

**Does Hardiness Mediate the Association between Hope and Wellbeing?**

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### Abstract

**Introduction:** Research revolving around character strengths has repeatedly shown that hope is a significant contributor to people's wellbeing as well as hardiness. Interestingly, attributes that are used to describe people high in hope are also used to describe people high in hardiness. Hence, it was hypothesized that hardiness might mediate the association between hope and PWB. Furthermore, it was also hypothesized that hope has an effect on PWB over and above the effects of hardiness.

**Methods:** As part of an overarching research project 102 students from the University of Twente participated in a cross-sectional online survey. 94 participants made up the data set (63.8% German, 67% female, age =  $21.5 \pm 2.6$ ) Questionnaires included the Adult Hope Scale (AHS), the Psychological Wellbeing Scale (18-item), and the Dispositional Resilience Scale (DRS-15). A mediation analysis was then conducted with the data using the SPSS extension PROCESS Macro.

**Results:** Results revealed a non-significant association between of hope and PWB. In addition, the indirect effect appeared to be significant, indicating that hardiness fully mediates the association between hope and PWB.

**Discussion:** The current study did find a mediation effect of hardiness on the association between hope and PWB. Meaning that hardiness fully mediates the association between hope and PWB. However, no significant correlation was found between hope and PWB. Future research might benefit from investigating the dynamic between hope and hardiness in more detail. In addition, future research might benefit also from investigating the association between character strengths and PWB in more detail as to avoid a one-sided understanding of the effect of character strengths on wellbeing.

*Keywords: Hope, Hardiness, Character strengths, Psychological Wellbeing*

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## **Introduction**

For a long time, psychology was mainly revolving around the identification and treatment of mental illnesses. Although, this process is still very valuable, wellbeing is seen as more than the mere absence of mental illness (World health organisation, 2022). Instead, it is seen as a general state of happiness, characterised by low levels of stress as well as good physical and mental health (American Psychological Association, 2022).

Precisely this recognition, namely that (clinical) psychology is almost exclusively concerned with mental illnesses as favoured the emergence of a new notion within the realm of psychology (Gable & Haidt, 2005). Initially arising from the interest on how to positively improve people's lives, positive psychology developed into a well-established subdivision of psychology and has since then taken on the task of promoting mental health as well as identifying and promoting factors that enhance people's wellbeing (Peterson & Seligman, 2006.)

The two most central concepts within positive psychology appear to be people's character strengths and wellbeing (Peterson & Seligman, 2004). Hereby, character strengths are defined as positive traits which are reflected in thoughts, feelings and behaviours and seem to be existing in degrees (Park et al., 2004). Moreover, character strengths are believed to be significant contributors to human flourishing (Csikszentmihalyi & Seligman, 2000; Peterson & Seligman, 2004). Indeed, the hypothesis that the possession of strengths as well as strength use positively influences wellbeing has been confirmed multiple times (Park et al., 2004; Proctor et al., 2011; Wood et al., 2011).

## **Wellbeing Conceptualisations and Psychological Wellbeing**

Wellbeing is a concept which has not only occupied philosophers over centuries but also captivated academia over decades. In academia there are two widely accepted forms of wellbeing namely subjective wellbeing (SWB) and psychological wellbeing (PWB). Due to the philosophical origin of wellbeing literature, there has been discussion around the question whether wellbeing is best conceptualised as hedonic or eudaimonic (Ryff, 1989; Vázquez et al., 2009). Hereby, hedonism stands for the pursuit of pleasure whereas eudaimonia stands for happiness and is seen as more of a by-product of a well-lived life emphasizing personal development, self-fulfilment, and self-actualisation (Ryff, 1989; Melendro et al., 2020; Ryff & Singer, 2008). As of today, SWB is associated more with hedonic wellbeing as it focuses on life satisfaction and the presence of positive affect in the absence of negative affect (Joshanloo, 2019; Kahneman et al., 1999). PWB on the other hand is associated with

eudaimonic wellbeing since it encompasses a wider range of humanistic factors (Joshani, 2019; Ryff, 1989). As described, there are two prevalent conceptualisations of wellbeing, however this study will focus on PWB.

For the context of this study, the concept of psychological wellbeing (PWB) is preferred over subjective wellbeing (SWB) since PWB is considered to entail a more comprehensive conceptualisation of wellbeing compared to SWB (Joshani, 2019; Vázquez et al., 2009). In 1989 Carol Ryff developed the psychological wellbeing model consisting of the six dimensions autonomy, environmental mastery, personal growth, positive relations, purpose in life, and self-acceptance. Although it was initially developed as a critique against the hedonic conceptualisation of wellbeing at time, it soon became one of the most popular measures of wellbeing (Joshani, 2019). There is a longitudinal study done by Joshani (2019) that found psychological wellbeing to be a more robust predictor of wellbeing over time than subjective wellbeing. In addition, PWB predicted positive changes in SWB (Joshani, 2019). Furthermore, research by Ryff and Singer (2006) associated psychological wellbeing with a range of biomarkers. Hereby psychological wellbeing was associated with better immune functioning, better neuroendocrine regulation, and lower cardiovascular risk (Ryff et al., 2006). Overall, PWB seems to be a more comprehensive measure of wellbeing than SWB. Therefore, due to those findings, and the multidimensional approach to wellbeing PWB is the preferred measurement in the context of this study.

### **Hope and PWB**

Over the years there has been extensive research linking character strengths to higher levels of wellbeing (Proctor et al., 2011; Martinez & Ruch, 2017; Zhang & Chen, 2018). However, some character strengths appear to have larger effects on wellbeing than others. Hereby, there appears to be a noteworthy association between PWB and hope. So called happiness strengths were consistently reported to be central for people's wellbeing (Park et al., 2004). These include the strengths hope, zest, gratitude, curiosity, and love (Hausler et al., 2017; Proctor et al., 2011). Furthermore, the character strength hope has, as part of the so called "happiness strengths", repeatedly showed to be more relevant to wellbeing than other character strengths (Hausler et al., 2017; Harzer, 2016; Proctor et al., 2011). However, a study conducted by Hausler et al. (2017) separates hope from other happiness strengths. Their findings suggested that three of six PWB dimensions were most strongly linked to the character strength hope. This means that hope is strongly associated with half of the PWB dimensions, including the dimensions of meaning, autonomy, and optimism (Hausler et al.,

2017). Therefore, it can be concluded that hope appears to play a significant role in the association between character strengths and wellbeing, more specifically PWB.

For the general public hope is a positive emotion we feel when we envision a fortunate future outcome. However, according to academia hope is more a cognitive process than an emotion. There is one theory in particular that offers the most elaborated approach to hope and it is called the hope model (Snyder et al., 1991). According to Snyder et al., (1991) hope is a thought process that is characterised by three defining concepts called goals, agency, and pathways (Snyder, 1994; Snyder, 2000). The most conclusive definition was offered by Edwards et al., (2007) who define hope as “a motivational state that is based on an interactively derived sense of successful a) agency (goal directed energy) and b) pathways (planning to meet goals)” (p. 83). Hereby, goals are seen as the anchor of the hope model as they are the targets of any goal-directed mental action sequences (Snyder, 1994; Snyder, 2000). However, there are two important conditions in relation to goals. On the one hand, the goal must be of sufficient importance to the individual and on the other hand, the individual must feel capable of attaining the goal (Snyder, 1994; Snyder (2000). The process of goal attainment agency is considered to be the motivational factor which helps the individual to initiate and sustain efforts to approximate that goal (Rand & Cheavens, 2009). Correspondingly, Snyder (2000) defines agency as “the motivational component to propel people along their imagined routes to goals” (p. 10). Lastly, pathways describe one’s ability to generate routes that lead to the achievement of desired goals. More precisely, pathways are defined as “the mental capacity we call on to find one or more effective ways to reach our goals” (Snyder, 2000, p. 8).

Put in more practical terms, according to Snyder (2000) high hope individuals have the belief that they can find alternative ways when faced with obstacles. Moreover, high hope individuals are associated with more motivation as well as a “can-do” or “I’ll try” attitude. As can be seen, people high in hope also have a more positive attitude towards their efforts which in turn makes them more likely to sustain in efforts toward.

### **Hardiness in relation to Hope and Wellbeing**

Another interesting trait that might relate to hope based on some fundamental similarities is the concept of hardiness. Hardiness is, just like hope, a cognitively based personality trait which is conceptually quite closely related to resilience (Harms et al., 2018). Hardiness describes the extent to which a person is predisposed to be resistant to harmful effects of stressors as well as their ability to effectively adapt and deal with challenging

environments (Eschelman et al., 2010). As a result, people that score high in hardiness tend to have higher PWB and in addition are said to be less likely to get sick as a result of stressful life events than people low in trait hardiness (Hull et al., 1987). Furthermore, a study conducted by Kobasa (1979) found that hardy individuals were less likely to get ill as a result of work-related stress than non-hardy individuals. Moreover, hardiness has also been negatively associated with burnout (Mazzetti et al., 2019). The concept of hardiness consists of three characteristics also often referred to as the three C's namely, control, commitment, and challenge (Harms et al., 2018). Control describes a person's tendency to believe that they have influence over their lives (Maddi et al., 1998). Commitment refers to a person's tendency or ability to attach meaning to one's efforts as a means to stay involved with events and people in one's life (Harms et al., 2018; Maddi, 2008). Lastly, challenge refers to the way people appraise difficult circumstances. Individuals high in challenge view such circumstances not so much as a threat but rather as normal events in life as well as opportunities for growth (Harms et al., 2018).

One apparent similarity between the hope and hardiness is that both concepts are associated with optimism (Eschelman et al., 2010; Peterson & Seligman, 2004). In that regard, both traits involve a positive outlook as well as positive expectations about the future (Harms et al., 2018; Snyder et al., 1991). Hereby, the motivational aspect of agency within the hope model appears to speak for an optimistic belief about the future as a basis for people to sustain their efforts in the pursuit of their goals. In the same sense does the aspect of control within the hardiness conceptualisation speak for a similar optimistic belief in which people feel positive about their ability to influence their lives (Maddi et al., 1998). Nevertheless, similarities also apply to how hardy people and people high in hope are perceived. In general, hardy individuals are said to be more likely to see the "silver lining" when faced with difficult situations while also adapting to those conditions in a more productive manner (Eschelman et al., 2010). In addition, according to Kobasa (1979) hardy people are cognitively more flexible which has a positive effect on the way they deal with changes or demanding environments. Likewise, similar properties are attributed to high hope individuals (Snyder, 2000). In that regard, hope was positively correlated with several measures of psychological adjustment which included control perceptions and problem-solving (Snyder et al. 1991). At last, both concepts are positively associated with performance. Hereby, hardiness was consistently positively related to objectively assessed job performances (Westman, 1990). Similarly, Edwards et al., (2007) presented several studies that associated high hope scores with

increased academic and athletic performance. As can be seen, there is a noticeable number of similarities between the two concepts which this study aims to investigate further.

In regard to their association with wellbeing, research on the topics of hope and hardiness has shown that both concepts are positively associated to wellbeing (Eschelman et al., 2010; Hausler et al., 2017). Similarly, hope has also repeatedly been shown to be relevant for people's wellbeing (Hausler et al., 2017; Park et al., 2004). Hereby, high hope individuals were associated with increased physical and psychological wellbeing (Rand & Cheavens, 2009). The same can be said for hardiness, Kowalski and Schermer (2019) suggested based on their findings that hardiness contributes to better mental health. This is in line with the findings of Kobasa (1979) as well as Hystad et al., (2009) who found that hardiness moderated the relationship between stress and (mental) health. As described, both hope as well as hardiness are significant contributors to wellbeing.

### **Association between Hope and Hardiness**

In the context of this study a mediation model is assumed in which more hope leads to more hardiness which in turn leads to more PWB. As noted by Hamid (2020) there is a noticeable research gap when it comes to the association between hope and hardiness. Although, some studies did attend to both concepts these studies treated hope and hardiness as independent variables and were looking at their effects on SWB (Hamid, 2020; Hiver, 2016). However, it should be said that both Hamid (2020) as well as Hiver (2016) have noted an interesting association between the two concepts. Though, since this association was not the primary interest of these studies, the authors have mentioned this association in a rather peripheral manner. Thus, based on the presented literature it becomes evident that there is a noteworthy association between hope and hardiness one that should be investigated more closely.

As mentioned, there is very limited literature on the association between the two concepts. However, there is one study which might be pathbreaking in this context. Hereby, a study conducted by Martinez and Ruch (2017) found large correlations between hope and resilience. Interestingly, resilience is said to be the closest related concept to hardiness thus this study might facilitate a relevant inference (Harms et al., 2018). In this regard, the authors suggested that “emotional strength might provide individuals with the energy, determination, and social connectedness necessary to face adversities successfully” (Martínez-Martí and Ruch, 2017, p.116). Consequently, in the context of the present study this comment puts forward the suggestion that more hope might lead to more hardiness.



Regarding the directionality between the two concepts there is only one contrasting suggestion made by Hamid (2020). In her paper which related to both hope and hardiness the suggestion was made that the hardiness component of control might lead to more hope. However, no data was presented to support this claim. As can be seen there is very limited literature on the association between hope and hardiness. However, based on the data and the proposed directionality presented by Martinez and Ruch (2017) as well as the fact that hardiness and resilience are so closely related this paper will focus on the notion that more hope might lead to more hardiness which in turn might lead to more PWB.

### **The present study**

Since there is a noticeable amount of conceptual as well as perceivable similarities it is important to clarify the association between hope and hardiness as to avoid unnoticed overlaps. It could be the case that these similarities speak to a more profound connection between the two concepts which could change or affect how academia interprets the effects that these two concepts have on various dimensions of life. However, although there have been a handful of studies that attended to hope and hardiness there have not been any studies investigating this association in more detail (Hamid, 2020). This observation was also made by Hamid (2020) who noticed and reported this research-gap in saying that hope and hardiness are rarely investigated simultaneously. Hence, against this background the central aim of this study is to shed light onto the association between trait hope and trait hardiness and PWB. For this reason, the following research question is asked:

*RQ: Does hardiness mediate the association between hope and wellbeing?*

Hypothesis 1: Hope is associated to PWB over and above the effects of hardiness

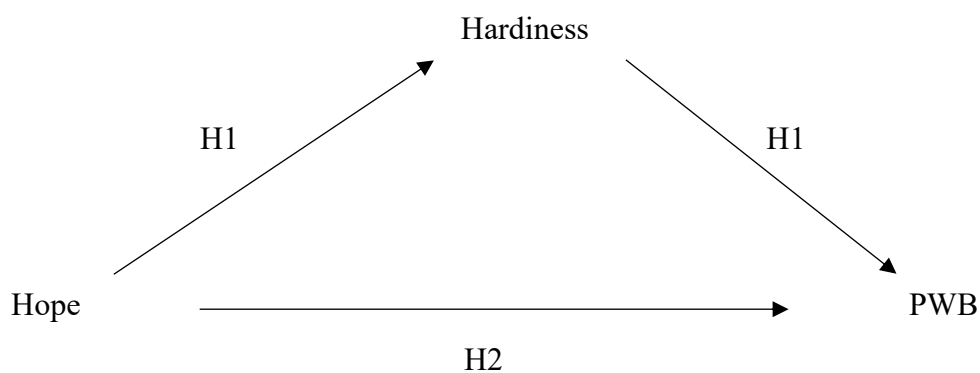
Hypothesis 2: Hardiness does mediate the association between hope and PWB.

Furthermore, in regard to this research, there are some expectations relating to the outcomes of this investigation. Firstly, (H1) it is hypothesised that hope is associated to wellbeing over and above the effects of hardiness. This hypothesis is based on the finding that strengths showed to have predictive value over and above resilience related factors and that hope is repeatedly found to be a significant contributor to wellbeing (Hausler et al., 2017; Martínez-Martí & Ruch, 2017). Similarly, due to the conceptual closeness between resilience and hardiness a similar result is expected manifest also in the context of this study.

Lastly, (H2) it is hypothesised that hardiness mediates the relationship between hope and PWB. In this regard, this hypothesis emerged mainly as a result of the research conducted by Martinez and Ruch (2017) who found large correlations between hope and resilience. Furthermore, the proposed directionality between hope and hardiness has been the only data-based suggestion in this context, therefore it is hypothesized that hope will lead to more hardiness which in turn will lead to more PWB. This hypothesis is further supported by the reported conceptual similarity between resilience and hardiness which contributes to the assumption that a similar effect is to be expected in the context of this research (Harms et al., 2018).

### Figure 1

*Visualization of the Research Question*



### Methods

#### Design

This study made use of a quantitative non-experimental research design. Furthermore, by means of convenience sampling a cross-sectional online survey was published as part of an overarching research project investigating the association between character strengths and wellbeing. Hereby, this particular study investigated the correlation between the independent variable hope and the dependent variable PWB, while testing for a potential mediating effect of the variable hardiness. This study was approved by the Ethics Committee of the Faculty of Behavioral Sciences (221217).

#### Participants

Inclusion criteria for this study were that participants at least 18 years of age, were sufficiently fluid in English and students at the University of Twente. In total, 102 participants took part in this study. Although, 8 participants had to be eliminated from the data set as they

either did not complete the survey (6), did not give consent (3) or gave unrealistic answers (2) (e.g., the age of 1). Therefore, the final data set comprises 94 participants. Moreover, as for the demographics of this sample the mean age was 21,5 (SD = 2.6) and the majority of the sample was either German (63.8%) or Dutch (17%). The remaining part of the sample (18%) came from other nationalities including Mexico, Greece, and India. Regarding the sample's gender, 31% of participants stated they were male, 67% stated female and 1% stated that they are non-binary.

## **Materials**

To assess the different types of character strengths an extensive questionnaire was put together using three different measurements. This was done through the University's Qualtrics survey software. The questionnaire could then be filled out online and was accessible for any computer or mobile phone through the SONA system. A copy of the full questionnaire can be found in Appendix A. The questionnaire consisted of short forms of the Adult Hope Scale (AHS), the Psychological Wellbeing Scale (18-item), and the Dispositional Resilience Scale (DRS-15). For time purposes shorter equivalents of scales have been used for which literature showed sufficient reliability (Bartone, 2007; Li, 2014; Snyder et al., 1991).

### ***Hope***

Participants levels of the character strength hope were assessed using the Adult Hope Scale (AHS) (Snyder et al., 1991). The questionnaire assesses respondents' level of the hope using an 8-point likert scale ranging from 1 ("Definitely false") to 8 ("Definitely True"). Hereby, as the questionnaire consists of 12 items, thus the maximum score is 96 while the minimum score is 12. Correspondingly, higher scores indicate higher levels of hope. An example of an item assessing people's hope scores would be: "I can think of many ways to get the things in life that are important to me." Furthermore, the AHS proved to have satisfactory internal consistency with Cronbach's alpha of 0.74 to 0.84, with a test-retest coefficient of 0.80 (Snyder et al., 1991). Although, in this study the AHS showed a poor internal consistency as the calculated Cronbach's Alpha was  $\alpha = 0.564$ .

### ***Hardiness***

Hardiness levels were assessed using the Dispositional Resilience Scale (DRS-15) (Bartone, 2007). The DRS-15 is a short hardiness scale which is the result of extended efforts to create a short hardiness measure (Bartone, 2007). The DRS-15 assesses people's hardiness

levels by using a 4-point likert scale ranging from 0 “Not at all true” to 3 “Completely true”. However, in this study the likert scale was set to range from 1 “Not at all true” to 4 “Completely true”. As the questionnaire consists of 12 items as well, the maximum score is 48 while the minimum score is 12. Correspondingly, higher scores indicate higher levels of hardiness. An example of an item assessing people’s hardiness levels is: “How things go in my life depends on my own actions”. It should be noted that according to the questionnaire guide the items Q3, Q4, Q8, Q11, Q13 and Q14 have to be reverse-coded to correctly calculate the sum-scores. The DRS-15 has shown good internal consistency as well. Hereby, the questionnaire is said to have efficient reliability with  $\alpha = .78$  (Bartone, 2007). This is in line with the findings in this study as the Cronbach’s alpha revealed good internal consistency also among this sample with a value of  $\alpha = 0.736$ .

### ***Psychological Wellbeing***

PWB was assessed by use of the Ryff Psychological Wellbeing Scale short version (18-items) (Ryff, 1989). The questionnaire assesses respondents’ level of the PWB using a 7-point likert scale ranging from 1 (“Strongly Agree”) to 7 (“Strongly Disagree”). Since the questionnaire comprises 18 items the maximum score is 126 while the minimum score is 18. Accordingly, higher scores indicate higher levels of PWB. An example for an item measuring people’s PWB would be: “When I look at the story of my life, I am pleased with how things have turned out so far.” It should be noted that according to the questionnaire guide items Q1, Q2, Q3, Q8, Q9, Q11, Q12, Q13, Q17, and Q18 have to be reverse-coded to correctly calculate the sum-scores. The scale proved to have an excellent reliability coefficient of 0.92 (Li, 2014). However, the PWB scale showed rather questionable internal consistency, as determined by Cronbach’s alpha of  $\alpha = 0.676$ .

### **Procedure**

In a first step, a cross-sectional online survey was created using the software Qualtrics. Upon getting ethical approval from the University's ethics committee the researchers then reached out to other students from the of Behavioural, Management and Science faculty and asked them to participate in this study. This was done mainly via the messaging application “WhatsApp” or mouth-to-mouth inquiry. After signing up for the study and accessing the questionnaire through SONA participants were then presented with an information letter which can be found in Appendix B. The letter gave a written description of this study. In that description participants were informed about the aim of the study, handling, and storage of data as well as contact details of the researchers involved in this study. After reading the

description participants then gave consent through the consent form which also can be found in Appendix A. Within the description it was estimated that the questionnaire would take approximately 30 minutes to fill out. Subsequently, participants answered basic demographic questions (age, gender, and nationality). Afterwards, participants were asked to fill out several scales relating to each research topic involved in the survey. After the questionnaires have been filled out the participants were thanked for their participation and the study ended. Within two to three days after their participation participants were granted 0.25 SONA credits unless the study was not filled out entirely in which case no SONA credits were granted.

### **Data Analysis**

To analyse the collected data, the statistical program SPSS (Statistical Packages for the Social Sciences) version 28.0.1.0 (142) was used. Hereby, the extension POCRESS Macro was further utilised as means for a more extensive analysis (Hayes, 2012; Hayes, 2022) In a first step, the collected data was imported into SPSS. Secondly, participants' demographic information have been analysed using descriptive statistics. Hereby, frequencies, mean values, standard deviations as well as minimum and maximum scores have been calculated.

Secondly, new variables were created containing the sum scores of each of the three variables. Next, the same frequencies analysis was carried out using the newly created variables.

Thirdly, before conducting further analyses, the data was examined as to whether or not it meets the assumptions of linear regression. In that regard, the study works with continuous variables that do show a linear relationship. The existence of a linear relationship was checked by visual inspection of a scatterplot consisting of the independent and dependent variable (Appendix D). Furthermore, due to the nature of this study no correlated residuals needed to be taken into account. Regarding outliers, casewise diagnostic analysis in SPSS revealed that there are nine outliers present in the data set of which 6 pertained to the variable PWB. The decision was made to leave the outliers in the data set since their reports represent subjective accounts on their wellbeing which would be arbitrary to exclude.

Moreover, the data showed homoscedasticity as assessed by visual inspection of a plot of standardized residuals versus standardized predicted values. Also, visual inspection of a normal probability plot showed that residuals were normally distributed (Appendix C). Since the data proved to meet the seven assumptions it was thus deemed suitable for linear regression analysis.

Lastly, a Mediator analysis was carried out as a third step by making use of the SPSS extension PROCESS Macro. This allowed for an extensive analysis of the research question. Hereby, PWB was used as a criterion variable, hope was used as predictor variable and hardiness was used as mediator variable. The extension analysed both the direct and indirect effect as well as the total effect of hope on PWB. The results of such a mediation analysis are presented by reporting the computed values of the PROCESS Macro extension.

## Results

### Descriptive Statistics

Mean values regarding the three variables involved were as follows. For PWB the mean score was 87.7 (SD = 16.6) from possible 126, for hope it was 65.3 (SD = 9.6) from possible 96, and for hardiness it was 31.9 (SD = 5.2) from possible 48.

### Inferential Statistics

A mediation analysis was conducted testing for a mediation effect of hardiness on the association between hope and PWB.

In regard to the direct effect, also called  $c'$ -pathway (see Figure 2), which represented H1 namely that hope has an effect on PWB over and above the effects of hardiness, results indicated a non-significant effect, ( $b = .214$ ,  $s.e. = .171$ ,  $t(92) = 1.248$ ,  $p = .215$ ). Indicating that hope does not have an effect on PWB.

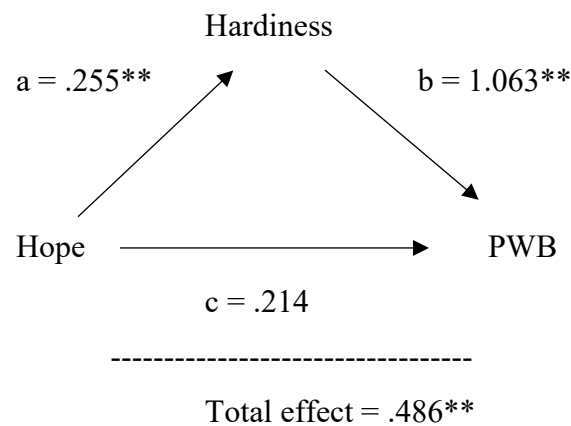
Furthermore, regarding the indirect effect, representing the  $a'$  and  $b'$ -pathway (see Figure 2), which represented H2, namely that hardiness does mediate the relationship between hope and PWB, bootstrapping analysis revealed significant results for the indirect effect ( $b = .272$ ,  $s.e. = .129$ , 95% CI [.059, .573]). This result indicates that there is indeed a mediation effect of hardiness on the association between hope and PWB.

Looking more closely at the indirect effect significant results were found for the  $a$ -pathway (see  $a$ -pathway in Figure 2) ( $b = .255$ ,  $s.e. = .064$ ,  $t(92) = 3.939$ ,  $p < .001$ ), and the  $b$ -pathway (see  $b$ -pathway in Figure 2) ( $b = 1.063$ ,  $s.e. = .254$ ,  $t(92) = 4.175$ ,  $p < .001$ ).

Lastly, the total effect was also found to be significant ( $b = .486$ ,  $s.e. = .172$ ,  $t(92) = 2.823$ ,  $p = .005$ ). This indicates that higher scores on hope were associated with higher scores of hardiness. In addition, higher scores on hardiness were associated with higher scores of PWB.

**Figure 2**

*Results for the direct and indirect effect of the mediation analysis for hardiness*



Note. \* =  $p < .05$ , \*\* =  $p < .01$

**Discussion**

The present study was the first study associating hope, hardiness and PWB. In addition, it was also the first study to test for a potential mediating effect of hardiness on the association between hope and PWB. The aim of this study was to shed light onto the association between trait hope and trait hardiness in relation to PWB. Hereby, a significant indirect effect was found indicating that hardiness, in this sample, fully mediated the association between hope and PWB. Furthermore, the association between hope and PWB was found to be non-significant. Indicating, that also absent of the mediator variable hardiness, hope did not have a significant effect on PWB.

**Interpretation of Results**

Although some findings of this study align with the available literature on the topic, other findings rather stand in contradiction with the current literature. First, the finding that hardiness does indeed mediate the association between hope and PWB confirms the notion presented by Martínez-Martí and Ruch (2017) who have hypothesised that emotional strengths like hope provide people with the energy, determination, and social connectedness necessary to successfully face adversities. Furthermore, this finding is also in line with the other studies that found meaningful associations between hope and hardiness (Hamid, 2020; Hiver, 2016). Therefore, the present study confirms the notion that there is indeed a noteworthy association between hope and hardiness and thus offers first insights into the association between the two concepts.

However, the finding that hope did not have a significant effect on PWB stands in direct contradiction to other literature in the field. Since there is a clearly established consensus in academia that hope is indeed a significant contributor to people's wellbeing this finding was unexpected (Hausler et al., 2017; Martínez-Martí & Ruch, 2017). More specifically in a study conducted by Hausler et al. (2017) the authors argued for a noteworthy connection between hope and three of six PWB dimensions thus especially highlighting the association between hope and PWB. Hence, it should be pointed out that this particular finding in the present study clearly does not align with other literature in the field. Therefore, in the light of these findings there are a few things to consider that might impact the way these results are interpreted.

Firstly, one reason for these findings could be that most studies reporting high correlation coefficients between hope and wellbeing make use of Life Satisfaction scales as an indicator for Subjective Wellbeing (SWB) (Buschor et al., 2013). Meaning within this field of research it is unlikely to measure wellbeing in terms of PWB. In this regard, it should be noted that although correlated SWB and PWB are empirically distinct concepts (Joshani, 2019). Another difference between the two concepts lies within their philosophical conceptualisations. While SWB is associated with hedonic wellbeing PWB is associated with eudaimonic wellbeing (Joshani, 2019). Hereby, hedonic wellbeing is seen as the pursuit of enjoyment, satisfaction, and the presence of positive affect in the absence of negative affect (Kahneman et al., 1999; Melendro et al., 2020). In contrast, eudaimonic wellbeing is a more multidimensional concept and the result of a well-lived life. (Ryff & Singer, 1998; Vázquez et al., 2009). Therefore, it might be the case that hope as a character strength might correlate more with measures of SWB. Hereby, hope might centre more around positive emotions rather than a more coherent conception of wellbeing one that would entail psychologically more encompassing areas of life than only the pursuit of pleasure. This notion is in line with a study conducted by Güsewell and Ruch (2012) who found that hope as part of what they called emotional strengths yielded the most numerous and highest links with positive emotion. Hence, there appears to be a noticeable connection between hope and SWB namely one that is based on positive emotions (Güsewell & Ruch, 2012).

Secondly, another explanation for these findings is the correlation between character strengths and SWB. Hereby, the disparity between the results of this study compared to other studies might have another reason that should be considered in the context of these findings. Namely, Buschor et al. (2013) have been bringing to attention that character strengths, especially hope in this context, and life satisfaction might share some unwanted variance. As



a result, reported correlation coefficients could be artificially inflated (Buschor et al., 2013). Consequently, this variance might be one reason why hope is repeatedly found to be one of the key contributors to wellbeing with exceptionally high coefficients. In turn, this variance might also explain in part why in this particular study there was no correlation to be found between hope and PWB since in this association there is no shared variance that could lead to significant findings. In other words, the variance that is apparently shared between hope and measures of SWB might be another reason why hope does not seem to have such an impact on wellbeing when measured in terms of PWB. Reason being that with hope and PWB there is no shared variance that might come to bear. The shared variance mentioned by Buschor et al. (2013) thus appears to question the extent to which hope has an effect on SWB which would in turn put the rather unusual non-significant association between hope and PWB more into context.

Lastly, it is worth to put these findings into context. Although in the present study a mediation effect of hardiness on the association between hope and PWB was found that does not exclude the possibility of a bi-directional relationship between the two variables hope and hardiness. Overall, there is still a lot of research to be done when it comes to the association between hope and hardiness, especially in regard to the directionality and the mechanism of this dynamic. Hereby, other researchers have proposed a different mechanism by which the two concepts hope, and hardiness complement each other. For instance, Hamid (2020) proposed that hardiness might increase hope. She argued that the way this dynamic might work is that the hardiness component of control might lead to more hope. In contrast to that stand the comments made by Martínez and Ruch (2017) who suggested that “emotional strengths might provide individuals with the energy, determination, and social connectedness necessary to face adversities successfully.” (Martínez-Martí & Ruch, 2017, p. 116). There are points to note that arise as a result of these opposing arguments made by the different researchers. For once, it does raise the question of whether or not testing for the contrasting directionality as proposed by Hamid (2020) would have resulted in significant results as well. Secondly, these common-sense explanations that address the association between hope and hardiness illustrate how little research has been conducted on this particular topic.

### **Strengths and Limitations**

One strength that should be highlighted in relation to this study is that it might offer a new and interesting perspective on the association between hope and wellbeing. The findings especially emphasize the fact that hope appears to be only relevant to a certain

conceptualisation of wellbeing namely one that pertains more to a hedonistic understanding of wellbeing (Joshani, 2019). Another strength is that this study might offer new impulses in realm of hardiness research. Hereby, this study might help to broaden the scope of possibilities that academia associates with hardiness. Especially since hardiness did not receive a lot of attention from academics, the effect of hope on hardiness and vice versa might draw more attention to hardiness as well as its dynamic with hope (Hamid, 2020). In addition, in the light of this study the conceptualisations as potentially distinct character strengths might be overthought.

However, the limitations of this study should also be taken into account. One relevant limitation in the context of these findings is that the internal consistency of the scales used in this study were strikingly lower compared to those reported by other studies. Especially the AHS-15 and the PWB-18 had poor Cronbach's alphas of 0.5 and 0.6, respectively. This finding was surprising since the scales were taken over in precisely the way they have been set up originally. Since internal consistency represents the degree to which items of the same scale measure a latent variable the results of this study should be interpreted carefully. Another limitation pertains to the inclusion criteria and sampling strategy used in this study. As a form of convenience sampling has been used among a population of students only, the sample acquired in this study showed to be quite narrow culturally as well as in terms of age. Since the mean age was 21.5 with around 82% of the sample being either German or Dutch this sample does not represent an equally distributed population. Therefore, the biggest limitation in the context of this study relates to its low generalizability. Reason for that being the low internal consistency of the scales used and the fact that the sample does not sufficiently represent the general population the generalizability of this study is quite low.

### **Contributions and Future Research**

The present study contributes to the academic discussion of character strengths and their effect on wellbeing. Hereby, two points stand out particularly. The first point is that this study brought to attention the conceptual overlap between hardiness and hope. In this regard, although the results of study did reveal a mediation effect, future research would benefit from investigating this effect as well as the conceptual overlap in more detail. Reason being that an unnoticed overlap between hope and hardiness might lead to a form of conceptual slurring where the lines between the concepts, and their respective effects are not clearly defined and thus cannot be understood properly. It might also be the case that the relationship between hardiness and hope is bi-directional which would verify the assumptions of both Hamid

(2020) and Martinez and Ruch (2017). In addition, given the potentially shared variance of hope and SWB measures, future research might benefit also from repeating this study but replacing the dependent variable with a SWB measure. This might lead to different results that potentially confirm the hypothesised direct effect of hope on wellbeing.

The second way in which this study contributes to the academic discourse is that it highlights again the shared variance of hope and SWB measures. In this regard, future research would benefit from two things. For once, it may be wise to investigate the relationship between hope and SWB more closely as to avoid artificially inflated correlation coefficients (Buschor et al., 2013). Secondly, it might also be beneficial to investigate the association between character strengths and PWB. Since wellbeing is an extensive concept, it would be wise to investigate it in its entirety and not focus on one particular facet.

Lastly, it might be wise to replicate this study. Since a replication study might be able to confirm or refute the results of this study. However, in a similar study attention should be paid to acquire a culturally and demographically more diverse sample in order to increase the generalizability of the findings. Furthermore, in such a study the Cronbach's alpha should be monitored more closely in order to increase the reliability of the results.

## **Conclusion**

Overall, this study aimed to shed light onto the association between the traits hope and hardiness and wellbeing. Although no direct effect of hope on PWB was found this study, nevertheless, it contributes to the academic discourse regarding character strengths and wellbeing. Moreover, for the first time a mediation effect of hardiness on the association between hope and PWB was found, however, the association between hope and hardiness requires more investigation. In addition, the association between character strengths and PWB should be given more attention as to avoid a one-sided understanding of the effect of character strengths on wellbeing.

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## Appendix A

# Bachelor Thesis; Are Good People Happy People?

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### Start of Block: Informed Consent

Q3 The purpose of this research study is to investigate the effect of character strengths on well-being. For this reason, you will be asked to fill out the provided questionnaire. The questionnaire includes questions regarding your well-being and your character strengths such as spirituality, hope, perseverance, and hardiness. The questionnaire takes approximately 30 minutes to fill out. The data will be used for our report only and will not be shared for any other purpose. Your responses will be saved and stored to properly analyze your answers. However, after analyzing your answers all the data that has been collected will be deleted. The deletion of your data will be no later than the 27th of February 2023. Lastly, in the individual reports of this research, all data will be anonymized.

**By giving consent you indicate that you:** have read and understood the study information dated. voluntarily participate in this study. understand that you can refuse to answer questions and that you can withdraw from the study at any time, without having to give a reason. understand that taking part in the study involves answering questions related to the topic of character strengths and well-being, understand that the information you provide will be used for quantitative research in the context of a university project. understand that the data that is collected will be stored for the purpose of analysis. understand that the stored data is archived until no later than the 27th of February, 2023. understand that the information you provide in this survey will not be shared beyond the study team and the study teams' supervisor.

### **Study contact details.**

Names of Students: Cedric Middendorf, Chiara Stegemann, Gijs Smid, Jérôme Zabloutny  
Supervisor: M.J.M. Van Bergen MSc. MRes.  
Email address: j.zabloutny@student.utwente.nl

### **Contact Information for Questions about Your Rights as a Research Participant.**

If you have questions about your rights as a research participant, or wish to obtain information, ask questions, or discuss any concerns about this study with someone other than the researcher(s), please contact the Secretary of the Ethics Committee/domain Humanities Social Sciences of the Faculty of Behavioural, Management and Social Sciences at the University of Twente by ethicscommittee-hss@utwente.nl.

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Q4 I agree and give my informed consent

- Yes (1)
- No (2)

End of Block: Informed Consent

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Start of Block: Demographics

General 3 What is your nationality?

- Dutch (1)
- German (2)
- Other: (3) \_\_\_\_\_
- 

General 2 How would you describe your gender?

- Male (1)
- Female (2)
- Non-binary / third gender (3)
- Other: (4) \_\_\_\_\_
- Prefer not to say (5)
- 



General 1 What is your age?

\_\_\_\_\_

End of Block: Demographics

---

Start of Block: Gijs Smid's Block

PANAS 1/2 This scale consists of a number of words that describe different feelings and emotions.

Read each item and **indicate to what extent you have felt this way during the past week.**

	Very slightly or not at all (1)	A little (2)	Moderately (3)	Quite a bit (4)	Extremely (5)
Interested (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Distressed (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Excited (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Upset (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Strong (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Guilty (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Scared (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hostile (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enthusiastic (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Proud (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

PANAS 2/2 This scale consists of a number of words that describe different feelings and emotions. Read each item and **indicate to what extent you have felt this way during the past week.**

	Very slightly or not at all (1)	A little (2)	Moderately (3)	Quite a bit (4)	Extremely (5)
Irritable (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alert (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ashamed (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Inspired (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nervous (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Determined (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Attentive (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jittery (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Active (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Afraid (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

SWLS Below are five statements about how satisfied you are with your life that you may agree or disagree with. Using the 1 - 7 scale below, **indicate your agreement with each item** by placing the appropriate number on the line preceding that item. Please be open and honest in your responding.

	Strongly disagree (1)	Disagree (2)	Slightly disagree (3)	Neither agree nor disagree (4)	Slightly agree (5)	Agree (6)	Strongly agree (7)
In most ways my life is close to my ideal. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The conditions of my life are excellent. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am satisfied with my life. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
So far I have gotten the important things I want in life. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I could live my life over, I would change almost nothing. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

ECR-S The following statements concern **how you feel in romantic relationships or other significant close relationships**. Please respond to each statement by **indicating how much you agree or disagree**.



I don't  
worry about  
being  
abandoned.  
(8)

I usually  
discuss my  
problems  
and  
concerns  
with my  
partner. (9)

I get  
frustrated if  
my  
romantic  
partner is  
not  
available  
when I need  
them. (10)

I am  
nervous  
when my  
partner gets  
too close to  
me. (11)

I worry that  
a romantic  
partner  
won't care  
about me as  
much as I  
care about  
them. (12)



VIA-120 1/3 Please choose one option in response to each statement. Many of the questions reflect statements that many people would find desirable, but we want you to **answer only in terms of whether the statement describes what you are like.**

	Very Much Unlike Me (1)	Unlike Me (2)	Neutral (3)	Like Me (4)	Very Much Like Me (5)
I really enjoy doing small favors for friends. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There are people in my life who care as much about my feelings and well-being as they do about their own. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
As a leader, I treat everyone equally well regardless of his or her experience. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I rarely hold a grudge. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I go out of my way to cheer up people who appear down. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
One of my strengths is helping a group of people work well together even when they have their differences. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
At least once a day, I stop and count my blessings. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I welcome the opportunity to brighten someone else's day with laughter. (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I never seek vengeance. (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I love to make other people happy. (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not give up. (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am the most important person in someone else's life. (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I work at my very best when I am a group member. (13)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I try to have fun in all kinds of situations. (14)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To be an effective leader, I treat everyone the same. (15)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am an extremely grateful person. (16)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I try to add some humor to whatever I do. (17)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe it is best to forgive and forget. (18)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I always feel the presence of love in my life. (19)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

VIA-120 2/3 Please choose one option in response to each statement. Many of the questions reflect statements that many people would find desirable, but we want you to **answer only in terms of whether the statement describes what you are like.**

	Very Much Unlike Me (1)	Unlike Me (2)	Neutral (3)	Like Me (4)	Very Much Like Me (5)
I am as excited about the good fortune of others as I am about my own. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can express love to someone else. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Without exception, I support my teammates or fellow group members. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My friends always tell me I am a strong but fair leader. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel thankful for what I have received in life. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I never quit a task before it is done. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a great sense of humor. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I rarely try to get even. (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I enjoy being kind to others. (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can accept love from others. (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I always finish what I start. (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Even if I disagree with them, I always respect the leaders of my group. (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
As a leader, I try to make all group members happy. (13)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I look at my life, I find many things to be grateful for. (14)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am usually willing to give someone another chance. (15)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is important to me to respect decisions made by my group. (16)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel a profound sense of appreciation every day. (17)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I gladly sacrifice my self-interest for the benefit of the group I am in. (18)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am known for my good sense of humor. (19)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I finish things despite obstacles in the way. (20)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I stick with  
whatever I  
decide to do.  
(21)

○ ○ ○ ○ ○

Page Break



VIA-120 3/3 Please choose one option in response to each statement. Many of the questions reflect statements that many people would find desirable, but we want you to **answer only in terms of whether the statement describes what you are like.**



	Very Much Unlike Me (1)	Unlike Me (2)	Neutral (3)	Like Me (4)	Very Much Like Me (5)
I always look on the bright side. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am a spiritual person. (22)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know how to handle myself in different social situations. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I practice my religion. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am always busy with something interesting. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No matter what the situation, I am able to fit in. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I experience deep emotions when I see beautiful things. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Despite challenges, I always remain hopeful about the future. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My faith never deserts me during hard times. (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the ability to make other people feel interesting. (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I see beauty that other people pass by without noticing. (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I have a clear picture in my mind about what I want to happen in the future. (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I love what I do. (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am excited by many different activities. (13)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have often been left speechless by the beauty depicted in a movie. (14)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I look forward to each new day. (15)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have many interests. (16)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am always aware of the natural beauty in the environment. (17)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My faith makes me who I am. (18)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have lots of energy. (19)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can find something of interest in any situation. (20)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am good at sensing what other people are feeling. (21)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I know that I will succeed with the goals I set for myself. (23)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am in awe of simple things in life that others might take for granted (24)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think my life is extremely interesting. (25)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I always know what to say to make people feel good. (26)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I feel down, I always think about what is good in my life. (27)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My beliefs make my life important. (28)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I awaken with a sense of excitement about the day's possibilities. (29)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People describe me as full of zest. (30)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Gijs Smid's Block

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Start of Block: Jerome Zablony's Block

AHS Below are twelve statements that you may respond to using the eight answering options that are shown on top. For each statement, please **indicate your answer by ticking the**

**appropriate description.**



My past experiences have prepared me for my future. (9)

I've been pretty successful in life. (10)

I usually find myself worrying about something. (11)

I meet the goals that I set for myself. (12)

PWB Below are eighteen statements that you may agree or disagree with. Using the answering options on top, please **indicate your response to each of these statements by**

**ticking the appropriate option.**





In general, I feel I am in charge of the situation in which I live. (8)

I am good at managing the responsibilities of daily life. (9)

I sometimes feel as if I've done all there is to do in life. (10)

For me, life has been a continuous process of learning, changing, and growth. (11)

I think it is important to have new experiences that challenge how I think about myself and the world. (12)

People would describe me as a giving person, willing to share my time with others. (13)

I gave up trying to make big improvements or changes in my life a long time ago. (14)

I tend to be influenced by people with strong opinions. (15)

I have not experienced many warm and trusting relationships with others. (16)

I have confidence in my own opinions, even if they are different from the way most other people think. (17)

I judge myself by what I think is important, not by the values of what others think is important. (18)

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Page Break

DRS-15 Below are twelve statements that you may agree or disagree with. Using the answering options on top, **please indicate your response to each of these statements by ticking the appropriate option.**

	Not at all True (1)	A little True (2)	Quite True (3)	Completely True (4)
Most of my life gets spent doing things that are meaningful. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
By working hard you can nearly always achieve your goals. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't like to make changes in my regular activities. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that my life is somewhat empty of meaning. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Changes in routine are interesting to me. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How things go in my life depends on my own actions. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I really look forward to my daily activities. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't think there's much I can do to influence my own future. (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I enjoy the challenge when I have to do more than one thing at a time. (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Most days, life is really interesting and exciting for me. (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It bothers me when my daily routine gets interrupted. (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

It is up to me to decide how the rest of my life will be. (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Life in general is boring for me. (13)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like having a daily schedule that doesn't change very much. (14)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My choices make a real difference in how things turn out in the end. (15)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Jerome Zablotny's Block

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Start of Block: Chiara Stegemann's Block

Extracurricular How many hours per week do you spend on extracurricular activities? (Extracurricular activities are activities which don't fall within the scope of the regular curriculum, which are usually organized student activities, which are connected to the University and which carry no academic credit. (e.g. sports, participating in an association))

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End of Block: Chiara Stegemann's Block

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Start of Block: Cedy's Block

Q31 Spirituality can be described as that which lies at the heart of a person being human. Spiritual health can be seen as a measure of how good you feel about yourself and how well you relate to those aspects of the world around you, which are important to you.

Please **give one response to each of the following items**

**how do you feel each item reflects your personal experience most of the time.**

1 = very low 2 = low 3 = moderate 4 = high 5 = very high.

Do not spend too much time on any one item. It is best to record your first thoughts.

	very low (1)	low (2)	moderate (3)	high (4)	very high (5)
a love of other people (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
personal relationship with the Divine/God (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
forgiveness toward others (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
connection with nature (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
a sense of identity (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
worship of the Creator (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
awe at a breathtaking view (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
trust between individuals (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
self-awareness (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
oneness with nature (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
oneness with God (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
harmony with the environment (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
peace with God (13)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
joy in life (14)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
prayer life (15)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
inner peace (16)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



respect for others (17)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
meaning in life (18)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
kindness towards other people (19)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
a sense of 'magic' in the environment (20)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How important is religion in your life (21)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How important is spirituality in your life (22)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Cedy's Block

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Start of Block: Cedy

Q46 The next three questions concern your alcohol use.  
Please only consider your alcohol consumption in the last 6 months.

On how many days in a general week do you have a drink containing alcohol?

- none (1)
  - one or two days (2)
  - two or three days (3)
  - three or four days (4)
  - five days (5)
  - daily or near daily (6)
-

Q47 How many standard drinks do you have on a typical day when you are drinking?

- 0 (1)
  - 1-2 (2)
  - 3-4 (3)
  - 5-6 (4)
  - 6-7 (5)
  - 7 or more (6)
- 

Q48 On how many days do you get drunk in a typical week when you are drinking?

- never (1)
- once or twice a week (2)
- two or three times a week (3)
- three or four times a week (4)
- five times a week (5)
- daily or near daily (6)

End of Block: Cedy

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Start of Block: Thank you + contact details

Q35 You have come to the end of the survey! Thank you for your participation!

**Study contact details.**

Names of Students: Cedric Middendorf, Chiara Stegemann, Gijs Smid, Jérôme Zablotny

Supervisor: M.J.M. Van Bergen MSc. MRes.

Email address: j.zablotny@student.utwente.nl

**Contact Information for Questions about Your Rights as a Research Participant.**

If you have questions about your rights as a research participant or wish to obtain information, ask questions, or discuss any concerns about this study with someone other than the researcher(s), please contact the Secretary of the Ethics Committee/domain Humanities

Social Sciences of the Faculty of Behavioural, Management and Social Sciences at the University of Twente by [ethicscommittee-hss@utwente.nl](mailto:ethicscommittee-hss@utwente.nl).

End of Block: Thank you + contact details

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## **Appendix B**

The purpose of this research study is to investigate the effect of character strengths on well-being. For this reason, you will be asked to fill out the provided questionnaire. The questionnaire includes questions regarding your well-being and your character strengths such as spirituality, hope, perseverance, and hardiness. The questionnaire takes approximately 30 minutes to fill out. The data will be used for our report only and will not be shared for any other purpose. Your responses will be saved and stored to properly analyze your answers. However, after analyzing your answers all the data that has been collected will be deleted. The deletion of your data will be no later than the 27th of February 2023. Lastly, in the individual reports of this research, all data will be anonymized.

### **By giving consent you indicate that you:**

- have read and understood the study information dated.
- voluntarily participate in this study.
- understand that you can refuse to answer questions and that you can withdraw from the study at any time, without having to give a reason.
- understand that taking part in the study involves answering questions related to the topic of character strengths and well-being,
- understand that the information you provide will be used for quantitative research in the context of a university project.
- understand that the data that is collected will be stored for the purpose of analysis.
- understand that the stored data is archived until no later than the 27th of February, 2023.
- understand that the information you provide in this survey will not be shared beyond the study team and the study teams' supervisor.

### **Study contact details.**

Names of Students: Cedric Middendorf, Chiara Stegemann, Gijs Smid, Jérôme Zablotny

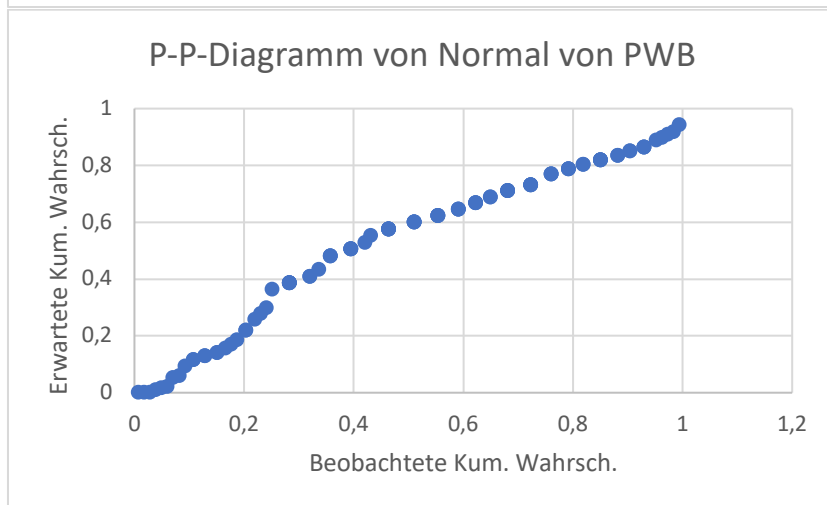
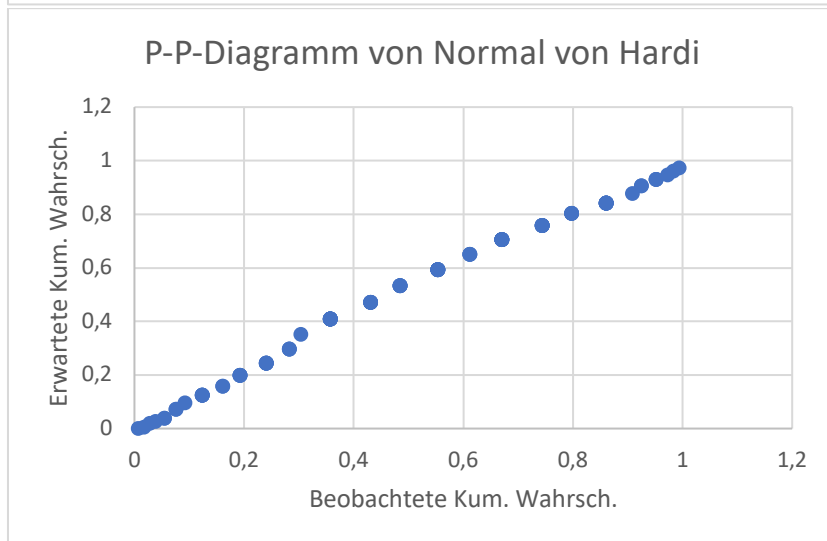
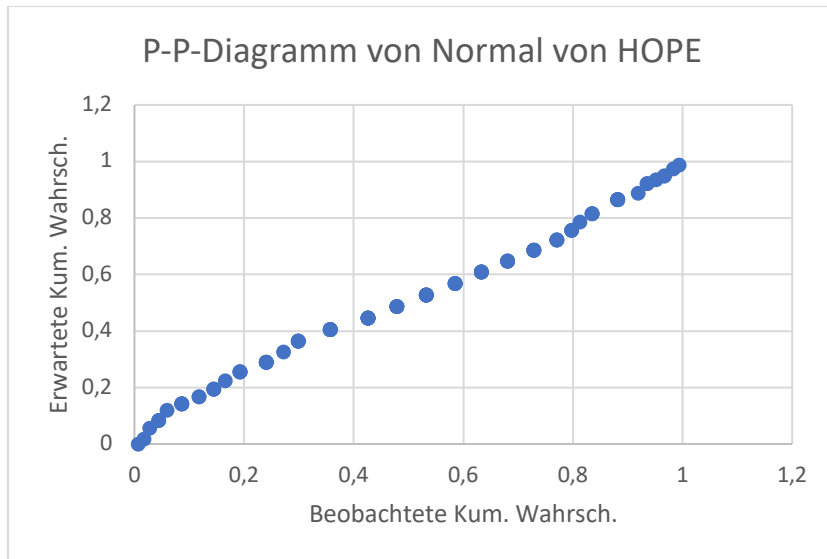
Supervisor: M.J.M. Van Bergen MSc. MRes.

Email address: [j.zablotny@student.utwente.nl](mailto:j.zablotny@student.utwente.nl)

### **Contact Information for Questions about Your Rights as a Research Participant.**

If you have questions about your rights as a research participant, or wish to obtain information, ask questions, or discuss any concerns about this study with someone other than the researcher(s), please contact the Secretary of the Ethics Committee/domain Humanities Social Sciences of the Faculty of Behavioural, Management and Social Sciences at the University of Twente by [ethicscommittee-hss@utwente.nl](mailto:ethicscommittee-hss@utwente.nl).

**Appendix C**



Appendix D

