What clusters or profiles of flourishers are present in the general population?

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Abstract

Introduction: Human flourishing refers to an optimal state of mental well-being. It comprises of a combination of hedonic well-being (emotional well-being) and eudaimonic well-being (psychological and social well-being). Flourishing is known to have several beneficial effects on the individual's life, including positive relationships and resilience towards mental illnesses. Nevertheless, little is known about how the 14 dimensions of well-being constitute flourishing mental health. There is no available literature about what combination of well-being dimensions commonly ensures flourishing mental health and whether it is possible to identify subgroups of people with similar flourishing profiles.

Method: The current study aimed to find clusters in the flourishing population. Therefore, 260 participants with flourishing mental health based on the 14-item Mental Health Continuum-Short Form were extracted from the initial sample and further analyzed. A k-means cluster analysis was employed to create homogeneous groups of flourishers based on the scores of the 14 dimensions of well-being.

Results: The results suggested a total of five distinct clusters. The clusters were given animal names to illustrate the individual profile of each cluster. Moles (5.4 % of the sample) had the overall lowest scores on every dimension, scoring high on only 5 of the 14 dimensions. Bees (32.7 %) scored comparably high on emotional and social well-being. Beavers (14.6 %) scored low on emotional but high on psychological well-being. Eagles (20.4 %) displayed high levels of emotional and psychological well-being with low scores on social well-being. Lastly, Elephants (26.9%) had the highest scores on every subscale.

Discussion: The present study illustrates clearly that there are multiple profiles of flourishers which in some regards do not necessarily fit the familiar definition of flourishing and the subsequent image that the term creates. Future research is needed to further characterize the

clusters of well-being with regards to member characteristics like age, life circumstances, personality, or workforce in order to benefit the healthcare system and society. Moreover, it is yet to be examined whether they all benefit equally from their flourishing state.

Introduction

Mental illnesses are composed of a variety of symptoms that interfere with the individuals' regular life. For a long period of time, mental health research focused primarily on alleviating or preventing these symptoms. But more recently an increasing amount of evidence emphasized the importance of also looking at the other end of the spectrum (Diener, 2000; Huppert & So, 2012; Keyes & Corey, 2002). Westerhof and Keyes (2009) proposed that mental health is not only the absence of symptoms, but also the presence of positive mental health factors. Those comprise of hedonic well-being operationalized by Keyes as emotional well-being. Keyes and Corey (2002) defined this component by adding different dimensions such as happiness or satisfaction with life (Keyes & Corey, 2002; Westerhof & Keyes, 2009). The second component of positive mental health is eudaimonic well-being which entails psychological well-being and social well-being (Keyes & Corey, 2002). Dimensions associated with psychological well-being are for example self-acceptance or personal growth. In contrast to that, social well-being is comprised of dimensions such as social-contribution or social-coherence (Keyes & Corey, 2002; Westerhof & Keyes, 2009). It has been extensively demonstrated that high levels of well-being are beneficial for individuals and society. High well-being predicted several positive outcomes including meaningful, positive relationships (Diener et al., 2010a) and reduced mortality (Chida & Steptoe, 2008; Keyes, 2012).

Flourishing, as a concept of mental health, was first introduced by Keyes and Corey (2002). It refers to a mental state of individuals and is regarded by various sources as a combination of high levels of both hedonic and eudaimonic well-being. Flourishing is, thus, defined as feeling good and functioning well (Huppert & So, 2009; Keyes & Corey, 2002; Schotanus-Dijkstra et al., 2016). Keyes and Corey (2002) created an operational framework and measurement instrument for the different dimensions of well-being, the mental health continuum

(MHC). The now frequently used short form (MHC-SF) contains three items (dimensions) for the components of hedonic well-being and 11 items for eudaimonic well-being (Keyes et al., 2008). To be flourishing, the criteria are a high score (≥ 4) on at least one dimension of hedonic well-being as well as high scores on at least six of the dimensions of eudaimonic well-being (Keyes et al., 2008; Schotanus-Dijkstra et al., 2016). Thus, flourishers are defined as experiencing high levels of mental well-being. The absence of mental well-being is described as languishing and people in between the categories of flourishing and languishing are considered to have moderate mental well-being (Keyes & Corey, 2002). The cut off for these categories means that individuals can have a unique set of dimensions of well-being that (can) make them flourish. However, it is yet unknown how heterogeneous flourishers are. What are the qualitative differences between them? Can certain dimensions be evaluated as essential to achieve a state of flourishing? It is also unknown whether there are clusters of dimensions and whether different clusters of flourishers can be distinguished by assessing the qualitative differences in the respective well-being components between flourishers.

The different dimensions of well-being

The first extensively researched component of well-being was emotional well-being which is oftentimes also referred to as subjective well-being. Inglehart (1990) found that once the basic needs of an individual are met, individuals move to a phase that is not concerned with materialistic value to reach happiness. Instead, there is a post materialistic phase in which individuals strive for self-fulfillment. Thus, the term *subjective* well-being was established to clarify that emotional well-being is not, as normative definitions suggested, linked to the possession of a certain desirable and observable quality. It rather relies on the individual's very own and subjective experience of his/her life (Diener, 2000). Shin and Johnson (1978) stressed

the importance of the subjectivity of happiness by defining it as “a global assessment of a person’s quality of life according to his own chosen criteria”. The dimension of emotional well-being that is related to this definition is life satisfaction (Diener, 2000). Research on the topic of happiness revealed another more obvious definition. Bradburn and Caplovitz (1965) conducted large surveys with the aim to get a more refined understanding of the interaction between positive and negative affect. They underlined the importance of a distinction between positive and negative affect and found different factors to be responsible for either of those. A comparison between an individuals’ positive and negative affect, in which positive affect is found to be more prevalent than negative would therefore lead to the experience of happiness (Bradburn, 1969). This definition covers the dimension of happiness in eudaimonic well-being. Keyes added besides happiness and life-satisfaction also interest in life to mirror the main DSM-criteria of a major depression which are unhappiness and no interest in life (Keyes & Corey, 2002).

With the aim to get a deeper understanding of overall human well-being as well as flourishing, several studies stressed the complementary role of eudaimonic well-being besides the hedonic component. Huta (2013a) emphasized the difference between eudaimonic and hedonic well-being. She proposed that either of those reflect different experiences and that a combination of both components provides a more complete picture of well-being. Additionally, various well-being outcomes are displayed to a greater degree when examining both components of well-being instead of focusing on them separately (Huta, 2013a; Huta & Ryan, 2010). While hedonic well-being is associated with momentary, immediate well-being, eudaimonic well-being may be a predictor of higher levels of long-term well-being (Huta, 2013; Huta & Ryan, 2010). A study on the well-being benefits of both hedonic and eudaimonic well-being revealed a variety of beneficial effects of both components (Henderson et al., 2013). Hedonic well-being behaviour was found to serve emotion regulation and predicted well-being factors such as vitality, life

satisfaction and carefreeness. At the same time, it was found to reduce negative affect, stress and depression (Henderson et al., 2013). Hedonic behaviour as well as eudaimonic, predicted flourishing mental health and reduced psychological distress (Henderson et al., 2013). This further stresses the importance of taking into consideration both components of well-being, especially with regards to flourishing.

Eudaimonic well-being consists of social and psychological well-being (Keyes & Corey, 2002; Vanhoutte, 2014). Psychological well-being reflects personal development as well as living up to one's potential and entails the six dimensions of self-acceptance, environmental mastery, positive relations, personal growth, autonomy and purpose in life (Ryff, 1989; Ryff & Keyes, 1995). Keyes and Corey (1998) argue that positive functioning also entails a social component that relates to eudaimonic well-being. In contrast to the psychological component, the social one relates more to the social challenges that need to be tackled effectively to ensure mental health. The dimensions proposed for this component comprise of social contribution, social integration, social actualization, social acceptance, and social coherence (Keyes & Corey, 2002). Eudaimonic well-being behaviour predicted well-being benefits such as meaning in life as well as elevating experience (Henderson et al., 2013).

Benefits of flourishing mental health

Research has shown that flourishing is beneficial for a variety of factors. The initial study of Keyes and Corey (2002) found that people who are languishing are approximately six times more likely to experience a major depressive episode than those who are flourishing. Following these findings, many studies have examined the positive consequences of flourishing as well as the health risks accompanying languishing. Keyes and Simoes (2012) examined the relationship between flourishing and all-cause mortality. Within a 10-year period, 1% of people identified as

flourishers died, while 5.5% of those that were not flourishing passed away. Another longitudinal study found that flourishing reduced the risk for developing mood disorders by 28% and the risk for developing anxiety disorders by 53% while not having a significant influence on substance abuse disorder (Schotanus-Dijkstra et al., 2016). Taking the focus away from the personal benefits, people who are flourishing also add towards society in the form of economic benefits. This becomes visible when examining the lower costs regarding healthcare of flourishers (Huppert & So, 2009). Additionally, less absenteeism and a diminished occurrence of underperformance in both school and workplace characterize flourishers as more powerful students and workforces (Huppert & So, 2009). All these benefits on the individual and societal level not only underlines the importance of flourishing as a topic of research, but also raises the question whether it is possible to better characterize those people that can be diagnosed as flourishing. Just as different symptoms lead to a diagnosis of a certain illness, an individual set of different well-being components leads to flourishing mental health or probably even different flourishing ‘’diagnoses’’. This suggests individual experiences of flourishing mental health which need to be further explored. Moreover, on a societal level, it may be interesting to see whether there are communalities in all flourishers and whether certain dimensions seem more important than others. This would give direction towards what needs to be worked on to improve individuals’ mental health. Lastly, it may be explored what sets of dimensions comprise for example the most productive workforces or what set of dimensions seems most resilient towards mental illnesses.

Characteristics of flourishers

Several studies already examined common characteristics of individuals who are flourishing. Schotanus Dijkstra et al. (2016) examined factors that are related to flourishing and found that

certain personality traits do have a strong correlation. Flourishers displayed higher levels of conscientiousness and extraversion while scoring comparably low on neuroticism. In addition, this study found more flourishers in younger age groups, in females as well as in people with higher education (Schotanus Dijkstra et al., 2016). However, the relation between flourishing and age or gender seems not consistent within literature. For example, a longitudinal study in the US demonstrated older age groups as containing more flourishers and males being flourishers more frequently (Keyes & Simoes, 2012). A longitudinal study from Scandinavia examined the relation between flourishing and volunteer work. It was found that working voluntarily doubled the likelihood of an individual to be flourishing, making voluntary work another characteristic associated with flourishing (Santini et al., 2018). Another study among adults in the United States examined the benefits of flourishers in everyday life (Catalino & Fredrickson, 2011). It was discovered that participants who were flourishing reported greater benefit from small pleasurable experiences throughout the day. Spiritual activities or acts of helping, which compliments the findings of Santini et al. (2018), caused greater positive emotional responses in flourishers (Catalino & Fredrickson, 2011).

Research has already discovered a large variety of characteristics that flourishers display. Nevertheless, what all these studies have in common is the assessment of commonalities of flourishers. Moreover, they aimed at finding common characteristics rather than actual dimensions of flourishing that the target group shares. Therefore, it seems interesting to explore what differentiates one flourisher from another. And what actually makes them flourish. Especially with regards to the actual dimensions of well-being that constitute flourishing as a state of mental health.

Clusters in well-being and flourishing

To date, only a few studies have tried to create clusters related to well-being using data-driven means (Busseri et al., 2007; Do Carvalhal Monteiro et al., 2018; Pancheva et al., 2020). A well-known means to identify clusters among sets of data is cluster analysis. According to Samoilenko and Osei-Bryson (2008), clustering is a statistical technique to divide sets of objects into a set of mutually exclusive clusters. These characterize themselves by a high similarity within the sub-cluster and a low similarity between the different clusters. This data-driven method of analysis is especially useful to sort sets of data into natural groups (Huang, 1997; Samoilenko & Osei-Bryson, 2008).

A study that focuses on dimensions that are known to be relevant when it comes to assessing flourishers is the one by Busseri et al. (2007). This study also uses the method of clustering and focused on emotional well-being. The different dimensions assessed were life satisfaction, positive affect as well as negative affect. Based on a combination of either low, moderate or high values of these three dimensions, they came up with a total of five different clusters. The two largest clusters were cluster one which was defined by high mean levels of life satisfaction and positive affect and low mean levels of negative affect and cluster two with moderate scores on life satisfaction, moderate to low ones on positive affect and a low mean score on negative affect. The sample consisted of 783 undergraduate students and the definition of clusters relating to their emotional well-being allowed for a comparison between these groups based on other factors such as mental and physical health as well as physical symptoms (Busseri et al., 2007).

An additional study that aimed at clustering dimensions of well-being combined hedonic and eudaimonic well-being (Pancheva et al., 2020). The researchers analyzed data of 2393 participants. While Keyes and Corey (1998) emphasized the importance of social functioning in eudaimonic well-being, this study regarded psychological well-being as the only component of

eudaimonic well-being. Thus, Pancheva et al. (2020), used the 3 dimensions of hedonic well-being and the six dimensions of psychological well-being as defined by Ryff (1989) in American adults. The results revealed five clusters. Three of them had similar overall scores in hedonic and psychological well-being. Cluster 1 revealed “uniformly low well-being” while cluster 4 displayed “somewhat high well-being” and cluster 5 “mostly high well-being”. Cluster 2 and 3 had either high scores on emotional well-being and low ones on psychological well-being or vice versa. Another important finding was that scoring high on one of the dimensions of either hedonic or psychological well-being, did not predict a high score on each of the other dimensions in the respective well-being category which stresses the importance of examining the different dimensions of each of the well-being components instead of just looking at the respective mean scores (Pancheva et al., 2020).

To date, it is unknown what clusters of flourishers can be distinguished regarding all 3 well-being components that play a role in flourishing as defined by Keyes and Corey (2002). While examining two dimensions of well-being in the total population has already revealed a variety of different clusters, it has not yet been examined how these different dimensions come together to classify someone as flourishing. Especially, as the previously discussed studies did not consider flourishing mental health as an inclusion criterion. Moreover, available studies of flourishing have not yet researched on which of the 14 different dimensions flourishers often reach the criterium and which combinations of dimensions characterize different clusters of flourishers. Thus, it is yet unknown how flourishing individuals differ from each other based on the criteria for flourishing. Furthermore, it remains unknown whether certain dimensions are of relatively larger importance for all people with flourishing mental health than others.

Present study

The aim of the current study is to examine what clusters of flourishers are present in the general Dutch population. Besides clustering the domains of well-being, background information in the form of age and gender are also examined in the individual clusters. Based on the findings of Huta (2013) and Pancheva et al. (2020), it is expected that there may be a notable difference in the experience of well-being between flourishing individuals. Especially the study by Pancheva et al. (2020) suggests the existence of different clusters based on what exact dimensions are scored high on and stresses the importance of examining each of the dimensions separately as different ones may account for a high score on a well-being component. It can even be expected that the number of dimensions that are scored high on varies between different groups of flourishers. Furthermore, certain cluster may display strength in one specific component of well-being while failing to meet the requirements to thrive in another one.

Method

Study design

A quantitative between subject study design was employed using the Mental Health Continuum Short-Form (MHC-SF) to identify people diagnosed as flourishing and to identify clusters within the dataset of flourishers. The data was retrieved from several non-clinical studies which were conducted between 2014 and 2020. They used the MHC-SF and focused on the general (non-clinical) population (Bohlmeijer et al., 2020; Nelson-Coffey et al., Submitted; Schreiber & Schotanus-Dijkstra, In progress; Schotanus-Dijkstra et al., 2017)

Participants and procedure

The participants were recruited in a time period from 2014 to 2020 under supervision of dr. Schotanus-Dijkstra from the University of Twente. Inclusion criteria for all the data acquisitions

was an age of at least 18 as well as the ability to speak either Dutch, German or English. A large number of participants were recruited using social media (Facebook and LinkedIn), regional newspaper, online newsletters with psychological topics and psychology magazines. Convenience sampling and purposive sampling were used to recruit the remaining participants. The final dataset consisted of 1281 participants who completed the MHC-SF at baseline of these different studies. Their age ranged from 18 to 84 with a mean age of 43.53 (SD = 14.05) years. The majority of participants were female (77.7%). The inclusion criterion for the current analysis was being flourishing, defined as a high score on at least one of the three dimensions of hedonic well-being and a high score on at least six of the dimensions of eudaimonic well-being (Keyes et al., 2008; Schotanus-Dijkstra et al., 2016). A total sample of 260 people (20.3% of the initial dataset) were identified as flourishers, of which 86 (33.1%) were male and 174 (66.9%) were female. The mean age of this sample was 40.42 (SD = 15.95) years ranging from 18 to 84.

Measures

The MHC-SF was used to both identify the (flourishing) participants that were relevant for this study and to perform the cluster analysis. The MHC-SF is a 14-item self-report questionnaire constructed to measure mental well-being (Lamers et al., 2010). Participants can be classified into three categories based on their score. In order to be categorized as flourishing, at least one out of three of the hedonic well-being items and six out of eleven eudaimonic items must be answered with “every day” (5) or “almost every day” (4). Therefore, scores equal to or higher than 4 on any dimension can be seen as sufficient to fulfill the respective dimension. If the opposite is the case, the mentioned number of items are answered with either “never” (0) or “once or twice” (1). In this instance, the person can be seen as languishing. Any in between result indicates moderate mental health. All questions of the questionnaire were of importance as they

not only revealed the individuals that can be regarded as flourishers but also provided information about the scores on the 14 domains of well-being. Moreover, high scores on the separate components of hedonic-, social- and psychological well-being were of importance to examine how the different combinations of dimensions make up flourishing.

Data analysis

SPSS was also used to identify flourishers, to compute descriptive statistics and to perform the cluster analysis. A k-means clustering algorithm was used on the MHC-SF items to identify natural groups within the dataset. Z-scores for each of the 14 dimensions (items) of the MHC-SF per participant were computed to allow an easy comparison of scores. Based on these z-scores, k-means cluster analysis was employed. The number of clusters which the algorithm tries to identify started with 2. After that, iterative additional k-means cluster analyses were done adding one cluster after each classification. This was done iteratively analyzing the cluster solutions based on both the number of participants per cluster and interpretability of clusters. At the number of six clusters, the interpretability of the cluster solution became unclear and the a-priori defined number of required participants per cluster (at least 10) was no longer met. Therefore, the optimal number of clusters was identified to be five.

An ANOVA was run for each MHC-SF item with the five clusters. For each of the 14 cluster variables the means were analyzed to visualize the significance of each of the 14 different dimensions for the classification. If a certain variable has a p-value of above 0.05 its exclusion from the cluster analysis can be considered as it does not have a sufficient impact on the clustering procedure (Sulistyono et al., 2021). At a total of five clusters, all of the 14 dimensions had an ANOVA significance score of <.001, indicating that each of the 14 dimensions had an impact on the determination of what cluster the individual was grouped into. Another value to be

determined was the number of iterations. This value determines the number of times the algorithm adjusts the respective cluster centers of the five clusters to maximize differences between clusters and minimize differences within clusters. At 20 iterations, the change between the iteration steps reached 0.00 for cluster one and three and was below 0.01 for the remaining three clusters. This indicated the end of the optimization of clusters. All the participants were assigned to their respective clusters which allowed a comparison of flourishers within as well as between the clusters. The mean scores per dimension for the respective clusters were analyzed and compared to qualitatively characterize the flourishing profile in each cluster. Based on these individual flourishing profiles, the clusters were given typical animal names to resemble their respective characteristics.

According to the Centraal Bureau voor de Statistiek (2020), the Dutch population is composed of 49.68% males. Therefore, the flourishing sample of this study (33.1% males) did not represent the actual gender distribution of the Netherlands. To be able to draw inferences about the gender distribution within the respective clusters, a weighting factor of 1.501 for males and 0.752 for females was computed and applied to the dataset in SPSS. In a separate paragraph, the findings incorporating the weighting factor are displayed. For the main findings, the weighting factor has not been considered.

Results

The k-means cluster analysis revealed five different clusters. First, a general overview of the findings is provided. After that, the five different clusters are described separately. Lastly, individual pairs of clusters are compared.

Results of the cluster analysis

The mean scores of subscales and dimensions per cluster as well as of the whole sample are displayed in Table 1. The overall mean score of the combined dimensions of well-being ranged from 3.21 (Cluster 1) to 4.27 (Cluster 5). What all clusters have in common is the comparably low score on the social well-being subscale. In all the 5 clusters, this subscale had the lowest scores among the three subscales ranging from 2.5 (Cluster 1) to 3.66 (Cluster 5) with an average of 3.27 on the total sample. Emotional and psychological well-being had almost identical average scores among the 260 participants with a mean score of 4.13 for emotional well-being and 4.16 for psychological well-being. A similarity that all the five clusters displayed can be seen in the emotional well-being subscale. Each of the clusters scored a pattern in which Interest in Life had the highest score, Life satisfaction was in second place and Happiness was scored the lowest.

The overall highest mean score was observed for Interest in Life (4.59), with all clusters scoring at least a 4 on this scale on average. The overall lowest score was found for Social-Actualization (2.28). None of the five clusters was found to have achieved a satisfactory score (scores ≥ 4) on this dimension. Some of the clusters even displayed a score of 1 on average (Cluster 1 and 4).

Table 1

Mean values of the 14 dimensions per cluster

Dimension of well-being	Cluster 1 Mole (n = 14; 5,4 %)	Cluster 2 Bee (n = 85; 32.7 %)	Cluster 3 Beaver (n = 38; 14.6 %)	Cluster 4 Eagle (n = 53; 20.4 %)	Cluster 5 Elephant (n = 70; 26.9 %)	Total sample (*n* = 260)

Emotional well-being	3.35 (0.46)	**4.01 (0.40)**	3.53 (0.48)	**4.38 (0.37)**	**4.56 (0.37)**	**4.13 (0.56)**
Happiness	2.86 (1.03)	3.62 (0.69)	3.00 (0.84)	**4.13 (0.65)**	**4.36 (0.59)**	3.79 (0.86)
Interest in life	**4.00 (0.68)**	**4.39 (0.54)**	**4.37 (0.59)**	**4.81 (0.44)**	**4.91 (0.28)**	**4.59 (0.55)**
Life satisfaction	3.21 (1.19)	**4.02 (0.62)**	3.21 (0.78)	**4.21 (0.57)**	**4.41 (0.60)**	**4.00 (0.79)**
Social well-being	2.50 (0.80)	3.61 (0.40)	3.03 (0.52)	2.55 (0.53)	3.66 (0.58)	3.27 (0.70)
Social Contribution	1.57 (1.28)	3.44 (0.98)	2.58 (1.18)	2.98 (1.26)	3.87 (1.02)	3.23 (1.24)
Social Integration	3.29 (1.49)	**4.34 (0.67)**	2.76 (1.28)	**4.11 (1.07)**	**4.30 (1.10)**	**4.00 (1.16)**
Social Actualization	1.00 (1.11)	2.95 (1.05)	2.05 (1.37)	1.08 (0.98)	2.74 (1.18)	2.28 (1.36)
Social Acceptance	2.64 (2.10)	3.91 (0.73)	3.79 (1.04)	1.81 (1.24)	3.64 (1.06)	3.32 (1.35)
Social Coherence	**4.00 (1.36)**	3.42 (0.91)	**4.00 (0.90)**	2.79 (1.54)	3.74 (1.06)	3.50 (1.19)
Psychological well-being	3,7 (0.27)	3.89 (0.26)	**4.12 (0.38)**	**4.09 (0.31)**	**4.63 (0.26)**	**4.16 (0.42)**
Self-acceptance	3.21 (1.31)	3.81 (0.61)	**4.29 (0.73)**	3.85 (0.79)	**4.54 (0.56)**	**4.05 (0.79)**
Environmental mastery	**4.21 (0.58)**	3.84 (0.71)	3.92 (0.78)	**4.13 (0.65)**	**4.57 (0.55)**	**4.13 (0.72)**
Positive relationships	**4.29 (0.47)**	**4.33 (0.59)**	3.58 (1.00)	**4.72 (0.46)**	**4.90 (0.30)**	**4.45 (0.72)**

Personal growth	3.79 (0.89)	3.59 (0.79)	**4.00 (0.96)**	3.30 (1.14)	**4.41 (0.84)**	3.82 (1.00)
Autonomy	**4.29 (0.61)**	3.69 (0.82)	**4.34 (0.67)**	**4.09 (0.74)**	**4.53 (0.63)**	**4.13 (0.79)**
Purpose in life	2.57 (0.94)	**4.08 (0.54)**	**4.61 (0.50)**	**4.45 (0.57)**	**4.83 (0.42)**	**4.35 (0.74)**
Total score	3.21 (0.30)	3.82 (0.21)	3.61 (0.29)	3.60 (0.25)	**4.27 (0.24)**	3.83 (0.39)

Note: The bold figures represent the dimensions with a sufficient score (mean scores ≥ 4) that can be considered as fulfilled flourishing dimensions

Description / interpretation of the flourishing profiles

Figure 1 allows for a comparison between the overall scores per subscale in the five different clusters. Figures 2-4 represent the mean values per dimensions for the respective subscales of well-being. Based on these scores and their comparison to the other clusters, characteristics of the individual flourishing profile were examined. Combining these individual characteristics, each of the five different clusters were assigned with an animal that was considered to fit the flourishing profile of the individual clusters.

Cluster 1 – Mole

Cluster 1 was the smallest cluster consisting of only 14 individuals (5.4%) of the 260 cases. An equal number of males and females with a mean age of 37.8 years formed this cluster.

Overall, this is the cluster with the lowest scores on the level of both dimensions and subscales. The mean value for the combined 14 dimensions in this cluster was 3.21, which is the lowest of all clusters. The mean values per subscale are the lowest for emotional-, social- as well as psychological well-being components. Overall, only 5 of the 14 dimensions were scored satisfactorily (scores ≥ 4). Besides cluster 2, which also scored high on only 5 dimensions, all other clusters scored high on at least 1 and up to 5 more dimensions. As can be seen in Figure 1, the

highest overall scores were achieved in the psychological subscale. The emotional dimensions were on average higher than 3 while the social subscale was the lowest, even scoring below 3.

Figure 2 – 4 represent the scores of the individual dimensions per subscale in comparison to the other clusters. Examining these results, a profile for the Mole was created. The profile of the mole characterizes itself through several factors. These include being good at what they are doing and standing up for themselves but not regularly having the feeling to contribute something important to society. Generally, they do not evaluate society as good or becoming better but they have a number of meaningful relationships. They are not constantly happy or satisfied with themselves. Therefore, Cluster 1 was named after a mole as moles live under the surface among themselves without a lot of contact to the overworld and other social creatures. Still, they are good at what they are doing in digging tunnels but do not make the impression of being overly happy as they live in quite dark places on their own.

Cluster 2 – Bee

Cluster 2 was found to be the largest cluster of 85 cases (32.7%). It also characterizes itself through a high prevalence of females (77.6%) and by the highest mean age among the five clusters which was 42.8 years.

Overall, this is the cluster with the second highest score with a mean total wellbeing score ($M = 3.82$). As can be seen in figure 1, all the mean subscale scores are above 3. Nevertheless, only 5 of the 14 dimensions were scored high on (scores ≥ 4). The emotional ($M = 4.01$) and psychological (3.89) subscales have achieved higher scores but the social well-being subscale is what stands out compared to the other clusters. With a score of 3.61, the social well-being scale is the second highest with only a slight disadvantage towards cluster 5. This cluster characterizes itself by solid scores above 3 on 13 out of 14 dimensions, making it the cluster that scores second

highest in general. Nevertheless, it scored high on the fewest number of dimensions together with cluster 1.

Examining and comparing the individual scores of the dimensions per subscale, a profile of this cluster was created and assigned as Bees. Figure 2 – 4 visualizes the clusters scores in comparison to the others. Bees are especially thriving in social contexts compared to the other clusters. They have a strong sense of belonging to a community, are predominantly happy with themselves as well as society and generally have no characteristic that stands out as being especially neglected. Therefore, the name of the Bee was decided on as Bees are known to live in colonies working and living together with conspecifics.

Cluster 3 – Beaver

Cluster 3 was the second smallest cluster of 38 cases (14.6 %). As in most of the clusters, the majority of people assigned to this cluster were female (65.8%). The mean age of this cluster is 40.39 years.

Figure 1 illustrates that this is the cluster with the third highest well-being scores. The mean value for the combined 14 dimensions is 3.61. The third cluster especially characterizes itself throughout high psychological well-being, while social well-being is barely satisfactory. The psychological well-being subscale was found to only be higher in cluster 5. Only cluster 1 scored lower on the emotional well-being subscale. Overall, 6 of the 14 dimensions were scored ≥ 4.

Comparing the scores on the dimensional level per subscale to the scores of the rest of the sample through figure 2 - 4, cluster 3 was assigned the name of the beaver. They are especially blooming in the psychological dimensions. They have a strong sense of pursuing a meaningful goal, stand up for themselves and are satisfied with their personality. On the other hand, they

have the lowest score in Life satisfaction and lack the continuous feeling of belonging to a group or contributing to society. The name of the beaver is mainly developed based on the psychological assets. They are known to have a meaningful goal which is commonly pursuit by beavers in building dams.

Cluster 4 – Eagle

Cluster 4 contained 53 cases (20.4%). In this cluster, the genders are distributed almost equally with 45.3% being male, which makes this cluster the one with the second-highest percentage of males. The mean age of this cluster is 36.55 years which also makes this cluster the youngest one.

Figure 1 identifies this cluster as the one with the second lowest scores overall. The mean value for the combined 14 dimensions is 3.60 which makes it compete closely with Cluster 3. The fourth cluster especially characterizes itself throughout high emotional well-being while social well-being is in general not satisfactory. The psychological well-being subscale was found to be only slightly lower than the one of cluster 3, making it the third highest one. The emotional well-being subscale only received higher scores in Cluster 5. But the social well-being scale is just barely higher than the lowest one of Cluster 1. Overall, 8 of the 14 dimensions were met (scores ≥ 4).

Cluster 4 is associated with an eagle. Figure 2 – 4 visualizes its high scores concerning emotional and psychological well-being, but also their lack in social competencies. They are happy and satisfied with their life, lack continuous chances to grow but have a strong sense of direction in their lives. Moreover, they feel like having close relationships on a daily basis but do not evaluate society or mankind in general highly. They do not often feel like contributing to society and out of all the clusters they have the lowest score on feeling like society makes sense to them. Therefore, the name of the Eagle was created. Eagles seem like floating above other

species, being on their own and happy with their lives. As Eagles do not have any predators or similar things they need to worry about, the name was fitting to Cluster 4.

Cluster 5 – Elephant

Cluster 5 was found to contain 70 cases (26.9%) which makes this cluster the second largest. In this cluster, the majority of people were found to be female (67.1%). The mean age of this cluster is 41.01 years.

Figure 1 shows that overall, this is the cluster with the highest scores. The mean value for the combined 14 dimensions is 4.27. Therefore, this the only cluster that generally scores satisfactory (≥ 4). It has the highest overall values in all three subscales. As can be seen in the figure above, the fifth cluster especially characterizes itself throughout high emotional well-being and even closely higher psychological well-being. Social well-being also obtained the highest score of all 5 clusters (3.66) but compared to the other subscales, it is quite a bit lower. Overall, 10 of the 14 dimensions were met (scores ≥ 4).

Examining the individual scores per dimension of this sample, visualized in figures 2 – 4, cluster 5 are the most optimal flourishers of this sample and referred to as Elephants. They stand out in having the highest score in every subscale as well as in 10 of the 14 dimensions, thriving in psychological, emotional, and social well-being. Elephants were chosen to resemble these characteristics as they are known to be social animals, can deal with predators, have a sense of belonging in forming groups and make the impression to be satisfied with their lives.

Figure 1

Mean values per subscale for the five clusters

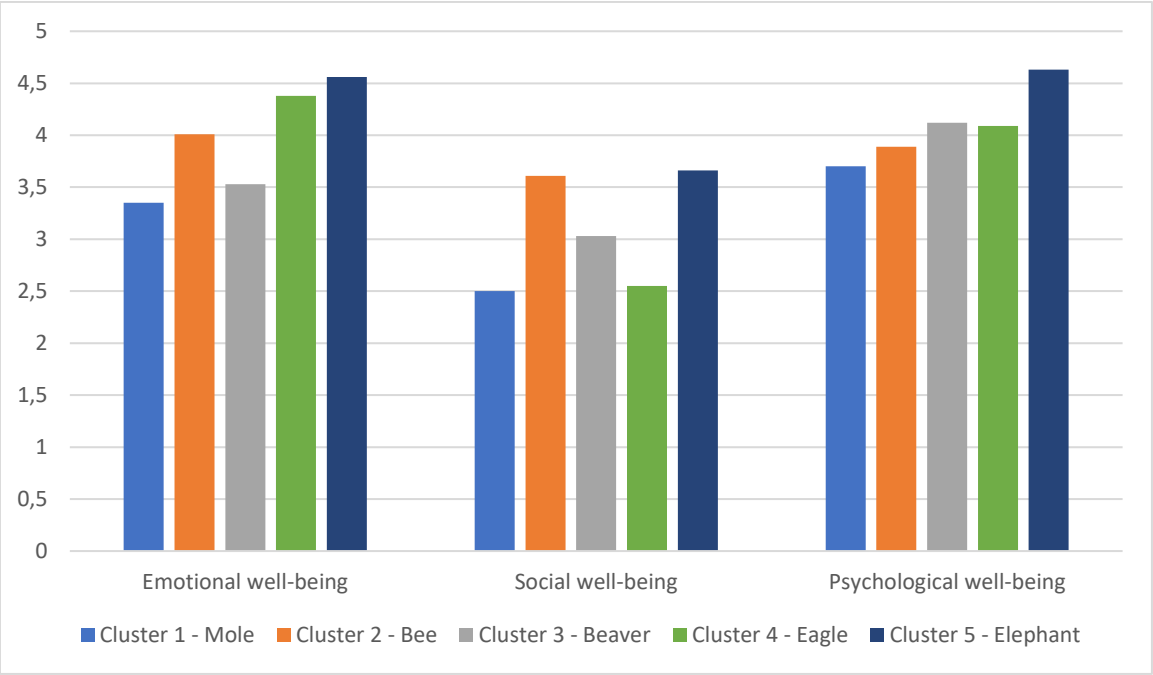


Figure 2

Mean values per dimension of emotional well-being for the five clusters

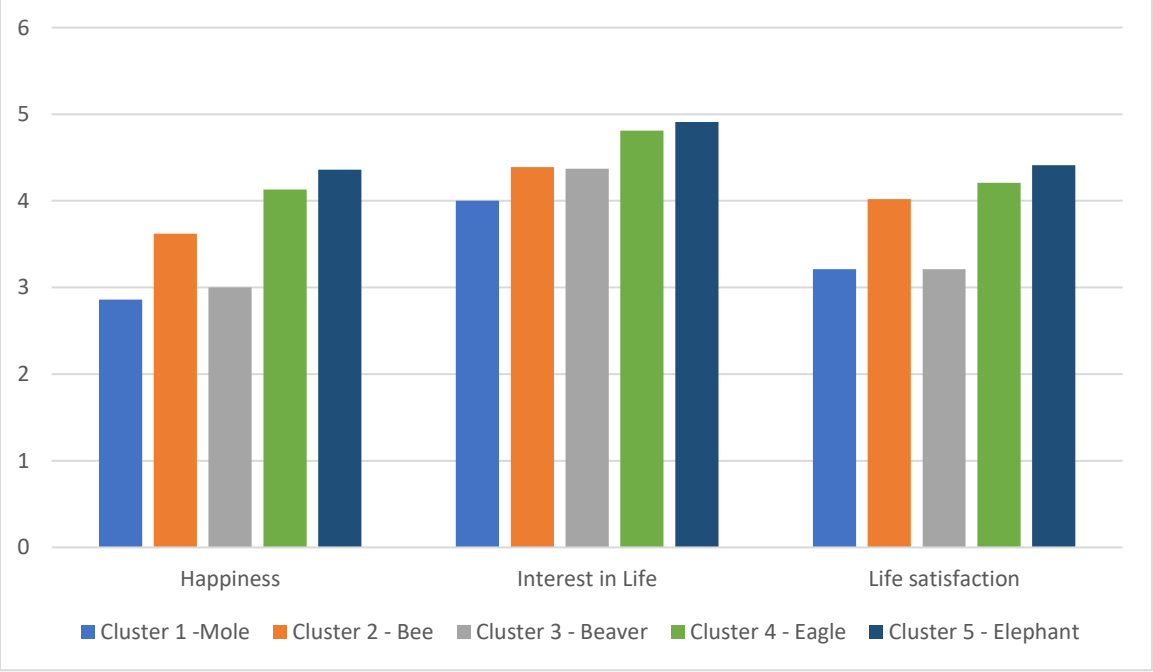


Figure 3

Mean values per dimension of social well-being for the five clusters

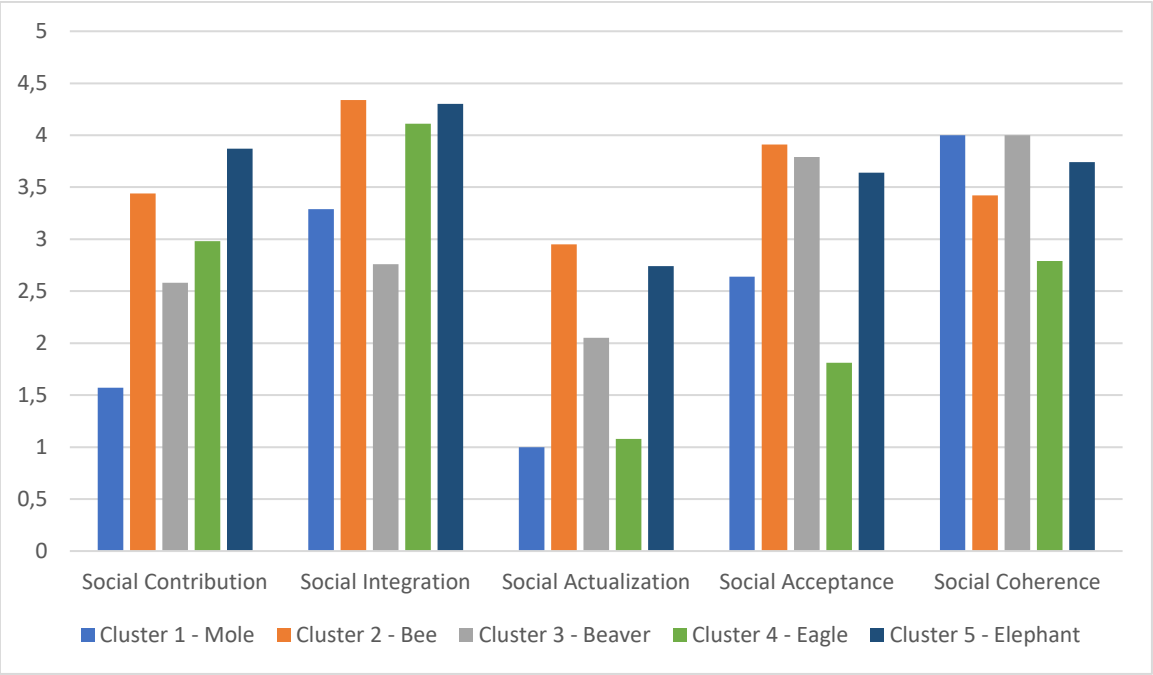
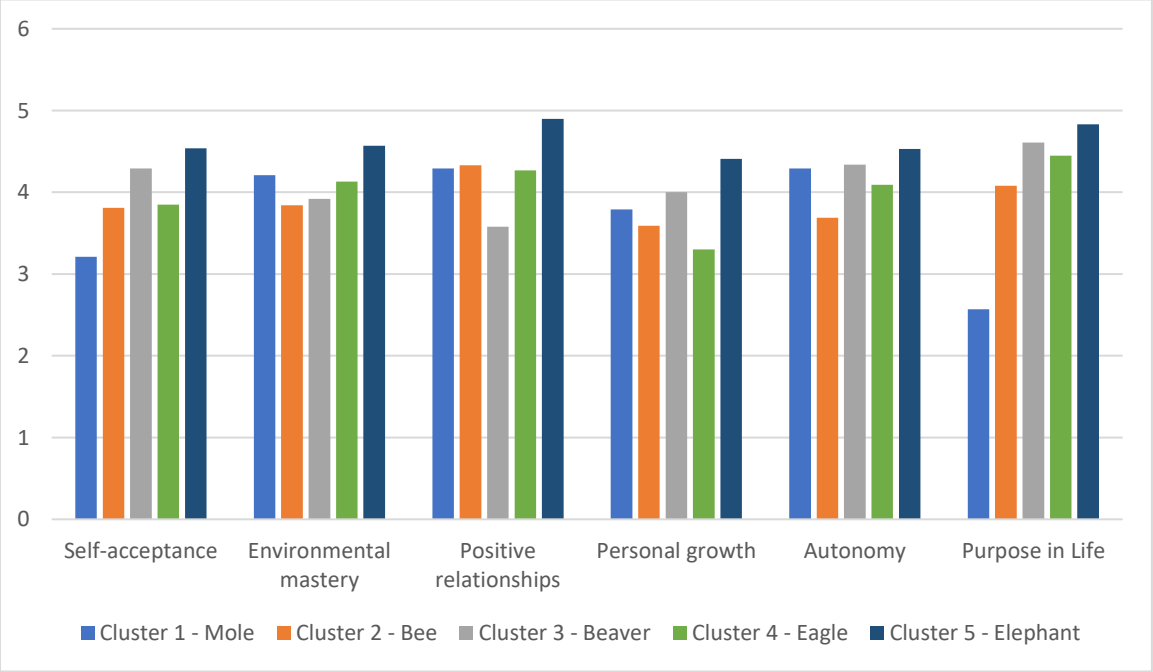


Figure 4

Mean values per dimension of psychological well-being for the five clusters



Gender representation

The initial dataset of 260 flourishers did represent the Dutch population in displaying different age groups. Nevertheless, the gender distribution of 33.1% males clearly does not represent the actual representation of males in the Netherlands (Centraal Bureau voor de Statistiek, 2020). Therefore, a weighting factor was applied to the dataset. This allowed for a more realistic view on the actual gender distribution of the certain clusters.

Cluster 1 became marginally bigger now accounting for 6.15% of the sample. This sample contains 66.6% males. Cluster 2 entails only 30% of the sample but is still the biggest cluster. Within this cluster females were overrepresented (63.5%). Cluster 3 still represented 14.6% of the cases with an almost equal distribution of males (50.9%) and females (49.1%). Cluster 4 grew to 22.3 % with a overrepresentation of males (62.3%). Cluster 5 did not change in terms of size and contained an almost equal distribution of males (49.4%) and females (50.6%). The mean scores per dimensions and subscales did not change at all for some clusters or only marginally therefore allowing for a comparison between the actual and weighted gender distribution. Eventually it can be said that Moles and Eagles are more common in males than in females while Bees are more typical in women. Elephants and Beavers are almost equally present in males and females.

Discussion

The aim of the present study was to identify clusters with different flourishing profiles among the flourishing Dutch population based on the 14 individual dimensions of well-being. The results revealed a total of five distinct and interpretable clusters. Each of these clusters displayed some unique characteristics based on the dimensions of well-being that were fulfilled. As expected, the number of fulfilled dimensions differed between profiles. While the Moles and Bees only scored high on an average amount of 5 dimensions, the Elephants scored satisfactory on 10 dimensions

on average. Furthermore, differences between the hedonic and eudemonic components could be found. Bees displayed comparably high levels of emotional well-being compared to their other scores fulfilling every dimension but happiness. Beavers had their highest scores in psychological well-being. Eagles scored high on both of these dimensions but lacked social well-being. It can be concluded that even within flourishers, which are a small subgroup of people with generally high mental health, there are substantial variations in their perception of well-being on a dimensional level. Those allow for a further distinction of different flourishing profiles.

Examining the mean scores per well-being component, it becomes apparent that on average flourishers in the Dutch population possess about equally high levels of emotional and psychological well-being. Nevertheless, segmenting the sample into the five clusters, it shows that this is not the case for the individual clusters. Especially Beavers and Moles display notable differences between emotional and psychological well-being. For social well-being the mean score of the whole population is the lowest. This also shows in the scores of the individual clusters. Only Bees and Elephants come close to a satisfactory average score on this dimension. These findings indicate that social well-being may generally be lower in flourishers than the other scales. A study by Joshanloo et al. (2013) found this pattern in populations of Iran, the Netherlands and South Africa as well. Furthermore, high scores on either emotional- or psychological well-being, or a combination of both, does not predict a high score on social well-being. This is also related to the findings of study of Franken et al. (2018). They found that among the three subscales, social well-being has the least predictive power concerning the total MHC-SF score. Moreover, studies like the one of Pancheva et al. (2020) did not even incorporate this subscale as its correlation with the other scales is too weak.

Flourishing, as a state of mental health, is regarded as maintained by an individual who thrives in life, feels good and functions well socially as well as psychologically (Huppert & So,

2009¸Keyes & Corey, 2002; Schotanus-Dijkstra et al., 2016). Thus, the image of a happy individual with social competencies who thrives psychologically is painted. Still, the different clusters found in this study create another picture of many flourishers. The Mole did not obtain satisfactory score on average on any of the three subscales. They tend not to feel happy on most days and especially struggle with regards to the social dimensions. Still, they are flourishing according to the definition of Keyes et al. (2008). Examining the average scores on the well-being components, it could be inferred that they are rather moderately mentally healthy. Also, the eagles display a lack of competencies in every single dimension of social well-being apart from Social Integration. Nevertheless, they make up for it through thriving in the psychological and emotional well-being dimensions. In fact, the Elephant is the only cluster that represents flourishers as pictured through flourishing definitions because they scored high on every single subscale of well-being. But only about 27% of flourishers in this sample belonged to this cluster. This clearly shows that there are a lot of ways to obtain flourishing mental health besides the one proposed through the common definitions. It may even be possible to speak of different flourishing diagnoses as the characteristics between clusters based on dimensional scores clearly differ from cluster to cluster. Apart from the individual differences between flourishers found in this study, there were also a number of commonalities. On a dimensional level it can be concluded that Interest in Life was the one dimension fulfilled by every cluster, while Social Actualization was not scored satisfactory by any cluster. This finding was also in line with the study of Joshanloo et al. (2013) which assessed Social Actualization as unsatisfactory in the populations of South Africa, Iran and the Netherlands. In the Netherlands and Iran, it was even the lowest overall score while in South Africa a score of 2.97 was achieved. The sample in these populations consisted of people with a mean age of 21.4. Further research may investigate whether age plays a role in explaining these low scores. Additionally, the fairly high score in

South Africa suggests that cultural backgrounds may also possess predictive power in the score of Social Actualization. Overall, this suggests a difference in the overall importance of certain dimensions when it comes to the goal of flourishing mental health. Interest in Life may be a more crucial dimension predicting flourishing mental health than others such as Social Actualization. Which also raises the question of the importance of the Social Actualization dimension when assessing flourishing mental health.

Lastly it was found that males are more inclined to fall into the cluster of Moles or Eagles while females were more frequently found in Bees.

Comparison to existing literature

Putting the findings into perspective regarding existing literature on this topic is difficult as, to the researcher's knowledge, this was the first attempt to cluster a sample of flourishers considering all three dimensions of well-being. Still, two existing studies can be compared to the present one in certain aspects. The findings of Busseri et al. (2007) are partly in line with the findings of the present study. The largest cluster they found consisted of individuals with high life satisfaction and positive affect as well as low negative affect. In the present study this could be considered as high Life satisfaction and Happiness. The largest three clusters of the present study, the Beaver, Eagle, and Elephant, all displayed both high levels of Life satisfaction and Happiness. In total, 80% of the sample displayed a similar combination of high levels on these two dimensions of emotional well-being as the largest cluster in the study by Busseri et al. (2007).

The second study that produced comparable outcomes as the present one is the study by Pancheva et al. (2020). Their k-means cluster analysis of the dimensions of emotional and psychological well-being revealed a total of 5 clusters. The patterns of combinations between

high/low scores on emotional and psychological well-being were represented in the present study as well. As an example, one cluster displayed high psychological well-being with simultaneous low emotional well-being. This cluster is represented in the current study by the Beaver who scored second highest in psychological well-being and second lowest in emotional well-being. The same accounts for the three other clusters found in the study of Pancheva et al. (2020). However, they only incorporated two of the three components of well-being and did not only analyze the clusters for flourishers only, but for the whole population irrespective of their level of mental health. Given that the present study only analyzed the data of flourishers, it can be regarded as quite interesting that flourishers seemed to fall into comparable clusters as the general population of mixed mental health conditions. This further points towards a rather dimensional distribution of the concept of flourishing rather than a binary one.

Strengths and Limitations

A strength of the present study is the large, combined data set of 1281 participants which was relevant as only a selection of this sample could be used in the process of the cluster analysis. The larger the sample, the higher the probability of finding stable differing clusters among them. A further asset of the sample is that it represents the Dutch population rather precisely. It is not a student population but rather a mixed group of men and women of different age groups. Nonetheless, the acquisition of actual clusters was limited as there needs to be a large enough group of participants per cluster for interpretation purposes as well as to define whether they are represented in the actual population. A study by Dolnicar et al. (2014) underlined the importance of large samples in order to ensure the correct segmentation of data into several clusters. Most research on sample sizes suggest a number relative to the variables used in order to cluster the data. For example, Dolcinar et al. (2014), even though they examined a different topic, suggested

a sample size of 70 times the respective variables. Nonetheless, the current size of the sample allowed for a distinction into 5 substantive groups. A study with an even larger sample size could potentially have allowed for an even larger number of clusters, even though a cluster size of 5 seems fitting for the number of 14 dimensions. An even greater sample size could have made it more difficult to interpret or illustrate differences between them. Cluster 1 (moles) was the one with the smallest number of individuals. A larger sample size could have further indicated to what extent this cluster is represented in the population and it would have allowed for a more reliable estimation regarding the distribution of characteristics within clusters.

Another limitation of the present study can be the point in time during which the data were collected. Most of the data was gathered before the COVID-19 pandemic and a small percentage early in the pandemic. A study by Perk (2021) has not revealed a significant change in the way people describe flourishing from their own experiences before and after the pandemic started. Nevertheless, the pandemic could have had an influence on especially the social subscale of flourishing. Overall, the social well-being subscale achieved the lowest average scores, suggesting it may be of less importance for people as the 260 people in the sample were still flourishing. This is further underlined as several studies did not even incorporate this subscale as it does not correlate as well with the other ones (Pancheva et al., 2020). This, for example, could have changed in the past years as socializing was made a lot more difficult during COVID-19 lockdowns possibly weakening this correlation even further.

A last limitation of this study is the cut-off score of fulfilling at least seven dimensions to be diagnosed as flourishing using the MHC-SF. This predisposition can of course be questioned and setting the cut-off score higher or lower would possibly have produced completely different outcomes. It needs to be stressed that this cut-off score was used in this and many other studies

but there is a possibility that flourishing may be assessed more reliably using other cut-off scores or surveys, which is still to be researched

Suggestions for future research

There are a number of steps to be taken in order to enhance the likelihood of these findings to have an influence on the healthcare system. Current findings showed several notable differences between the clusters, especially when comparing Moles and Elephants. Even though both are flourishing according to Keyes' definition, there may be a difference in the experience of this mental state. When regarding sufficient scores on certain dimensions as the opposite of symptoms for mental illnesses, it raises the question whether people with differing flourishing profiles have other benefits, are more/less productive or generally whether the mental state of flourishing can be perceived differently. Just as different mental illnesses feel different and have other influences on peoples lives, this may also be the case for different states of flourishing, just in a positive sense. An important aspect with regards to the Positive Psychological approach is to shift the focus away from the negatives and towards the aspects of life in which individuals thrive. As important as it is for people to improve their mental health, it is also important for individuals with already flourishing mental health to sustain their well-being. Characterizing the individual well-being profile of flourishers, it becomes apparent what domains of their life's are responsible for their high level of well-being. This creates a deeper understanding of what they need in their lives to thrive and allows a focus on those domains in clinical practices. A deeper understanding of what comprises the flourishing profiles of individuals would allow for a more nuanced focus on certain aspects of life in clinical practice. Some profiles may benefit more from enhancing certain domains of social well-being while others profit more from focusing on creating a purpose in life.

Further research on this topic may also include whether there are correlations between personality traits, such as the big five, and the affiliation of the respective clusters. Research on these topics may not only allow people in the healthcare system to know what dimensions to work on in order to increase individuals' mental states but may also allow employers to efficiently search for workforces or train existing ones in becoming more resilient and efficient. Generally spoken, knowing which cluster a person is allocated to allows us to draw inferences on possible strength of the individual but also about dimensions of their lives that need to be worked on or are neglected. That way, society may profit from the present study. Another topic to be researched can be the relation between flourishing profiles and age. Does peoples' flourishing profile change over time? Does it relate to certain life circumstances? This would allow for preventive measures to be taken in order to maintain high mental well-being when faced with aging or life changes. Additionally, this may point towards the possibility to help people move form moderate mental health to flourishing by knowing in which cluster they fall. This way, inferences can be drawn on what advice to give in clinical settings to tailor down possible treatments to the specific dimensions that needs to be worked on. Labelling positive mental health profiles as done in this study with the animal names may further stress the importance of individuals to not only focus on why they feel bad but to also question what makes them feel good. Further stressing the importance of that in the health care system may allow for individuals to analyze what they need in order to flourish and what to do in order to maintain an already high level of well-being. This would also benefit society in the way to ensure that people stay healthy once they are flourishing. Making people aware that there are a lot of different ways to flourish in life apart from the picture painted of an optimal flourisher may fuel optimism and interest on the topic of well-being in general.

Conclusion

The present study illustrates that flourishing mental health can be obtained in multiple ways. Individuals do not have to thrive in every domain of their life to be regarded as being in a state of optimal mental health. This study found a total of five distinct profiles of flourishers with individual differences and patterns of well-being dimensions.

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