The relation between flourishing, perceived stress, and lifestyle habits to reduce stress

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Abstract

Nowadays, the focus has shifted from treating symptoms to improving the quality of life, i.e., well-being. This is an essential aspect of the field of positive psychology. The current study examined the role of perceived stress, yoga, and meditation in flourishing individuals, which is the highest attainable state of mental well-being. It was expected that flourishing people would perceive less stress in their daily lives and spend more time engaging in stress-reducing activities, such as yoga and meditation. In a cross-sectional design, 153 participants completed an online questionnaire that tracked their well-being, perceived stress, and the number of days they practiced yoga and meditation on average. A weak but significant association was found between perceived stress and well-being. However, no differences in perceived stress levels were found in flourishers compared to non-flourishers. Additionally, no associations were found between the variables of yoga, meditation, and flourishing but with overall well-being and meditation. Future research should utilize a longitudinal study to understand participants' well-being and perceived stress levels fully. Additionally, more items should be used for stress-reducing activities that include other options such as reading or exercising.

Keywords: flourishing, well-being, perceived stress, meditation, yoga

The relation between flourishing, perceived stress, and lifestyle habits to reduce stress

Everyone experiences stress during his or her life. It is a widespread phenomenon in modern society that has developed into a global public health problem (Romas, & Sharma, 2017). Stress refers to the body's general response to a demand (Donnelly, Eburne, & Kittleson, 2001). The General Adaptation Syndrome (GAS) is a concept first devised by Hans Selye (1950) that describes the response pattern that the body goes through after being triggered by a stressor. According to that model, any type of stress triggers the same biological responses (Welle, & Graf, 2013). When feeling stressed, the brain becomes more awake, heart rate increases, breathing speeds up, adrenaline is released, and since the digestive and immune systems are not vital in a crisis, they are shut down (Donnelly, Eburne, & Kittleson, 2001). This response to stress, also known as 'flight or fight', can be activated by anything from a minor inconvenience to a significant traumatic event (Welle, & Graf, 2013).

When the stress response is triggered in the body regularly, it can have serious consequences. Constant stress can impair the immune system, which is associated with physical and mental illness (Hales, 2011). Physical health problems associated with stress, including chronic fatigue, muscle pain, and burnout, are all conditions that have increased significantly in modern societies in recent years (European Commission, 2000). Moreover, prolonged and high levels of perceived stress can lead to negative consequences, including developing an anxiety disorder (Wiegner et al., 2015). For example, when students experience high anxiety levels during their studies, it often leads to lower performance levels. This can make them feel that situational demands are beyond their competence, which further increases perceived stress and eventually leads to psychological distress (Cohen, Janicki-Deverts, & Miller, 2007).

The impact of stress is different for everyone, and individuals do not respond in the same way when confronted with similar stressors. The differences in the way individuals

handle stress are attributed to stress tolerance, also called resilience (Izutsu et al., 2004). Resilience, simply put, is a person's ability to cope with stress and adapt to adverse circumstances (Wagnild & Young, 1993). According to Connor & Davidson (2003), resilience is an enduring and relatively stable personality trait that enables individuals to face, overcome, or adapt to extreme difficulties and adversities. It can be influenced by genetics, coping strategies, and lifestyle habits, to name a few (Welle, & Graf, 2013).

Lifestyle habits are regularly performed activities that are chosen by the individual and either benefit or harm one's development. For example, these activities can increase or reduce stress. One of these lifestyle habits that potentially reduces stress is yoga (Chattha et al., 2008). Yoga is an ancient Indian practice that focuses on breathing and physical exercises, combining muscle relaxation, physical training, and meditation (Singh-Khalsa, 1998). The National Institutes of Health classify it as complementary and alternative medicine (Williams, Steinberg, & Petronis, 2003). Research has confirmed that practicing yoga enables individuals to manage and relieve stress (Chattha et al., 2008). Also, Ross and Thomas (2010) found that yoga has profound impacts on physical and mental stress reduction as it effectively helps to manage and prevent stress.

Research focusing exclusively on meditation also found that it promotes relaxation and personal growth (Oman et al., 2008). According to Kabat-Zinn (2009) ‘Meditation does not involve trying to change your thinking by thinking some more. It involves watching thought itself’. Shapiro et al. (1998) observed reductions in stress and anxiety in medical students after 7-8-sessions of a mindfulness meditation program. Another study showed similar effects; after a 4-session training based on passage meditation (i.e., the practice of mediation over a poem or inspirational text), a reduction in psychological distress was found (Winzelberg, & Luskin, 1999). Another more recent study by Zollars, Poirier, & Pailden (2019), which used the app Headspace (meditation app) to test the effects of mindfulness meditation, showed improved

mindfulness and increased mental well-being led to a reduction in perceived stress levels. Concluding from these studies, regular yoga and meditation practices seem to improve people's perceived stress levels and mental well-being.

Mental well-being is divided into emotional, social, and psychological well-being (Keyes, 2002). Emotional well-being refers to feelings of happiness and satisfaction with one's life. Social well-being is defined as positive social functioning related to contributing to society. Finally, psychological well-being focuses on positive individual functioning in terms of self-realization (Westerhof & Keyes, 2009). When individuals score high on all three dimensions, they are flourishing, which is the highest level of mental well-being that can be achieved (Keyes, 2002). Thus, flourishing refers to attaining a balanced life in which the individual feels good and functions well. The opposite of flourishing on the mental health continuum scale is languishing. Those individuals who neither flourish nor languish are considered to have moderate mental health (Keyes, 2010).

Overall, the prevalence of flourishing in Germany is 20% (Huppert, & So, 2013). Comparable to the Netherlands, where 36.5% were flourishing (Schotanus-Dijkstra et al., 2016). Being in a flourishing state brings many benefits with it. Flourishers are more satisfied in life, more productive, and more resilient to stress than people who do not flourish (Diehl, Hay, & Berg, 2011). According to a study by Gloria, & Steinhardt (2013), flourishing individuals perceive the lowest level of stress compared to groups of non-flourishers. Because of all these benefits, it is crucial to determine what factors encourage flourishing. Therefore, the current study aims to replicate existing findings and examine the perceived stress levels of flourishers compared to non-flourishers of German speakers. In addition, the study explores different characteristics of flourishers, namely their engagement in lifestyle habits that can reduce stress, including yoga and meditation. The study also takes the three sub-scales of well-being into account: emotional, social, and psychological well-being. It is hypothesized that

(H1) flourishers perceive less stress in their daily lives than non-flourishers, and that (H2) flourishers participate more often in meditation and yoga than non-flourishers.

Methods

Design

Within a cross-sectional design, two questionnaires were implemented to collect data. A cross-sectional design implies that the data collection is carried out at a specific point in time to examine a cross-section of a population (Vogt, 2011). The relationship between the dependent variable flourishing and the independent variables perceived stress and engagement in meditation and yoga was examined in April 2021. The study was part of a more extensive study that included many different subtopics. The questionnaires included in the current study took around 15 minutes to complete.

The research was approved by the Ethics Committee of the Faculty of Behavioral, Management and Social Sciences (BMS) of the University of Twente (No. 210168). Before the start of the study, participants gave online informed consent. This contained general information about the purpose and time commitment of the study. In addition, participants were assured that the use and storage of participant data would be confidential and anonymous.

Participants and Procedure

Participants were recruited via convenience sampling. Each of the 11 researchers asked approximately 20 friends, family members, or acquaintances to participate in an online questionnaire in Qualtrics. To participate in the study, participants needed an Internet connection, a minimum age of 18 years, and being able to speak and write German. If they were interested in participating, a link was sent, giving more information about the study and asking them to register with their name and email address. Afterwards, they received the consent form and questionnaire via email. The questions were posed in German.

In total, 241 individuals were recruited for the study. After excluding participants that did not complete the questionnaires, the final data set consisted of 153 participants. 96 (62.7%) of the participants were female, and the participants' mean age was 33 years (*SD*=16). The age of the participants ranged from 18 to 83.

Measures

Perceived stress

The Perceived Stress Scale (PSS), constructed by Cohen, Kamarck, & Mermelstein (1994), is the most commonly used psychological instrument for assessing perceived stress levels. The PSS consisted of ten items that capture how unpredictable, uncontrollable, and overloaded respondents perceive their lives to be (e.g., 'In the last month, how often have you been upset because of something that happened unexpectedly?'). For all ten items, five response categories ranged from *never* (0) to *very often* (4). Results were determined by reversing the responses (e.g., 0 = 4, 1 = 3, 2 = 2, 3 = 1 & 4 = 0) of the four positive items (items 4, 5, 7, and 8) and then summing up all answers. Results could range from 0 to 40. When an individual scored high on the PSS, it indicated higher levels of perceived stress. All total scores in the range of 0-13 indicated low stress, all scores in the range of 14-26 moderate stress, and all values in the range of 27-40 high stress. Previous research has found that the internal reliability of the PSS-10 ranges from acceptable (α = .78) to excellent (α = .91; Cohen and Janicki-Deverts 2012). The Cronbach's alpha for the PSS in this study was .85.

Mental well-being

Participants' mental well-being was assessed using the German version of the Mental Health Continuum-Short Form (MHC-SF) (Keyes, 2002). This questionnaire used 14 items to measure emotional well-being ('During the past month, how often did you feel happy?'), social well-being ('During the past month, how often did you feel that people are basically good?') and psychological well-being ('During the past month, how often did you feel that your life

has a sense of direction or meaning to it?'). All items were positively worded. For all 14 items, six response categories ranged from *never* (0) to *every day* (5). The total score of the MHC-SF was calculated by summing up all the scores of each item and taking the mean score leading to total scores between 0 and 5. Higher mean scores indicated higher mental well-being. In the current study, categories of mental well-being were also utilized. Keyes' guidelines were used to classify whether an individual was flourishing or not. An individual could be considered flourishing if he or she scored a 4 or 5 on at least one of the three emotional well-being items and a 4 or 5 on at least six of the eleven psychological and social well-being items. Participants who scored lower landed in the second category, i.e., were not flourishing. Based on the outcome, participants were categorized as *flourishing* (1) or *not flourishing* (0).

The MHC-SF has demonstrated high internal reliability and moderate test-retest reliability, suggesting that its scores are stable over time and sensitive to change (Lamers et al., 2010). Convergent validity and discriminant validity were also found to be good, making the MHC-SF a valid measure of well-being (Lamers et al., 2010). The Cronbach's alpha for the MHC-SF in this study was .86.

Lifestyle habits

Lifestyle habits were measured using two self-developed items: 'In the last 7 days on how many days did you engage in yoga?' and 'In the last 7 days on how many days did you engage in meditation?'. The participants answered on an 8-point scale of 0 (*0 days in a week*) – 7 (*7 days in a week*). High scores indicated higher engagement in meditation and yoga.

Data Analysis

All analyses were performed using IBM SPSS (version 23). Participants were divided into the categories *flourishing* (1) or *not flourishing* (0). None of the participants were considered languishing; therefore, only persons with moderate mental health fell into *not flourishing.* In addition, the data was tested on normality by doing a Shapiro-Wilk test of

normality. A *p*-value greater than 0.05 indicated that the data was normally distributed (Mishra et al., 2019). Furthermore, demographic variables such as gender and age were calculated and compared between flourishers and non-flourishers by doing a t-test and Chi-square analysis. Additionally, Pearson's correlation coefficients were used to examine whether there was a significant correlation between *mental well-being* and its three subscales and *perceived stress*, *yoga,* and *meditation*. A correlation coefficient less than 0.3 was considered weak. A correlation coefficient between 0.3 and 0.7 was viewed as moderate, and a correlation coefficient above 0.7 was considered good (Cohen,1992). To test whether flourishers perceived less stress and engaged more in meditation and yoga compared to non-flourishers, independent t-tests were conducted, and the means of both groups were compared. For the difference to be considered significant, the *p*-value must have been less than 0.05; p-values between 0.05 and 0.10 are considered marginally significant (Obafemi, 2019).

Results

In total, 69 (45.1%) individuals were defined as flourishers. 2 (1.3%) of the participants scored low on the perceived stress scale, while 72 (47.1%) scored moderate, and 78 (51%) scored high. 42% of all males were flourishers, while 46% of all females were flourishers. Thus, no significant differences between females and males were found for flourishing $\chi 2(5, N = 153) = 2.23, p > 0.05$. There is also no difference between the two groups in terms of the mean age. The mean age for flourishers was 33.3 (SD = 15.17) and for non-flourishers 34 $(SD = 16.35; t(151) = -.250; p = .803)$. The Shapiro-Wilk test of normality indicated that the data on all outcomes were normally distributed $(ps > 0.05)$.

Bivariate Correlations

In addition, the Pearson correlation analysis revealed that mental well-being had a moderate significant negative relationship with perceived stress (r = - 0.67; $p < .001$). These results indicated that higher levels of mental well-being are related to reduced levels of

perceived stress. Perceived stress also showed significant negative relationships with all mental well-being subscales, namely emotional, social, and psychological well-being (Table1). Furthermore, there was no significant correlation between mental well-being and yoga practice *(r* = 0.01; *p* = .903). However, meditation practice showed a weak yet significant positive relationship with mental well-being *(r* = 0.24; *p* = .003), indicating that individuals with high levels of mental well-being spent more days on average on meditation practice. This relation was also visible for the subscale of social well-being (*r* = .21; *p* = .009) and psychological well-being (*r* = .23; *p* = .005), but not for emotional well-being (*r* = .15; *p* = .060). In addition, meditation practice showed a weak but significant negative relationship with perceived stress (*r* = -.22; *p* = .005), suggesting that individuals with low levels of perceived stress spend more days on average meditating.

Table 1

Correlations between mental well-being, emotional, social, and psychological well-being, perceived stress and meditation and yoga practice

	1.	2.	3.	4.	5.	6.	7.
1.Mental well-being	-						
2.Emotional well-being	.78**	-					
3.Social well-being	.82**	.43**	-				
4.Psychological well-being	.91**	.67**	.56**	-			

5.Perceived stress	-.67**	-.63**	-.44**	-.64**	-		
6.Yoga	.01	-.08	.04	.02	.13	-	
7.Meditation	.24*	.15	.21*	.22*	-.22*	.13	-

** Correlation is significant at the 0.01 level (2-tailed)*

*** Correlation is significant at the 0.001 level (2-tailed)*

Differences between flourishers and non-flourishers

Moreover, the independent t-test showed that perceived stress was only marginally lower for the flourishing group (*M = 2.56, SD = .51*) than the non-flourishing group (*M* = 2.74, *SD* = .71), *t* (151) = 1.70; *p* = .092 (Table 2). Additionally, participants who flourished practiced on average 0.59 days of yoga (*SD* = 1.26) and 1.05 days (*SD* = 2.07) of meditation per week. Individuals in the non-flourishing group participated in yoga for an average of 0.43 days (*SD* = 1.12) and meditation for 1.12 days (*SD* = 2.06) per week. The t-tests revealed no significant differences in yoga practice (*t* (151) = -.86; *p* = .392) and meditation practice (*t*(*151*) = .18; *p* = .856) between people who are flourishing and those who are not.

Table 2

Comparison of Flourishing and Non-flourishing individuals based on the means of the perceived stress scale and yoga and meditation

	Flourishing n = 69	Not flourishing n = 84	P-value
Perceived stress	2.56	2.74	.092
Yoga	0.59	0.43	.392
Meditation	1.05	1.12	.856

Discussion

The current study aimed to examine the relationship between perceived stress, engagement in yoga and meditation and flourishing. More specifically, it examined whether individuals who flourish perceive lower stress levels and are more likely to engage in lifestyle habits such as yoga and meditation. Yoga and meditation have been found to reduce stress and increase well-being (Moszeik, von Oertzen, & Renner, 2020).

The results of this study are not consistent with the hypotheses. Initially, the first hypothesis stated that flourishers perceive lower levels of stress than non-flourishers. This hypothesis cannot be confirmed because the results are only marginally significant and do not allow for a conclusion to be drawn. A significant negative relationship was seen when considering the total scores of mental well-being and perceived stress. Therefore, it can be assumed that people with higher levels of mental well-being perceive less stress than individuals with low levels of mental well-being. However, when comparing the mean values of perceived stress between flourishers and non-flourishers, only slight differences were seen. This could be due to the strict cut-off score for flourishers and the fact that people in the non-flourishing group still have relatively high to moderate levels of well-being as no one is categorized as languishing. Previous studies often compared flourishers with individuals who are languishing or depressed; this may also explain why these studies found more robust results. For example, Gloria & Steinhardt (2013) examined whether groups of flourishing, languishing and depressed postdocs would differ in their levels of perceived stress. Their results showed that flourishing individuals had significantly lower levels of perceived stress compared to languishing and depressed individuals. In addition, a mixed-methods study by Teschner (2017) compared coping mechanisms between flourishers and non-flourishers. According to this

study, flourishers could be described as more willing to face difficulties and recognize more positive aspects of stress.

In addition, the second hypothesis had to be rejected, which stated that flourishers are more likely to practice stress-reducing lifestyle habits such as yoga and meditation than non-flourishers. There was no difference between the two groups in terms of average days spent on these activities. However, when looking at the total scores, a weak but significant correlation can be seen between meditation and mental well-being. In addition, meditation showed a correlation with two of the three subscales of mental well-being: social well-being and psychological well-being. It can also be seen that meditation and perceived stress displayed a negative correlation indicating that individuals who spend more days practicing meditation perceive less stress. A study by Slonim et al. (2015) showed similar results; they found a reduction in stress and an increase in well-being through meditation. In addition, a study by Zollars, Poirier, & Pailden (2019) showed that mindfulness meditation led to an increase in mindfulness and psychological well-being and a reduction in perceived stress. However, the study was only conducted with pharmacy students, who, on average, have higher stress levels compared to the average (Zollars, Poirier, & Pailden, 2019). Another study by Hartfiel et al. (2012) demonstrated that an 8-week program of yoga led to significant reductions in stress and back pain and improved psychological well-being. In contrast, Teschner (2017) used a qualitative study, showing no differences between the flourishing and non-flourishing groups in terms of 'relaxing activities'. These studies all included different samples, which could be the reason why different results emerged so that no clear conclusions can be drawn yet.

Strengths and Limitations

A primary strength of the current study was the use of the MHC-SF. The MHC-SF is not only a reliable and validated instrument for measuring mental health and its various dimensions, but its frequent use also allows the findings of this study to be compared with other

studies that have used this assessment instrument. Similarly, the perceived stress scale has been widely used to measure perceived stress and therefore facilitates comparison with other studies. Thus, a strength of the current study were the reliable and validated instruments that were used. Another strength of the study was that the sample was a broad convenience sample of the German population with ages ranging from 18-86, 96 (62.7%) were female, and primarily healthy individuals were included.

However, some limitations also apply. The first limitation was that the items for yoga and meditation are self-generated and cannot be compared with results from previous studies. Previous studies have typically encouraged individuals to participate in yoga or meditation and then recorded differences in stress levels or well-being before and after. This makes it easier to study stress and well-being because one has a direct comparison. In this study, participants were only asked once how many times they did yoga and meditation in the last week. Another limitation was the cross-sectional design; it was challenging to infer possible causality because it covered only a short period of time. An additional limitation of the cross-sectional design was that there may be temporary, occasional factors that bias the measurements (Spector, 2019). For example, this could have been the corona situation. Individuals might have feld more stressed or not motivated to do yoga or meditate at these times. Talevi et al. (2020) collected evidence confirming that the ongoing pandemic has enormous psychological and physical effects on people, which can also be seen in this sample as over 50% scored high on the perceived stress scale.

Furthermore, the quantitative nature of the study was limiting as well. Participants were responsible for completing the questionnaires themselves, which may have led to socially desirable responses, which refers to the tendency of individuals to present themselves in the best possible light in questionnaires (Van de Mortel, 2008). It was noticeable that none of the participants were in the languishing group. Thus, they may have overestimated their mental

health or answered in a socially desirable way. In addition, because there were no individuals in the languishing group, it was difficult to compare the differences between flourishers and non-flourishers. The differences between individuals with moderate mental well-being and flourishing mental well-being may not be as extensive as the difference between flourishers and languishers. Someone who has only one point difference from a flourisher still falls into the non-flourishing group, even though that person may have similar or even the same characteristics as a flourisher.

Recommendations for future research

Given the increasing emphasis on positive psychology, the question arises what factors might act as predictors or supporters of the various components of mental well-being and thus contribute to flourishing. For this reason, research should continue to address mental well-being and the subject of perceived stress and lifestyle habits. However, it is recommended that a longitudinal study be conducted to capture all the participants' states of mind and all the different levels of perceived stress, as well as the days spent on lifestyle habits, rather than just a momentary snapshot. A longitudinal study makes it possible to track changes over time in specific individuals, such as their perceived stress levels, and to eliminate recall biases among participants (Caruana et al., 2015). This could be done by having participants write a diary daily for some time. Here, everything could be documented, for example, how they feel and if they have done any stress-reducing activities. In this way, temporary influencing factors are monitored and controlled for. Another possibility would be to conduct an experiment in which the participants are stimulated to engage in stress-reducing activities such as yoga and meditation and record their level of well-being and perceived stress before and after.

In addition, the study should include individuals with low mental well-being to allow comparison with individuals with high or moderate mental well-being so that more evident conclusions can be drawn. In addition, further research should incorporate different variables

such as coping mechanisms and resilience to gain a better understanding of individual stress levels and the influence of mental well-being. Finally, lifestyle habits should be considered more extensively by adding more items about different habits that have not been considered before.

Conclusion

It can be concluded that a negative correlation was found between mental well-being and perceived stress, and a weak but significant correlation was found between overall mental well-being and meditation. Thus, it can be assumed that the higher the mental well-being, the less stress a person perceives and the more meditation the person practices. Stress continues to be a prevalent issue, and it can be expected that a flourishing person tends to have lower levels of perceived stress. Finding ways to combat high levels of stress could be beneficial in promoting mental well-being. Therefore, future research should focus more on lifestyle habits to emphasize their importance and help people adopt more stress-reducing lifestyle habits into their daily lives to enhance their well-being.

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