?), and psychological well-being (e.g., during the past month, how often did you feel that your life has a sense of direction or meaning to it?). Answer categories range from 0 (*never*) to 5 (*every day*), with higher mean scores indicating higher mental well-being. To be characterized as flourishing, an individual had to score a 4 or 5 on at least one emotional well-being item and 6 psychological or social well-being items. The instrument has been shown to have good psychometric properties (Keyes,

2005c, 2006; Keyes et al., 2008; Lamers et al., 2011; Westerhof & Keyes, 2010) which were also proven with the baseline data of the present study ($\alpha = .87$).

Momentary affect

Participants' momentary affect was assessed using a 10-item instrument developed by Wichers and her colleagues (2011) which is based on the Positive and Negative Affect Scale (PANAS) questionnaire (Watson et al., 1988) and previous ESM studies (Jacobs et al., 2007, Myin-Germeys & van Os, 2007; Peeters et al., 2006; Wichers et al., 2009; Jans-Beken et al., 2019). The questionnaire consists of two subscales: positive momentary affect (e.g. cheerful) and negative momentary affect (e.g. anxious). On a 7-point Likert scale ranging from 0 (*not at all*) to 6 (*very*) participants rated to what extent they felt "cheerful, content, insecure, lonely, energetic, anxious, low, enthusiastic, guilty, and suspicious" at the moment of the inquiry. Higher sum scores on the two subscales indicate higher momentary positive and negative affect. The instrument has been shown to have good psychometric properties (Wichers et al., 2011) which were also proven over the course of the present study with a mean Cronbach's alpha of .87 for positive affect and .79 for negative affect.

Hedonic and eudaimonic activities

Participants' hedonic and eudaimonic behaviors were assessed with an advanced question logic using an adapted version of the Hedonic and Eudaimonic Motives for Activities (HEMA) scale (Huta & Ryan, 2010). Instead of measuring motives for behaviors the two items in the present study measured participants' actual, objective behaviors. With the first item representing hedonia and the second item representing eudaimonia, participants were asked whether or not the activities they engaged in since the last inquiry were "enjoyable; pleasurable, fun, and/or

relaxing" and whether they "allowed you to do what you believe in, use the best in yourself, pursue excellence or a personal ideal, and/or develop a skill, learn, or gain insight into something". A positive answer to the hedonic item, was followed by a further open inquiry into the specific behavior participants engaged in by asking "What did you do?". In case of a negative answer, participants were directly navigated to the eudaimonic item. A positive answer was again followed by a further open inquiry into the activity. In case of a negative answer, no further questions were asked.

Data Analysis

All analyses were performed using the Statistical Program for Social Sciences (SPSS) version 26. First, the dataset was cleaned from missing reports and restructured into long format. Based on recommendations by Conner and Lehman (2012), participants with a total response rate of less than 40% were excluded from the analysis. To be able to differentiate between hedonic and eudaimonic activities as well as activities that were rated as both hedonic and eudaimonic simultaneously and those neither hedonic nor eudaimonic, four categories were established under the name "activity type". Furthermore, participants were categorized into flourishers and non-flourishers.

Participants' demographics were analyzed using descriptive statistics. Differences in demographics between completers and dropouts as well as between flourishers and non-flourishers were investigated using independent *t*-tests and $\chi 2$-tests. To fully account for the hierarchical and nested structure of the ESM data a series of Generalized Linear Mixed Models (GLMM) and Linear Mixed Models (LMM) with a first-order autoregressive covariance structure (AR1) and a homogenous variance was conducted. First, positive and negative

momentary affect levels in the total sample as well as in flourishers and non-flourishers over the course of the study were explored with LMMs. Positive and negative momentary affect were separately entered as dependent variables and time and flourishing were set as factors. Both factors and their interaction term were specified as fixed effects in the model. Second, the frequency of engagement in hedonic and eudaimonic behaviors in the total sample as well as in flourishers and non-flourishers over time was explored with a GLMM. To be able to include activity type as a categorical dependent variable into the model, dichotomous dummy variables were created for the four different activity types and separately entered as target variables into the model. Time and flourishing were set as factors and in addition to their interaction term both specified as fixed effects in the model. $\chi 2$-tests were used to check for differences in the frequency of engagement in the four activity types between flourishers and non-flourishers. Third, the association between momentary affect and activity type in flourishers and non-flourishers over time was investigated with LMMs. Positive and negative momentary affect were separately entered as dependent variables and the separate dummy code variables for activity type, and flourishing were set as factors. The factors and their interaction term were specified as fixed effects in the model. Lastly, to gain a more detailed insight into flourishers' and non-flourishers daily lives, the associations were again examined at the example of two individual cases. The selection of the example cases was based on a similar and high response rate, and mental well-being levels. Specifically, total scores of the MHC-SF were used to select a flourisher with a high level of mental well-being and a non-flourisher with a low level of mental well-being.

Results

Of the 118 participants that signed up for the study, 87 completed the baseline questionnaire and 52 responded to at least 40% of the daily surveys (Conner & Lehmann, 2012). On average these remaining 52 eligible participants completed 24 (66.7%) out of the 36 daily assessments (*SD* = 6.07; *Min* = 14, *Max* = 36), resulting in a total of 1248 observations. The total sample had a mean age of 32 years (*SD* = 13.77; *Min* = 19, *Max* = 62) and the majority was female (67.3%) and studying (55.8%). The baseline characteristics and differences of flourishers and non-flourishers are displayed in Table 1. Flourishers were significantly older, $t(50) = 2.50$, $p = .016$, and more often in paid employment, $\chi2(2) = 8.44$, $p = .015$, than non-flourishers. Whilst dropouts did not significantly differ from completers on demographics, they were significantly more likely to be non-flourishing, $\chi2(1) = 5.65$, $p = .017$.

Table 1.

Characteristics and differences of flourishers and non-flourishers

Category	Flourishers (n = 25)	Non-Flourishers (n = 27)	p[a]
Age, *M* (*SD*)	37.40 (15.11)	28.22 (11.24)	.016
Gender, *n* (%)			.625
Female	16 (64.0)	19 (70.4)	
Male	9 (36.0)	8 (29.6)	
Employment Status, *n* (%)			.015
Paid employment	14 (56.0)	7 (25.9)	
Student	9 (36.0)	20 (74.1)	
Unemployed or retired	2 (8.0)	0 (0.0)	
Common behaviors			
Hedonic	Spending time with friends and family; food; movies	Spending time with friends and family; food; movies	
Eudaimonic	University; work	University; work	
Simultaneously hedonic and eudaimonic	Creative activities (e.g., gardening, drawing); helping others; sport; university; work	Sport; university; work	

Note. [a]Differences between flourishers and non-flourishers using independent *t*-tests and χ2-tests

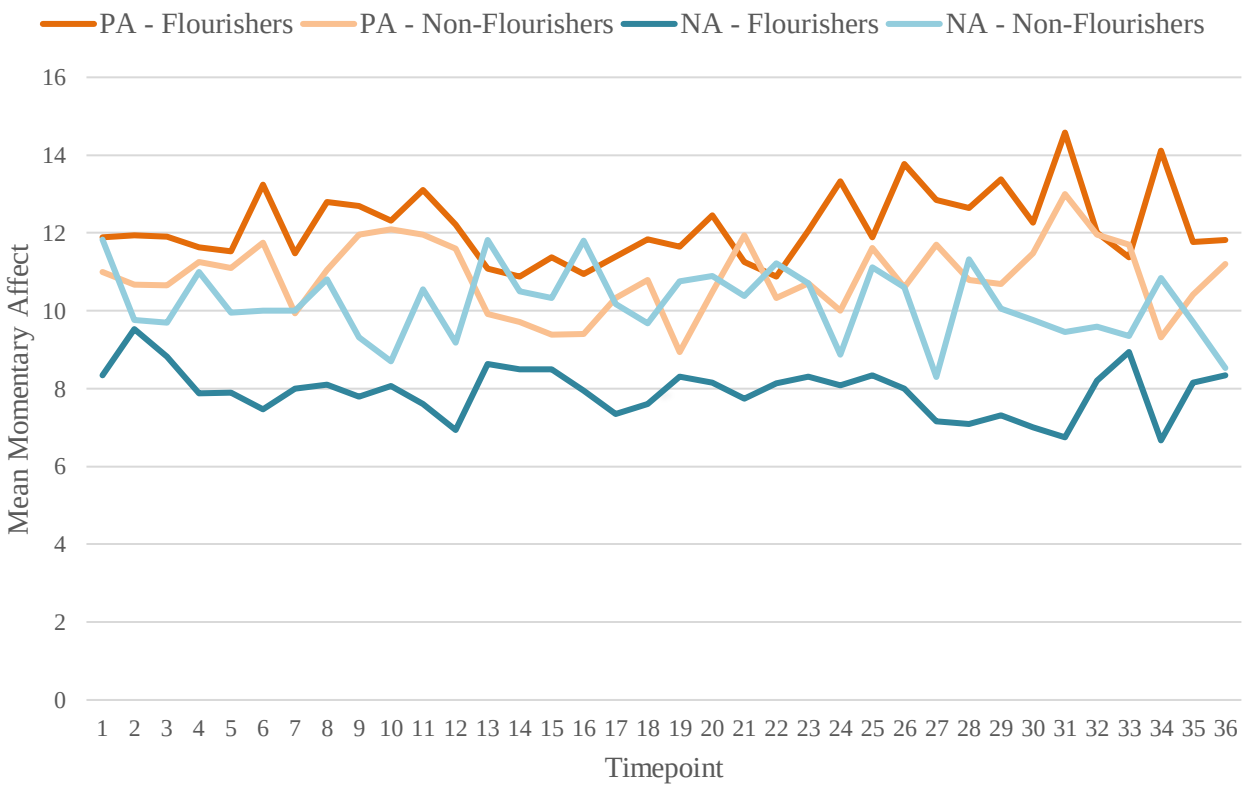
Momentary Affect Levels over Time

The results of the LMMs showed no significant association between positive and negative momentary affect levels and time in neither flourishers ($b_{positive}$ = 0.01, 95% CI [-0.04, 0.06], p = 0.726; $b_{negative}$ = -0.02, 95% CI [-0.06, 0.02], p = 0.327) nor non-flourishers ($b_{positive}$ = 0.00, 95% CI [-0.04, 0.05], p = 0.818; $b_{negative}$ = -0.03, 95% CI [-0.08, 0.03], p = 0.333). This

indicates that momentary affect levels did not notably vary between the different measurement points in both groups. However, the LMMs found positive (b = 1.06, 95% CI [0.35, 1.77], p = .003) and negative momentary affect levels (b = -2.17, 95% CI [-2.99, -1.35], p < .001) to be significantly related to flourishing, indicating that flourishers ($M_{positive}$= 12.15 , SD = 3.6; $M_{negative}$ = 7.97 , SD = 2.81) experienced notably higher positive and lower negative momentary affect levels over the course of the study compared to non-flourishers ($M_{positive}$ = 10.89 , SD = 3.66) ($M_{negative}$ = 10.22 , SD = 4.20). Flourishers' and non-flourishers' momentary affect levels for all inquiry moments of the study can be found in Figure 1.

Figure 1

Positive and negative momentary affect levels of flourishers and non-flourishers over the course of the study.

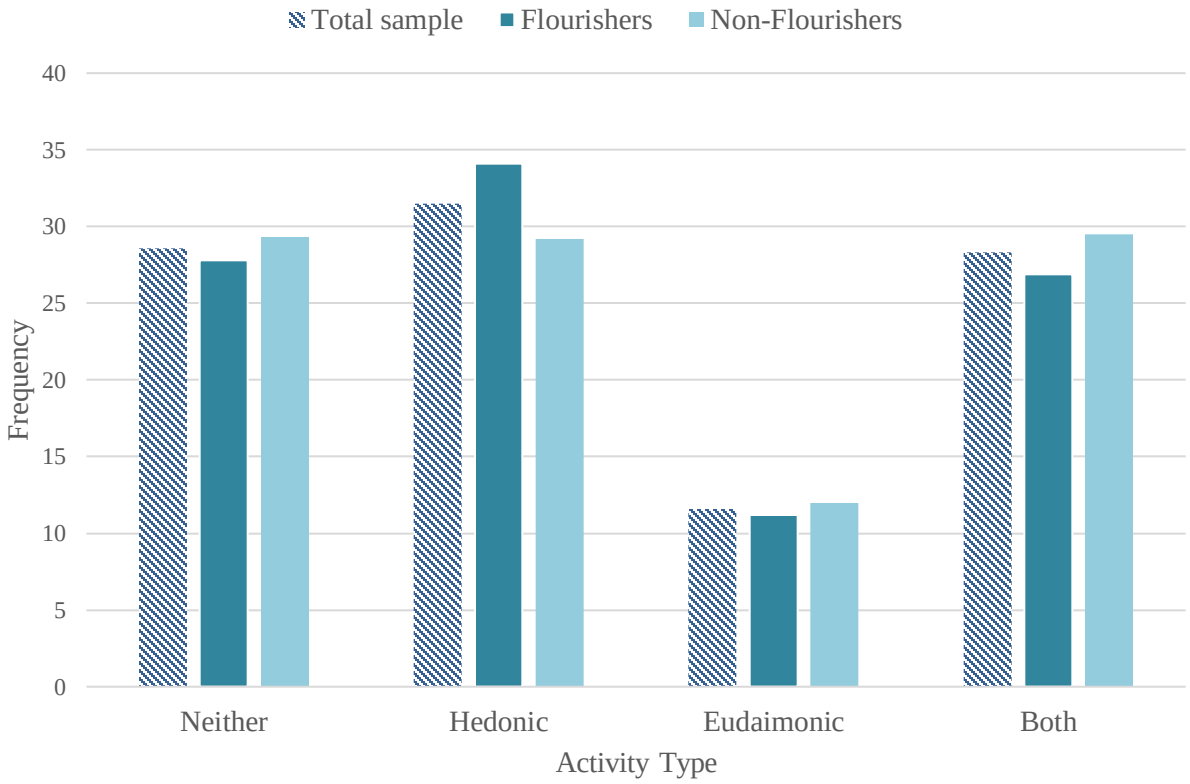


Engagement in Activity Types over Time

Over the course of the study, the total sample most frequently engaged in hedonic (31.5%), neither hedonic nor eudaimonic (28.6%), as well as in both hedonic and eudaimonic activities simultaneously (28.3%), and the least often in eudaimonic activities (11.6%). The percentual frequency of engagement in the four activity types in the total sample as well as in flourishers and non-flourishers can be found in Figure 2. Whilst the GLMMs revealed a significant association between time and eudaimonic activities ($b_{\text{eudaimonic}}$ = 0.02, 95% CI [0.00, 0.04], p = .025), no significant association has been found between time and the other activity types (b_{neither} = -0.01, 95% CI [-0.02, 0.01], p = .220; b_{hedonic} = -0.00, 95% CI [-0.02, 0.01], p = .721; b_{both} = -0.00, 95% CI [-0.01, 0.01], p = .906), indicating that participants' frequency of engagement in eudaimonic activities significantly varied between the different measurement points while for the other activity types this remained rather constant over the course of the study. Furthermore, the $\chi 2$-test revealed no significant differences in the frequency of engagement in the four behavior types between flourishers and non-flourishers, $\chi 2(3) = 3.49$, p = .323, indicating that flourishers did not engage more or less frequently in one specific activity type compared to non-flourishers.

Figure 2

Percentual frequency of engagement in the four activity types in the total sample, flourishers, and non-flourishers



Associations between Activity Types and Momentary Affect over Time

The results of the LMMs revealed a significant association between activity type and positive and negative momentary affect (Table 2). Positive momentary affect was the highest when engaging in activities that were hedonic and eudaimonic simultaneously and the lowest when engaging in neither hedonic nor eudaimonic activities. In contrast, negative momentary affect was the highest when engaging in activities that were neither hedonic nor eudaimonic, and the lowest when engaging in activities that were hedonic and eudaimonic simultaneously and

hedonic alone. The association between momentary affect and activity type over the course of the study in the total sample can be seen in Figure 3 and 4.

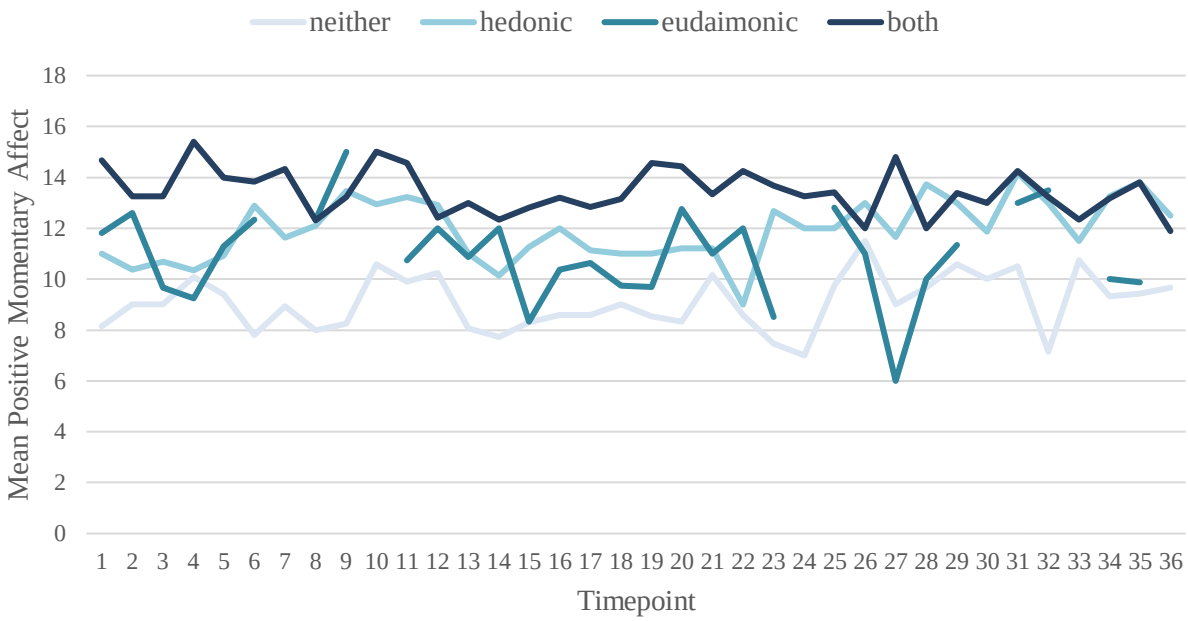
Table 2

Results of Linear Mixed Models on the association between momentary affect and activity type

Fixed factor	Positive momentary affect				Negative momentary affect			
	M (SD)	*b* (SE)	*p*	95% CI	*M (SD)*	*b* (SE)	*p*	95% CI
Activity type								
Neither	9.12 (3.26)	9.75 (0.21)	<.001	9.34, 10.16	10.76 (4.45)	10.41 (0.25)	<.001	9.92, 10.90
Hedonic	12.04 (3.47)	11.91 (0.22)	<.001	11.48, 12.34	8.42 (3.35)	8.75 (0.25)	<.001	8.26, 9.24
Eudaimonic	11.01 (3.29)	10.79 (0.28)	<.001	10.24, 11.34	9.71 (4.01)	9.90 (0.29)	<.001	9.32, 10.47
Both	13.44 (3.13)	12.88 (0.21)	<.001	12.47, 13.30	8.14 (2.71)	8.65 (0.25)	<.001	8.16, 9.14

Figure 3

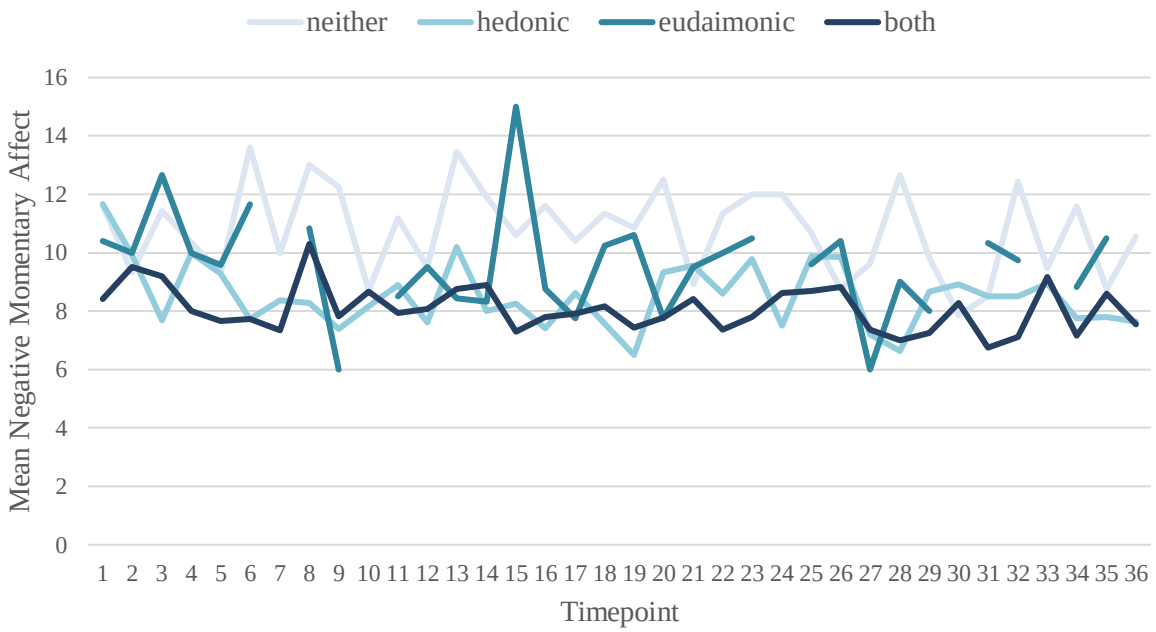
Association between positive momentary affect and activity type over the course of the study in the total sample



Note. missing values in the figure indicate that no participant reported engaging in this activity type at that specific time point

Figure 4

Association between negative momentary affect and activity type over the course of the study in the total sample.



Note. missing values in the figure indicate that no participant reported engaging in this activity type at that specific time point

Whilst there was no notable difference between flourishers compared to non-flourishers in the association between activity type and positive momentary affect (b = 0.49, 95% CI [-0.35, 1.32], p = .720), they differed significantly in the association between activity type and negative momentary affect (b = -1.53, 95% CI [-2.30, -0.76], p < .001). Specifically, flourishers had significantly lower negative momentary affect when engaging in activities that were neither hedonic nor eudaimonic (M = 8.77, SD = 3.39) compared to non-flourishers (M = 12.44, SD = 4.55). There were no significant differences between flourishers and non-flourishers in the association between momentary affect and the three other activity types.

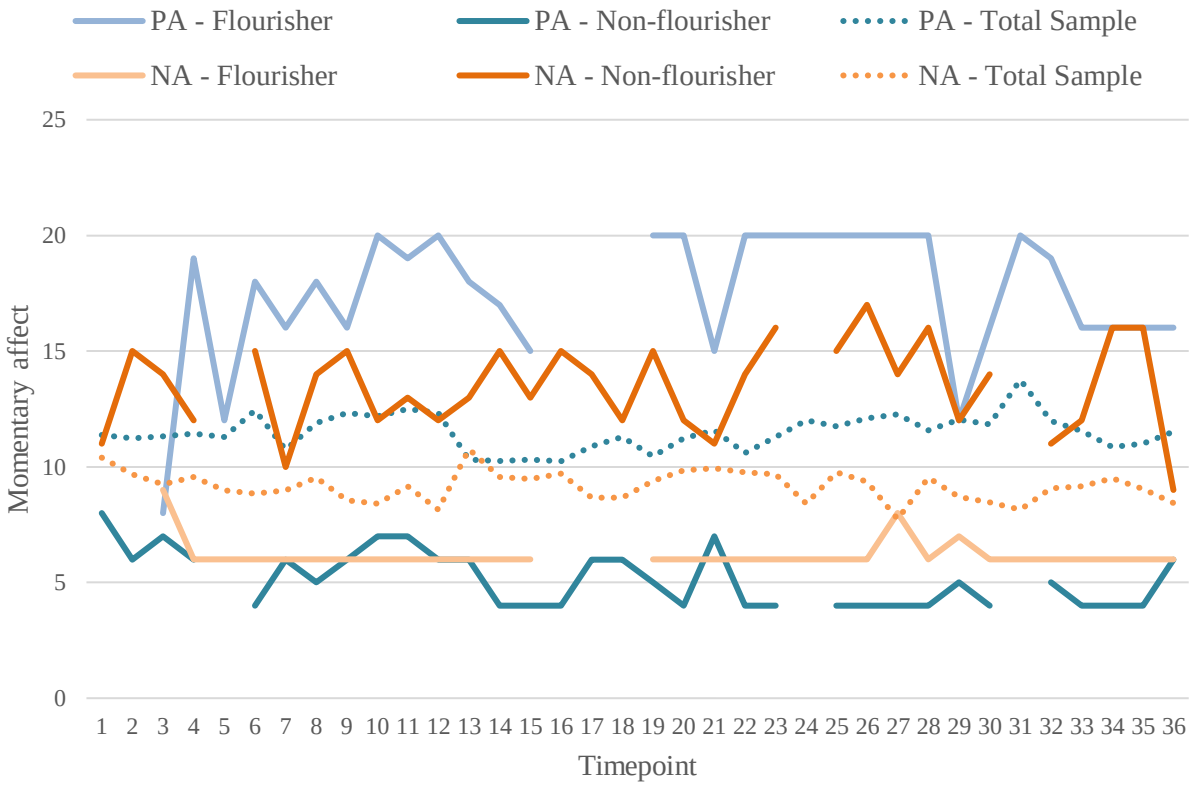
Individual Cases

To gain a more detailed insight into flourishers' and non-flourishers' daily lives, two example cases were selected for further visualization and analyses on the individual level. While the first selected participant was a 22-year-old, male, studying and part-time working flourisher with one of the highest mental well-being levels, the second selected participant was a 45-year-old, female non-flourisher in paid employment with one of the lowest mental well-being levels. Both participants had the same response rate with 33 (91.7%) completed daily assessments.

Over the course of the study the flourisher experienced the highest positive (M = 17.30, SD = 3.05) and the lowest negative (M = 6.24, SD = 0.66) momentary affect levels compared to both the non-flourisher ($M_{positive}$ = 5.15, SD = 1.23; $M_{negative}$ = 13.48, SD = 1.96) and the total sample ($M_{positive}$ = 11.48, SD = 3.69; $M_{negative}$ = 9.16, SD = 3.79). In contrast, the non-flourisher experienced the lowest positive and the highest negative momentary affect levels. Positive and negative momentary affect levels of the two individual cases and the total sample can be found in Figure 5.

Figure 5

Positive and negative momentary affect levels of the total sample and the two individual cases over the course of the study



Note. missing values in the figure indicate that the participant did not respond to the inquiry at that timepoint

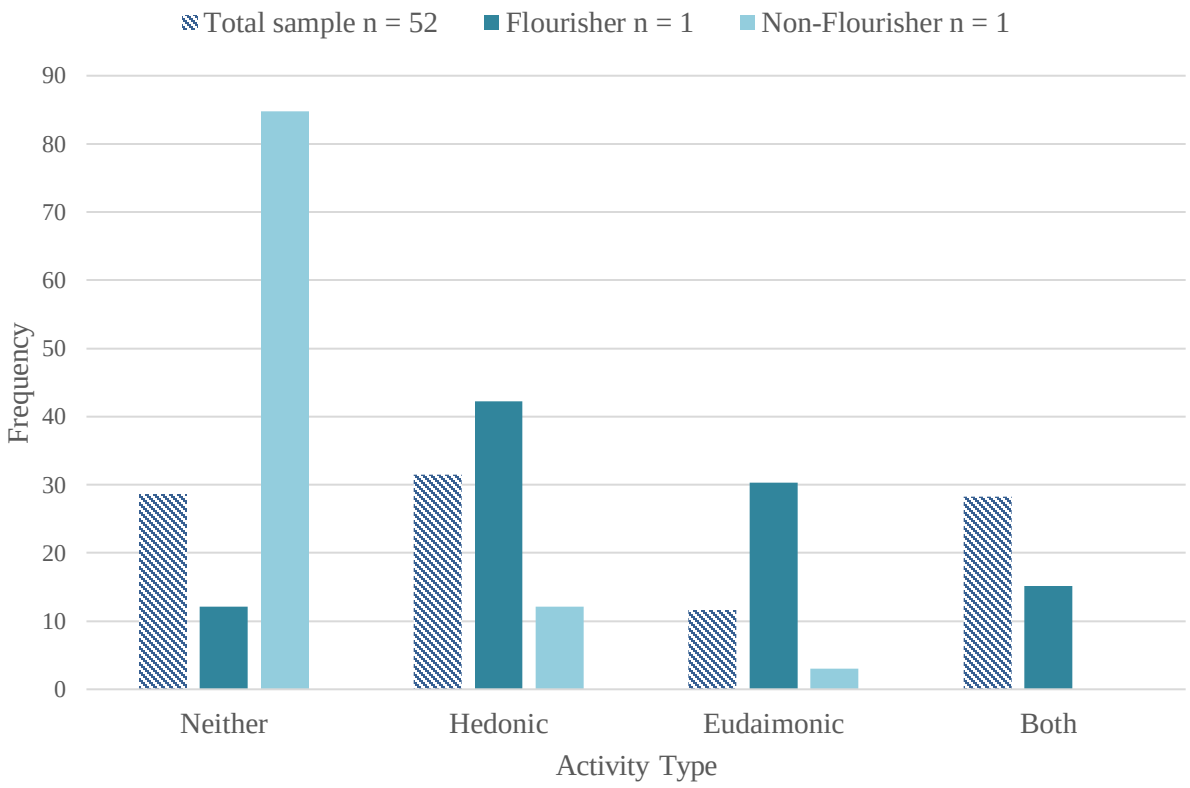
Over the course of the study, the flourisher engaged notably more in hedonic, eudaimonic, and simultaneously hedonic and eudaimonic activities compared to the non-flourisher who most frequently engaged in neither hedonic nor eudaimonic activities (Figure 6). Compared to the total sample, the flourisher engaged more frequently in eudaimonic as well as hedonic activities but less frequently in activities that were simultaneously hedonic and eudaimonic. In contrast, the non-flourisher engaged notably less frequently in hedonic,

eudaimonic, and both hedonic and eudaimonic activities, and more frequently in neither hedonic nor eudaimonic activities compared to the total sample.

Despite the notable differences in the frequency of their engagement in the activity types, both individuals considered similar activities as hedonic (e.g., social activities) and eudaimonic (e.g. work/university). However, the flourisher also frequently reported work and university-related activities to be simultaneously hedonic as well as eudaimonic, indicating that while he enjoyed these activities, he at the same time managed to find value and meaning in them.

Figure 6

Frequency of engagement in the four activity types over the course of the study in the total sample and the two individual cases



Discussion

The present ESM study aimed to explore the role of daily hedonic and eudaimonic behaviors in our emotions and the path to flourishing. While the findings revealed momentary affect to remain relatively stable over the course of the study in both flourishers and non-flourishers, flourishers were found to experience considerably higher positive and lower negative momentary affect levels during their daily lives. However, they did not engage notably more or less frequently in any of the four activity types. Activities that were simultaneously hedonic and eudaimonic were found to yield the greatest benefits for momentary affect in flourishers and non-flourishers. In contrast, activities that were neither hedonic nor eudaimonic were associated with the poorest momentary affect levels. However, flourishers, compared to non-flourishers, had notably lower negative affect levels after engaging in these activities that were neither enjoyable nor fulfilling.

Momentary Affect and Flourishing

The present study found positive and negative momentary affect to remain relatively stable over time in both flourishers and non-flourishers. Prior research on the variability of momentary affect has primarily focused on individuals suffering from mental illness and found a greater variation in affect to be associated with higher levels of mental illnesses such as depression and anxiety disorders (e.g., Schoevers et al., 2020; Servaas et al., 2017; Lamers et al., 2017; Peeters et al., 2006; Gilbert, 2012; Gruber et al., 2013). In combination with the present findings this could imply that while mental illness is coined by the (in)stability of momentary affect, mental well-being is not. Future ESM research is needed to further investigate the relation of variations in momentary affect and mental well-being by specifically exploring it on a within-

person level.

In line with prior studies on mental well-being and affect (e.g., Winter et al., 2020; Fredrickson & Losada, 2005; Prizmic-Larsen et al., 2020), the present study also found flourishers compared to non-flourishers to show considerably higher positive and lower negative affect levels. Moreover, this finding further adds to the existing literature, by substantiating that this also holds true on a momentary level during their everyday lives. These daily and frequent experiences of more positive and less negative emotions might be a key ingredient of flourishing. As proposed by Fredrickson's broaden-and-build theory (2004, 2013), experiencing positive emotions broadens individuals' awareness. In turn, this is considered to temporarily allow them to take in more of their environment as well as to build enduring personal cognitive, psychological, social, and physical resources. Experiencing negative emotions, in contrast, is thought to narrow individuals' perspectives by overly focusing on the negative to avoid stressors or problems. Thus, experiences of positive emotions are understood to predict and cultivate growth in personal resources allowing individuals to handle life and its difficulties more successfully. Flourishers might thus not "simply feel good and do good. Rather they do good *by* feeling good" (Fredrickson, 2013, p. 816).

Hedonic and Eudaimonic Behaviors and Flourishing

The present study was based on the assumption that while hedonic behaviors yield short-term benefits for our positive and negative emotions (Henderson et al., 2013a; Huta & Ryan; Tončić & Anić, 2015; Giuntoli et al., 2020), the frequent engagement in eudaimonic and not hedonic behaviors is the path to long-term well-being, i.e., flourishing (Sheldon, 2018; Huta & Ryan, 2010). However, as flourishers did not engage notably more or less frequently in any of

the four activity types than non-flourishers, the present findings could not find support for eudaimonia's benefits on long-term well-being. There are three possible explanations for the present findings' inconsistency with the EAM (Sheldon, 2018) and prior research (Huta & Ryan, 2010). A first explanation might be the use of different methodologies. While this study investigated flourishing as it was defined by Keyes and understood it as an equivalent to long-term well-being, Huta & Ryan (2010) investigated different well-being-related constructs such as life satisfaction. Furthermore, instead of looking at actual behaviors, they examined participants' hedonic and eudaimonic motives to engage in activities. Second, as the present study was conducted during the Covid-19 pandemic it is highly likely that the governments' measures have significantly constrained the activities participants engaged in (e.g., Ammar et al., 2021; Savage et al., 2021). This might have thus distorted the frequency in which participants engaged in the four activity types. Since flourishing is a relatively stable trait that is associated with heightened resilience and better coping skills (e.g., Prizmic-Larsen et al., 2020; Basson & Rothmann, 2018; Faulk et al., 2013; Fredrickson, 2013), flourishers might have retained their mental well-being levels despite being restricted in their activities. A third possible explanation might be that it is not the frequency with which flourishers engage in eudaimonic activities that makes the difference but the duration and/or intensity of those activities. Engaging in a eudaimonic activity for a longer period or with a higher intensity might thus yield greater benefits for flourishing. Support for this explanation comes from Henderson et al. (2013a). In their four-day-long ESM study, they found that heightened intensity of hedonic and eudaimonic activities were significantly associated with increased well-being. Considering these explanations, the present study seems not to suffice for clarifying the link of hedonic and eudaimonic behaviors with

flourishing. Future research should therefore further investigate flourishers and non-flourishers daily behaviors while considering its duration and intensity once the Covid-19 restrictions are repealed.

Hedonic and Eudaimonic Behaviors and Momentary Affect in Flourishers and Non-Flourishers

While the present study could not support the assumption that the frequent engagement in eudaimonic behaviors is associated with flourishing, it did substantiate the short-term benefits of hedonic activities. Thus, in line with most prior studies (Henderson et al., 2013a; Huta & Ryan, 2010; Tončić & Anić, 2015, Giuntoli et al., 2020), the present study found pleasurable and relaxing activities to act as an emotion regulation tool by increasing positive and decreasing negative affect (see Steger et al., 2008 for exceptions). This temporary mood boost was found to be similar in flourishers and non-flourishers. However, as the present study investigated this association while also considering that activities can be experienced as simultaneously hedonic and eudaimonic or neither hedonic nor eudaimonic, our findings go beyond the scope of previous research. As such the present study made two important discoveries extending on the existing literature. First, the findings suggest not hedonic behaviors to yield the greatest benefits for momentary affect but simultaneously hedonic and eudaimonic behaviors. It seems that enjoying an activity while at the same time finding meaning in it notably boosts our emotions even more than solely enjoying it. Support for this comes from Huta (2016) who proposed hedonia and eudaimonia to satisfy different types of existential needs. Instead of engaging overly frequently in one or the other activity type, the present findings underline the importance of finding a balance in the engagement in both hedonic and eudaimonic activities. Secondly, the present

study discovered that engaging in activities that were neither pleasurable or relaxing nor fulfilling or meaningful, related to the poorest momentary affect levels in both flourishers and non-flourishers. Alarmingly, those behaviors were highly frequent in both groups albeit flourishers experienced notably fewer negative emotions than non-flourishers. As suggested by prior research flourishers might possess better resources and coping skills than non-flourishers, thus supporting them in bouncing back from and dealing with activities that they neither enjoyed nor found meaningful or fulfilling (Barber et al., 2010; Yildirim & Belen, 2019; Prizmic-Larsen et al., 2020; Basson & Rothmann, 2018; Faulk et al., 2013; Fredrickson, 2013). To further clarify this difference, future research should investigate how flourishers compared to non-flourishers tend to cope with those activities.

While prior research so far has solely focused on the question of whether best to engage in hedonic *or* eudaimonic behaviors, the present study suggests that the question should rather be *how to* engage in hedonic *and* eudaimonic behaviors. Considering that both hedonia and eudaimonia are proposed to yield benefits for our emotions in daily life and it is rather the behaviors neither hedonic nor eudaimonic that are problematic, the focus of prior research should be expanded.

Strength and Limitations

The present study has several methodological and conceptual strengths contributing to the mental health literature. Firstly, the ESM design of this study allows to repeatedly capture interactions of behaviors and emotions in a real life-context and offers new insights into their variability over time (e.g., Verhagen et al., 2016; Myin-Germeys et al., 2018; Scollon et al., 2003; Fisher & To, 2012). It thus not only overcomes the problem of retrospective recall bias and

reduces assessment errors but also provides more realistic, reliable, and (ecologically) valid data (Verhagen et al., 2016, Myin-Germeys et al., 2018, Scollon et al., 2003). Secondly, the design of the present study was based on guidelines and recommendations for ESM studies (van Berkel, 2017; Eisele et al., 2020). Thus, the study duration, notification schedule, sampling strategy, inter-notification time, inquiry limit, and device ownership were designed to decrease participants' burden and measurement reactivity while increasing compliance and data quality (Verhagen et al., 2016, Myin-Germeys et al., 2018; van Berkel, 2017; Eisele et al., 2020). Thirdly, the present study was the first to examine the concept of flourishing as it was defined by Keyes (2007) with ESM and thus offers a somewhat all-encompassing and holistic picture of well-being in daily life. Fourthly, by focusing on actual behaviors of participants instead of well-being, orientations, or motivations, the present study addressed prior criticisms (Sheldon, 2018; Henderson et al., 2013a; Vittersø & Søholt, 2011; Henderson et al., 2013b) and offers more tangible, realistic and practical findings in line with the EAM (Sheldon, 2018). Lastly, instead of choosing from a preset list of objectively categorized activities as hedonic or eudaimonic, the present study allowed participants to add activities themselves and decide individually whether they experienced them as hedonic, eudaimonic, both simultaneously, or neither. As prior research found perceptions of activities to be highly subjective (Huta & Ryan, 2010; Henderson et al., 2013a), this offered an unprecedented and deeper insight into hedonic and eudaimonic behaviors.

Despite the aforementioned strengths, the present study had several limitations that must be considered when interpreting the findings. A first limitation is the correlational nature of the data analyses that does not allow to make inferences about causal relationships (e.g., Aggarwal

& Ranganathan, 2016). Thus, while the findings of the present study might suggest that engaging in hedonic behaviors leads to more positive and less negative emotions, the reverse could also be the case: experiencing higher levels of positive and lower levels of negative emotions might motivate us to engage in enjoyable behaviors. A possible option to gain a clearer insight into the causal relation of hedonic and eudaimonic behaviors and momentary affect, future ESM research should investigate their temporal order (Myin-Germeys et al., 2017). A second limitation is the generalizability of the present study's sample. As the study has been advertised via certain social media platforms with a short video clip about mental health and well-being it might have specifically caught the attention of young and higher educated females as well as those overly interested in the topic (Hektner et al., 2007). A possible option to overcome this in future research is to motivate participants not only intrinsically with their interest in mental health and well-being but also with extrinsic factors (van Berkle et al., 2017; Conner & Lehman, 2012) such as course credit or vouchers. A third limitation is the higher dropout rate in non-flourishers compared to flourishers that might have introduced attrition bias (Nunan et al., 2018). As participants reported technical issues with the TIIM app such as not receiving notifications, it is, however, impossible to say whether they dropped out because of these technical difficulties or other reasons. Nevertheless, to keep dropout rates low, future ESM studies should, again, enhance the intrinsic and extrinsic motivation of their participants by, for instance, visualising individuals' data as a feedback mechanism (Hsieh et al., 2008), showing them the importance of their contribution (Larson & Csikszentmihalyi, 1983), and compensating them for their participation (van Berkel et al., 2017). Furthemore, while ESM softwares should be further developed and improved to ensure the hitchless conduct of future studies, the communication

between participants and researchers should also be facilitated in case of any upcoming issues (van Berkel et al., 2017).

Implications for Future Research

While the present study offered a deeper insight into the benefits of hedonic and eudaimonic behaviors for our momentary emotions, their role in long-term well-being, i.e., flourishing still remains unclear. Future ESM research is therefore needed to further investigate flourishers' and non-flourishers' behaviors. Specifically, future studies should implement a more frequent sampling schedule to capture a broader range of participants' behaviors (Myin-Germeys et al., 2018). This will allow for a more representative and realistic picture of their daily lives and possibly reveal patterns not caught in the present study. Moreover, next to the frequency of behaviors future studies should also investigate their intensity and duration to clarify whether this notably contributes to flourishing. Furthermore, to gain an even deeper insight into flourishers' and non-flourishers' daily behaviors, future ESM studies should investigate qualitative differences in flourishers' and non-flourishers' experience of those behaviors. Flourishers for instance might engage considerably more in prosocial activities than non-flourishers (Catalino & Fredrickson, 2011). Thus, a qualitative analysis might reveal conceptual differences or a specific pattern in both groups. Lastly, by finding the nature of our behavior to play a significant role in our daily emotions, the present study also yields some practical implications. As behaviors can be easily prescribed and changed (Henderson et al., 2013a; Tončić & Anić, 2015) even without guidance, future research should investigate the potential of behavioral interventions intending to enhance our daily mood. Such interventions might focus on how to engage in hedonic and eudaimonic behaviors and how to avoid engaging in activities that

are experienced as neither pleasurable nor fulfilling to increase positive and decrease negative emotions. A high scale approach would allow to reach individuals independent of age, gender, nationality, location, and employment status and thus yields the potential to make a difference in the daily lives of a diversity of individuals.

Conclusion

The present study offers new insights into the ongoing debate on whether well-being is best achieved through the engagement in hedonic or eudaimonic pursuits. As past research has solely focused on hedonic and eudaimonic behaviors, the present study adds to the field by considering that activities might also be experienced as simultaneously hedonic and eudaimonic or neither hedonic nor eudaimonic. While supporting the assumption of prior studies that hedonic behaviors act as a short-term emotion regulation tool, the present findings suggest the benefits of behaviors that are simultaneously hedonic and eudaimonic to be even greater. In contrast, activities which were experienced as neither hedonic nor eudaimonic were associated with the poorest levels of momentary affect and even significantly more so in non-flourishers. It thus seems that the ongoing debate about whether best to engage in hedonic or eudaimonic behaviors is oversimplified and must be extended. Instead of focusing on only hedonic or eudaimonic behaviors, future research must consider that behaviors can be pleasurable and meaningful simultaneously but also might be experienced as neither pleasurable nor meaningful.

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