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Abstract

Balanced assessment of mental health involves assessing wellbeing and strengths as well as psychopathology. The character strengths of curiosity, gratitude, hope, optimism and forgiveness, are assessed in 214 new undergraduates and their relationships to mental health, subjective wellbeing and self-esteem explored. Scoring the mental health scale for psychiatric caseness, case and non-case students did not differ in character strengths, positive affect or life satisfaction, supporting a dual-factor model. Hope pathways and gratitude predicted mental health. Gratitude, hope agency and exploratory curiosity predicted positive affect. Gratitude and hope agency predicted life satisfaction. Hope agency, hope pathways, exploratory curiosity and gratitude predicted self-esteem, with absorption curiosity a negative predictor. The benefits of assessing strengths are discussed and interventions designed to develop them.

Keywords: character strengths; mental health; subjective wellbeing; dual-factor mental health model; self-esteem

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Conceptualising mental health

The traditional medical model of mental health as epitomized by the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), (2013) focuses purely on measuring psychopathology. This model has dominated clinical practice and continues to do so. In this model, mental health is defined purely as the absence of psychopathology. Keyes (2005) conceptualized this as a disease model of human functioning. It is limited in its scope and focuses on treatment of symptoms and largely ignores the promotion of wellbeing. Increasingly since the advent of positive psychology, researchers are arguing that well-being should be assessed in addition to psychopathology (Greenspoon & Saklofske, 2001; Keyes, 2005, 2007; Keyes and Lopez, 2002). Greenspoon & Saklofske (2001) initially called this the dual-factor model of mental health and while there are other labels such as the two continua model of mental health (Keyes, 2007), the dual-factor model label predominates. The argument is that complete assessment of mental health is not simply the absence of psychopathology but also involves the assessment of subjective well-being as individuals may have the same symptoms but their sense of well-being may vary (Keyes, 2005).

Seligman, Steen, Park, and Peterson (2005) go further arguing that as the incidence of mental illness continues to grow, more focus on prevention is required by developing individuals' psychological strengths to foster resilience so they cope better with life stress. The aims of positive psychology are to empirically identify these psychological strengths and create effective interventions for strengths development to foster wellbeing (Seligman & Csikszentmihalyi, 2000). In keeping with this, researchers are increasingly arguing that assessment of these positive dispositions, labeled character strengths, should be a component of health and wellbeing assessment as character strengths provide resources that individuals can utilize to improve their health and wellbeing (Wright & Lopez, 2005). Before

considering which character strengths are relevant in this context, the wellbeing component of the model needs delineation.

Within positive psychology, subjective wellbeing (SWB) is defined as a fairly broad concept that includes assessment of life satisfaction and the occurrence of positive and negative affect (Diener, Lucas, & Oishi, 2005). Research suggests that to optimise wellbeing individuals need to like their lives and to experience more positive emotions than negative emotions (Frederickson, 2001). The adjective 'subjective' is important in the assessment of wellbeing. It reflects the view that only individuals can assess their levels of wellbeing. It allows for individuals living with chronic mental health conditions such as recurrent depression to have varying degrees of wellbeing despite their condition (Macaskill, 2012). Research has shown that differences in subjective wellbeing reflect underlying stable dispositional differences in the ways that people think about their worlds (Diener et al., 2005). This research will examine the relationship between mental health as assessed in the medical model and SWB as defined in positive psychology. The relationships of character strengths to mental health and SWB will be examined and the role of character strengths in predicting wellbeing. In this way, the dual-factor model of mental health will be empirically examined.

Character strengths, health, and wellbeing

While 24 character strengths have been identified in the Values in Action Inventory (VIA), supporting empirical evidence for the effects of many of these strengths on health and wellbeing is lacking (Park & Peterson, 2006, 2009). The aim in this study was to measure character strengths that have been shown in the empirical literature to be associated with health and well-being. The authors also intended to run interventions to develop these strengths in a subsequent study. However, there are few character strengths with effective interventions to promote their development. Seligman et al. (2005) and Sin & Lyubomirsky

(2009) have provided reviews of positive psychology interventions and their effectiveness. More recently, Ouweneel, Le Blanc, and Schaufeli (2014) conducted randomised controlled trials of gratitude and kindness interventions aimed at improving academic well-being in students. They reported increases in positive emotions but no decrease in negative emotions in this group. However, to summarise, the selection criteria for strengths were the existence of a significant relationship between the strength and mental health and SWB based on previous research, the availability of an effective intervention to develop the strength, and psychometrically sound scales for measuring it. This resulted in the selection of the strengths of optimism, forgiveness, curiosity, gratitude, and hope.

While optimism in not included in the VIA, a significant body of research attests to its health benefits so it was included. Individuals high in dispositional optimism tend to expect predominantly good things to happen rather than bad things (Carver & Scheier, 2001). Optimists cope better, considering negative situational outcomes as temporary and specific rather than the result of persistent and pervasive factors. This results in optimists being more motivated to deal with problems. Dispositional optimists appear more positive, have more adaptive coping skills and experience greater wellbeing than pessimists do (Park, Peterson, & Seligman, 2004; Scheier, Carver, & Bridges, 2001).

Forgiveness is included in the VIA. It involves giving up negative feelings towards the wrongdoer and the wish for retribution, so that revenge is not sought and the perpetrator is not avoided. Forgiveness is associated with better mental health and wellbeing compared with the alternatives of revenge seeking and avoidance of the wrongdoer (Maltby, Macaskill, & Day, 2001). While the ability to forgive is considered a strength, revenge seeking and avoidance of the perpetrator could be argued to be more negative tendencies although there may be cultural differences in what is expected when offences are committed so revenge for example may not always be conceptualised negatively (Boonyarit, Chuawanlee, Macaskill, &

Supparerkchaisakul, 2012). Providing a range of options is thought to provide a more realistic assessment of behavioural tendencies (McCullough & Hoyt, 2002).

To date there has only been one large study examining the relationship between all the VIA character strengths and life satisfaction, the cognitive component of SWB (Park et al., 2004). This was an internet study with over 4,000 participants. Curiosity, gratitude, hope, love, and zest were found to be strongly associated with life satisfaction. Park et al. (2004) suggested that zest was redundant as it was difficult to envisage a hopeful individual lacking zest. Love is also somewhat problematic to measure reliably and to develop via interventions. For these reasons, only the strengths of curiosity, gratitude, and hope from Park et al. (2004) were measured in the present study.

Curiosity is defined as a dispositional tendency to recognise and wish to pursue novel, complex or challenging interactions and experiences (Kashdan, Rose & Fincham, 2004). It is considered core to intrinsic motivation focusing attention and behaviour towards activities that facilitate learning, competence, and self-determination (Ryan & Deci, 2001). Kashdan et al. (2004) have identified two intrinsic dimensions of curiosity, an exploratory element reflecting the need for novelty and new experiences and absorption, which they define as the ability to become engrossed in activities.

Gratitude involves appreciation and thankfulness, operating as a moral or pro-social affect or trait (Hershberger, 2005; McCullough, Emmons, & Tsang, 2002). It involves a generalised tendency to recognise the positive even in adversity and to respond with positive emotion (Neto, 2007). Dispositionally grateful individuals experience greater SWB (Emmons & McCullough, 2003). Research suggests that a grateful disposition enables flexible and creative thinking and facilitates coping with stress and adversity as the individual adopts a positive outlook of the "it could be worse" type (Folkman & Moskowitz, 2000; Wood, Maltby, Stewart, Linley, & Joseph, 2008).

In the early research, hope was defined as a belief that personal goals were achievable and that it was possible to produce pathways to achieve these goals (Menninger, 1959). Snyder, Rand, & Sigman (2005) have expanded this definition to include the motivation to follow these pathways. This has resulted in a more comprehensive definition of hope as a goal-directed thought process where individuals believe they can produce paths to desired goals (pathways) and are motivated to use these pathways (agency) (Snyder et al., 2005). Research suggests that high hope individuals are psychologically healthier, with lower levels of depression, higher self-esteem, and greater ability to cope with stress (Snyder, 2000; Snyder et al, 1991; Snyder et al., 2005).

Student mental illness

Macaskill (2013) found that the rates of mental illness in British students have increased significantly and are now comparable to those of the general population. These results are in accordance with research on students in many other countries such as the United States (Kadison & Digeronimo, 2004), Australia (Stallman, 2008) and Turkey Guney, Kalafat, & Boysan, 2010). The relatively high rate of mental illness in university students does mean that they can provide a relevant sample to examine the application of the dual-factor model of mental health. The reasons for these increases in mental illness are complex as discussed in Macaskill (2013). One factor is their age as the peak age of onset for mental illness is before age 24 years (Kessler et al., 2007). The stresses associated with the transition to university requiring as it does most students to leave home, live independently, and adjust to new social and academic environments are also relevant in explaining this data (Fisher, 1994).

Montgomery and Côté (2003) suggest that the university experience entails further development of the young person's sense of self in terms of their adult identity which can be very stressful. However, this was not measured empirically by Montgomery and Côté but

seemed worth examining. Hewitt (2005) argues persuasively that self-esteem encapsulates the individual's sense of self, of personal and social identity, worth and acceptance and as such is a culturally sensitive measure of wellbeing so a global measure of self-esteem was included. An extensive literature associates high self-esteem with wellbeing indicating its importance (Diener et al., 2005).

The current study

The aim of this current research was to examine the relationship between character strengths (curiosity, gratitude, hope, optimism, forgiveness, and the related concepts of grudge holding and revenge) and the medical model of mental health as measured by the General Health Questionnaire (GHQ), (Goldberg & Williams, 1991) and SWB to explore the dual-factor model of mental health. The GHQ can be scored to provide a measure of psychiatric caseness, defined as the severity that would merit professional intervention. Using the psychiatric caseness scoring of the GHQ, any differences in character strengths related to psychiatric caseness will be examined. Based on previous research, the hypotheses for character strengths are that:

1. Higher levels of curiosity, gratitude, hope, optimism and forgiveness will be positively associated with good mental health (GHQ), positive affectivity and life satisfaction aspects of SWB, and self-esteem and negatively associated with negative affectivity. For curiosity, the prediction is based on its relationship to intrinsic motivation to engage with novelty. Gratitude, hope, optimism and forgiveness are associated with the individual's ability to cope positively with challenge and stress and all are related to positive thinking.

2. Revenge seeking and avoidance will be positively associated with negative thinking, and negatively associated with positive thinking, mental health and life satisfaction.

Method

Participants

The participants were 214 first year undergraduate social science students (170 women, 44 men) in a large modern university in northern England. The mean age of the sample was 19.11 years (*SD* =3.33) and 197 were white British, 17 British Asian, and 2 Greek.

Measures

The Curiosity and Exploration Inventory. (CEI; Kashdan et al., 2004) is a 7-item measure assessing two intrinsic dimensions of trait curiosity; exploration, defined as a strong desire for novelty and challenging experiences and absorption, describing a tendency to become fully engaged and not easily distractible. Responses are scored on a 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree). The Cronbach's Alphas range between .63 - .73 for exploration, .66 - .73 for absorption and between .72 - .80 for the complete scale with satisfactory test retest reliability (Kashdan et al., 2004).

The Gratitude Questionnaire (GQ-6; McCullough et al., 2002) is a 6-item measure of trait gratitude, assessing the intensity of gratitude, the frequency of its experience, and the scope of events that elicit grateful emotion. Responses are scored on a 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree). Cronbach's alphas are satisfactory between .76 - .84 (McCullough et al., 2002).

The Trait Hope Scale (Snyder et al., 1991) is a 12-item measure, with four items assessing agency, defined as beliefs that goals can be obtained through effort, and four assessing pathways, described as the perceived ability to overcome obstacles and four filler items to disguise the scale purpose. The alpha coefficients for the scales range from .74 to .88 (Snyder et al., 1991) and convergent and discriminant validation is satisfactory (Snyder, 2000).

The Transgression-related Interpersonal Motivations Inventory (McCullough & Hoyt, 2002) is an 18-item scale with three 6-item subscales measuring interpersonal motivations underlying forgiveness, the tendency to seek revenge, the motivation to avoid the individual

and benevolence/forgiveness defined as the existence of positive feelings towards the wrongdoer, giving up any right to retribution and letting go of negative affect directed towards the wrongdoer. The Cronbach's alpha coefficients are greater than .85 for the three subscales and there is good convergent and discriminant validity (McCullough & Hoyt, 2002).

The Life Orientation Test (Scheier, Carver & Bridges, 1994) is a 10-item measure of dispositional optimism. Scoring is on a 5-point Likert scale from 1(strongly disagre*e*) to 5 (strongly agree). There are four filler items designed to reduce social desirability sensitivity. The Cronbach's alpha coefficient is .81, with good convergent, and discriminant validity (Snyder et al., 2005).

The General Health Questionnaire-28 (Goldberg & Williams, 1991), measures symptomatic mental health in accordance with the medical model. It consists of four 7-item scales measuring somatic symptoms, anxiety and insomnia, social dysfunction, and depression. There are four possible answers to each question (less than usual, no more than usual, rather more than usual, much more than usual). Responses were scored initially using a Likert scale of 0-3 as this produces a less skewed distribution (Goldberg & Williams, 1991). All four subscales have high internal consistency with Cronbach's alpha coefficients between .85 and .91 evidence of good convergent and discriminant validity (Goldberg & Williams, 1991). For psychiatric clinical caseness, responses were later rescored, 0,0,1,1, according to the manual instructions.

The Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) assesses positive or negative affectivity. It is a 20- item scale consisting of 10 positive emotions and 10 negative emotional responses. Respondents rate how they generally feel using a 5-point Likert scale from 1 (very slightly) to 5 (extremely). Cronbach's alpha coefficients of .86 on positive scale and .84 on the negative scale (Crawford & Henry, 2004).

The Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985) is a 5-item scale of subjective wellbeing, assessing broad cognitive judgements about an individual's life. Responses are recorded on a 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree). The scale demonstrates good internal consistency ($\alpha = .82$) and satisfactory test re-test reliability ($\underline{r} = .69$) over seven months (Diener et al., 1985).

The Rosenberg Self-esteem Scale (Rosenberg, 1965, Rosenberg & Pearlin, 1978) is a 10-item measure of self-appraisal, rated on a 5-point Likert scale from 1 (completely disagree) to 5 (completely agree). The reliability is good with Cronbach's alpha coefficients between .77 and .88 and good convergent and discriminant validity (Fleming & Courtney, 1984).

Procedure

The researchers gave students an information sheet and provided a verbal briefing at small group sessions in the first week of university and volunteers were requested. On both the information sheet and the verbal briefing positive psychology was introduced as well as the concept of character strengths. Students were told that the researchers were examining how character strengths were associated with psychological health and wellbeing. The information sheet explained that they could choose not to answer any particular questions if they did not want to supply that information to the researchers. Questionnaire completion was anonymous and students returned completed questionnaires to a box in the room. Up to 40 minutes was available for completion but all students were finished within 30 minutes. Scales were labelled and their layout varied to alleviate any boredom effects. Participants were told that returning the questionnaire to the box was taken as providing informed consent and that data could only be withdrawn before that point, as there were no names on the questionnaires. All questionnaires had a cover sheet so that responses were not visible to others. Students received no inducements to participate such as course credits and were told that they could leave the session if they chose but all readily participated. After completion of

the questionnaires all students were given an information sheet outlining the sources of support available to them if completing any of the measures had raised any concerns about their psychological health. This included student counselling services, student health and some helplines numbers. The University Ethics Committee approved the study. A cross-sectional design was used.

Results

The descriptives and Cronbach's alphas for all the variables are in Table 1. The alpha levels for all the scales were satisfactory being above the recommended .70 (Kline, 2000).

- Table 1 -

Participants with missing values on any measure were excluded from the analyses on a case-by-case basis, hence the different values of N. An a priori alpha level of .05 two-tailed was set for the statistical tests. A one-way ANOVA was computed to test for any sex differences in scores. Women ($M = 24.28$, 95% CI [23.18, 25.39], $SD = 7.20$) scored higher than Men ($M = 21.81$, 95% CI [19.76, 23.86]), $SD = 6.59$) on negative affectivity ($F (1, 205) = 4.09$, $p = .04$). As this was the only difference, the effect size was small ($d = .35$) and the sample was predominantly female further analysis included the whole sample.

-Table 2-

A Pearson product moment correlation was computed to explore the associations between the health and wellbeing measures. These are illustrated in Table2. Mental health (GHQ) and life satisfaction and positive affect were negatively correlated and negative affect was positively associated with the GHQ scores. This suggests that lower levels of mental psychopathology are associated with greater life satisfaction, more positive affect and less negative affect.

Psychiatric caseness in the sample

The GHQ responses were rescored, using caseness criterion. While the GHQ Manual (Goldberg & Williams, 1991) suggests 4 or 5 points as a cut off, a more conservative score of ≥ 6 was used based on UK data validating GHQ scores against systematic clinical interviewing (Goldberg et al., 1997). From this 39 participants (18.22%) met the criteria for psychiatric caseness. A one-way ANOVA was computed to test for caseness differences in scores. There were no significant differences in mean character strengths scores in the GHQ case and non-case groups. Negative affectivity (PANAS) mean score was higher in the GHQ case ($M = 27.19$, 95% CI [25.41, 28.96], $SD = 7.66$) than for non-case ($M = 21.88$, 95% CI [20.81, 22.94], $SD = 6.13$,) ($F (1, 201) = 29.34$, $p < .001$). Mean scores on self-esteem were significantly lower for GHQ case ($M = 18.72$, 95% CI [17.68, 19.76], $SD = 4.51$) than for non-case ($M = 20.90$, 95% CI [20.22, 21.57], $SD = 3.92$), ($F (1, 203) = 13.16$, $p < .001$). Thus, in the GHQ case group levels of negative affect were higher and self-esteem was significantly lower than in the non-case group. There were no significant differences in mean scores on positive affect or life satisfaction.

Character strengths, mental health and wellbeing

The hypothesized associations between character strengths, self-esteem and mental health as measured by the GHQ, positive and negative affectivity and life satisfaction were computed using Pearson product moment correlations. The results are in Table 3. To assist in interpretation low scores on the GHQ indicate good mental health, while high scores on the strengths measures indicate greater strengths, hence the mental health scores correlate negatively with the strengths scores. Similarly, low scores on Negative Affectivity and the TRIM Avoidance and Revenge scales indicate lower levels of negative thinking, revenge seeking, and avoidance and produce negative correlations with measures such as strengths, life satisfaction and positive affect where high scores represent positive levels of a variable.

-Table 3 -

The hypothesis that higher levels of specific character strengths would be associated with better mental health (GHQ), higher levels of positive affectivity, higher levels of life satisfaction, higher self-esteem and lower levels of negative thinking was supported for exploratory curiosity and hope pathways (Table 3). For gratitude, hope agency, total hope, and forgiveness the hypothesized associations with better symptomatic mental health (GHQ), higher levels of positive affectivity, higher levels of life satisfaction, and higher self-esteem were supported. There were no statistically significant associations with negative affectivity. Total curiosity was significantly associated with mental health, positive affect and self-esteem. For absorption curiosity, the hypothesized statistically significant association was only with positive affectivity and self-esteem. Optimism was only associated with positive affectivity. TRIM revenge seeking and TRIM avoidance were associated with poorer mental health (GHQ), lower positive affectivity and lower life satisfaction as predicted. Lower levels of self-esteem were associated with avoidance and revenge seeking.

The correlations between the character strengths are in Table 4. As defined by Cohen (1988) there are moderately sized correlations between exploratory curiosity, absorption curiosity, hope pathways, hope agency, gratitude, optimism, and TRIM benevolence and a large correlation between the subscales of the Hope Scale although this still represents only 36% shared variance.

- Table 4 -

After pre-analysis checks on outliers, missing data, multivariate normality, multicollinearity and linearity indicated no problems with the dataset, the statistically significant associations between character strengths and wellbeing were explored further using multiple regressions. A power calculation (Cohen, 1988) for power of .80, a medium effect size indicated a minimum sample size of 146 and this is met (Tabachnik & Fidell, 2006). The results are in Table 5 and are summarised in figure 1.

-Table 5 -

For GHQ, hope pathways is the strongest unique predictor of mental health, followed by gratitude, with the model accounting for 15.2% of the variance $F (7, 198) = 5.08, p < .001$). Hope Agency is the strongest predictor of positive affectivity followed by gratitude, exploratory curiosity, and TRIM avoidance motivation, the latter being a negative predictor of positive affectivity, suggesting that being motivated to avoid a transgressor is not conducive to hopeful thought. The model accounts for 45% of the variance ($F (9, 193) = 17.40, p < .001$).

-figure 1 -

For life satisfaction, gratitude is the strongest predictor followed by hope agency, with the model accounting for 22% of the variance ($F (7, 197) = 7.83, p < .001$). In terms of self-esteem, the model accounted for 41% of the variance ($F (8, 196) = 16.67, p < .001$). Hope agency was the strongest predictor of self-esteem followed by hope pathways, exploratory curiosity, gratitude, and absorption curiosity, the latter being a negative predictor. While exploratory curiosity and hope pathways were significantly correlated with negative affectivity, they did not significantly predict negative affectivity.

Discussion

GHQ caseness

Significant findings for clinical practice are the absence of statistically significant differences in life satisfaction, positive affect, and character strengths between GHQ case and non-case students. Subjective wellbeing is defined as involving high levels of life satisfaction and greater experience of positive affect than negative affect in daily life (Diener et al., 2005). Thus, the GHQ case sample while scoring higher on psychopathology, were as satisfied with their lives as non-case participants and had equivalent levels of positive affect in their lives. This provides support for the dual-factor model of mental health (Keyes, 2005; Greenspoon

& Saklofske, 2001). It was higher levels of negative affect that was the distinguishing factor in terms of the wellbeing of the GHQ case sample. The lower self-esteem scores in the GHQ case group further attest to this as self-esteem is a culturally sensitive measure of wellbeing (Hewitt, 2005). The numbers in the GHQ case sample were relatively low and this study would benefit from repetition with a larger sample.

The differences in positive and negative affect as found here are worth stressing, as the distinctiveness of the two is not always appreciated. Factor analyses suggest that positive affect and negative affect are largely independent concepts but do correlate negatively with each other (Crawford & Henry, 2004; Watson et al., 1988). This means that working with clients to increase positive affect will not necessarily lead to a reduction in negative affect in clients and vice versa. Both need to be addressed separately.

Wright and Lopez, (2005) argue that mental illness symptoms co-occur with dispositional strengths and influence the experience of subjective wellbeing as found in this research. Character strengths provide resources that individuals can be encouraged to use to improve their wellbeing. Finding no differences in levels of character strengths between GHQ case and non-case students is important. These character strengths provide additional resources for therapists to utilize with clients. Macaskill (2012) found that individuals living with chronic recurrent depression welcomed the idea of strengths assessment as a counter-balance to psychopathology assessment, which they felt, reflected a deficits model of them as individuals. Indeed, Peterson, Park, & Seligman (2006) reported that coping with psychological illness could develop character strengths. This was based on a very large internet study but did include some retrospective data. However, the notion of growing through adversity is a very positive message for clients to counteract the deficits psychopathology model and is in line with what is known about how resilience develops

(Luthar, Cicchetti, & Becker, 2000). This is certainly important for individuals with chronic recurring conditions.

Character strengths

Hypothesis one is fully supported for exploratory curiosity and hope pathways. Higher levels of exploratory curiosity are associated with better mental health, higher positive affect, lower negative affect, greater life satisfaction and higher self-esteem. Exploratory curiosity underlies intrinsic motivation to develop learning competence and mastery in new situations (Ryan & Deci, 2001) so its positive association with health and wellbeing in new students is perhaps unsurprising. In dealing with illness such curiosity can provide the motivation for the individual to learn about their condition and how best to manage it. Hope pathways represents the ability to plan workable routes to goal achievement (Snyder et al., 2005), again a useful characteristic in novel, challenging situations such as coping with illness.

The hypothesized positive associations with mental health, positive affect, life satisfaction and self-esteem are supported for gratitude, hope agency, the total hope scale and forgiveness (benevolence) but there is no relationship with negative thinking. Gratitude involves recognition and appreciation of the positives in situations (Hershberger, 2005; McCullough et al., 2002) and responding with positive emotions (Neto, 2007). The greater flexibility and creativity in thinking associated with gratitude (Folkman & Moskowitz, 2000; Wood et al., 2008) are all skills likely to promote adaptation in new situations. These results confirm previous research linking higher levels of gratitude with positive affect, mental wellbeing, and life satisfaction (Emmons & McCullough, 2003).

Hope agency represents the motivation to pursue pathways to one's goals (Snyder et al., 2005). The link between high levels of motivation to achieve goals and better mental health, greater self-esteem, and improved ability to cope with stress is well supported (Snyder, 2000; Snyder et al., 1991; Snyder & Lopez, 2007). Higher levels of forgiveness

being associated with better mental health and wellbeing supports previous research (Maltby et al., 2001).

Absorption curiosity represents the ability to immerse oneself in an activity and while it is associated with more positive affect and higher self-esteem as predicted, the hypothesized associations with mental health, life satisfaction and negative affectivity are not supported. This lack of associations with mental health and life satisfaction would seem at odds with writers such as Rogers (1961) who suggested that absorption curiosity is linked to high levels of needs satisfaction and positive mental health. The participants here are in transition to adulthood and it may be as Rogers suggested that these associations become more important in later life. This could be examined with a wider age range in future.

For optimism, only the association with positive affect is supported. While this result is congruent with the literature (Deci & Ryan, 2000; Park et al., 2004), generally optimism is reported to be positively associated with wellbeing. Here optimism is not associated with GHQ scores. However, there is a lack of consistency in the measures used to assess the relationships between health and wellbeing and character strengths in research studies. The GHQ has not been used in studies assessing the relationship between health and character strengths in a student sample previously, which may help to explain this disparate finding.

Low levels of revenge seeking and avoidance are associated with better mental health, higher experience of positive affect and greater life satisfaction partially supporting the second hypothesis, but there is no significant association with negative affect. Previous research reported associations between low revenge -seeking and avoidance and better mental health (Maltby et al., 2001), but the associations with positive and negative affect have not previously been explored. For self-esteem, avoidance of the wrongdoer is associated with lower self-esteem, perhaps suggestive of being less confident to deal with the conflict and seeking revenge is negatively associated with self-esteem. It may be that individuals with low

self-esteem respond more negatively when they are wronged and are more likely to seek revenge. A future study could examine these relationships in more detail and explore causal links.

The moderate correlations between the strengths correspond with previous research even though they are designed to measure unique constructs, the separateness of which are supported by factor analysis (Snyder & Lopez, 2007). There may be some common element shared by these character strengths, not yet been identified. Perhaps a link to resiliency for example and is worth examining further.

Character strengths accounted for relatively high proportions of the variance in the health and wellbeing scores. Higher levels of hope pathways and gratitude are predictive of better mental health (GHQ) in that order. Gratitude and hope agency are equally predictive of positive affect followed by exploratory curiosity. Gratitude is the strongest predictor of life satisfaction followed by hope agency. While for self-esteem hope agency is the strongest predictor followed by hope pathways, gratitude, exploratory curiosity with absorption curiosity as a negative predictor.

Limitations

The numbers of males and females in the sample was very unequal but did represent the preponderance of women studying social science. Future studies should address this by including a wider range of subject specialisms and this is likely to improve the gender balance as well. Related to this, women differed significantly from men on negative affectivity in the study although the effect size was small. However, this may be a meaningful difference had the numbers of males and females been equal. This difference is worth investigating in a future study. The numbers of participants totally completing each measure did vary from 206 to 214. This may have been due to participants deliberately choosing not to answer a particular question as they were instructed that they could do, or

simply making an error. Following ethical guidelines makes it likely that some participants may choose not to answer particular questions but in this instance, any participants with missing values on a measure were removed from the analysis for that measure, as the sample size was large enough to allow this. While it was a long questionnaire, students were enthusiastic about completing it although they had the option to leave. However, this was their first day at university and their first experience of being asked to participate in a staff research project; had the exercise been repeated several months later the response may have been less enthusiastic. Verbally briefing students and conveying enthusiasm for research also seems to encourage participation. While causality is impossible to test using cross-sectional designs as used in this study, assessing psychopathology, wellbeing, and character strengths at one time did provide useful insights about their relationships with each other.

Conclusions and implications

The first important result for clinical practice is finding no significant differences between GHQ case and non-case student scores on two of the three components of subjective wellbeing, namely life satisfaction and positive affect. GHQ case students were distinguished by higher psychopathology scores and higher negative affect. This also emphasises the importance of addressing negative and positive affect separately in clinical settings and not assuming that a decrease in negative affect will automatically result in an increase in positive affect.

Finding no differences in character strengths scores between GHQ case and GHQ non-case student scores is important for clinical practice and evidences the value of assessing character strengths in mental health assessment. It is an important result as there are interventions that have been shown to be effective in developing the strengths included in this study. Most of this research is with general populations but finding no differences in strengths between GHQ case and non-case students would suggest that there are equally

suited to the former group. Character strengths provide resources that therapists can use to help individuals cope with adversity such as mental illness as proposed in dual-factor models of mental health assessment within positive psychology. There is evidence here that employing gratitude and hope interventions to develop these strengths further could be a useful addition to treatment for individuals with mental health problems. Literature describing and evaluating character strengths interventions is available (Seligman et al., 2005; Sin & Lyubomirsky, 2009; Ouweneel, Le Blanc, & Schaufeli, 2014) and websites such as Martin Seligman's at the University of Pennsylvania are valuable resources for individuals wishing to know more about measuring character strengths and using interventions.

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Table 1. Descriptives for all the scales and subscales.

Character strengths scales	N	M	CI$_{95}$	SD	α	Range
Exploratory curiosity	214	19.09	18.57,19.63	3.90	.76	4-28
Absorption curiosity	214	12.90	12.50, 13.30	2.95	.74	3-21
Total curiosity	214	31.99	31.59, 32.39	5.70	.74	7- 49
Gratitude	214	33.96	33.28, 34.60	5.07	.76	6-42
Optimism	213	18.32	18.04, 18.60	2.09	.81	6-30
Hope pathways	210	22.29	21.71, 22.87	4.33	.77	4-32
Hope agency	208	23.28	22.75, 23.81	3.94	.70	4-32
Total hope	206	45.56	44.57, 46.55	7.38	.82	8- 64
Avoidance	214	21.76	20.99, 22.53	5.72	.83	7-35
Revenge	214	11.58	11.05, 12.11	3.98	.85	5-25
Forgiveness	214	18.49	17.85, 19.13	4.77	.87	6-30
Wellbeing measures						
Self-esteem	210	19.93	19.34, 20.52	4.43	.85	10-40
Mental health (GHQ)	214	21.11	19.78, 22.44	9.91	.89	0-84
Positive affect	211	34.87	33.99, 35.75	6.55	.85	10-50
Negative affect	207	23.78	22.82, 24.74	7.14	.84	10-50
Life satisfaction	213	24.93	24.2, 25.66	5.42	.81	5-35

Table 2. Correlations between mental health (GHQ), positive affect, negative affect and life

satisfaction (*N*=203).

	Mental health	Positive affect	Negative affect
Mental health (GHQ)	-		
Positive affect	-.42***	-	
Negative affect	.49***	-.16	
Life satisfaction	-.28***	.268***	-.04

*** *p* < .001

Table 3. Correlations of character strengths with wellbeing measures (*N*= 214).

Character strengths	GHQ	Positive affect	Negative affect	Life satisfaction	Self-esteem
Age	-.13	.13	-.07	-.12	.17*
Exploratory curiosity	-.22***	.50***	-.17**	.14*	.43***
Absorption curiosity	-.10	.28***	-.02	.04	.14*
Total curiosity	-.20**	.49 ***	-.13	.12	.29***
Gratitude	-.25***	.45***	-.03	.44***	.36***
Optimism	-.02	.15*	-.06	-.01	.04
Hope pathways	-.31***	.47***	-.18**	.18**	.50***
Hope agency	-.14*	.51***	-.02	.32***	.52***
Total hope	-.31***	.47***	-.12	.29***	.47***
TRIM avoidance	.17**	-.21**	.04	-.14*	-.21**
TRIM revenge	.14*	-.19**	.09	-.17**	-.19**
TRIM benevolence	-.14*	.21**	-.05	.22***	.23**

* p < .05, ** p < .01, *** p < .001

Table 4. Correlations between character strengths (*N*= 214).

Character strengths	1	2	3	4	5	6	7	8
1. Exploratory curiosity	--							
2. Absorption curiosity	.37***	--						
3. Total curiosity	.88***	.77***	--					
4. Gratitude	.34***	.2**	.33***	--				
5. Optimism	.35***	.14*	.16*	.38***	--			
6. Hope pathways	.49***	.34***	.51***	.30***	.49***	--		
7. Hope agency	.41***	.28***	.43***	.35***	.43***	.60***	--	
8. Total hope	.50***	.34***	.52***	.37***	.13	.91***	.88***	--
9. Avoidance	-.06	-.08	-.08	-.13	-.13	.25***	-.08	-.16*
Revenge	-.10	.01	-.02	-.23**	-.13	-.01	-.11	-.07
Forgiveness	.19**	.11	.18**	.33***	.24***	.20**	.22**	.26***

* p < .05, ** p < .01, *** p < .001

Table 5. Regression Analyses for Character Strengths Predicting Mental Health GHQ), Positive Affect, Life Satisfaction and Self-esteem

	Mental health (GHQ)			Positive affect			Life satisfaction			Self-esteem		
Variable	B	SEB	β	B	SEB	β	B	SEB	β	B	SEB	β
Exploratory curiosity	-.17	.20	-.07	.40	.11	.24***	-.06	.10	-.05	.18	.07	.16*
Absorption curiosity				.06	.13	.03				-.20	.09	-.14*
Gratitude	-.34	.15	-.17*	.363	.08	.26***	.36	.08	.34***	.13	.06	.16*
Optimism				.29	.17	.10						
Hope pathways	-.68	.21	-.30***	.11	.11	.08	-.09	.11	-.07	.25	.08	.25***
Hope agency	.32	.22	.13	.43	.12	.26***	.35	.11	.26**	.30	.08	.28***
TRIM avoidance	.16	.16	.09	-.21	.08	-.19*	-.05	.08	-.05	-.08	.06	-.11
TRIM revenge	.22	.19	.09	-.12	.10	-.07	-.04	.10	-.03			
TRIM benevolence	.14	.19	.07	-.19	.10	-.14	.02	.10	.02			

Note: Mental health *(GHQ)* R^2 = .15 (*N* = 214, *p* < .001*)* Positive affect R^2 = .45 (*N* =203, *p* < .001) Life satisfaction R^2 = .22 (*N* = 214, *p* <

.001) Life satisfaction R^2 = .22 (*N* = 214, *p* < .001)   Self-esteem R^2 = *.41* (*N* = 205, p < .001) * *p* < *.05,* ** *p* < .01, *** *p* < .001

| Hope Pathways, *p < .001* | → | Mental Health (GHQ) |
| Gratitude, *p < .05* | | |

Gratitude, *p < .001*	→	Positive Affect
Hope Agency, *p < .001*		
Exploratory Curiosity, *p < .001*		

| Gratitude, *p < .001* | → | Life Satisfaction |
| Hope Agency, *p < .01* | | |

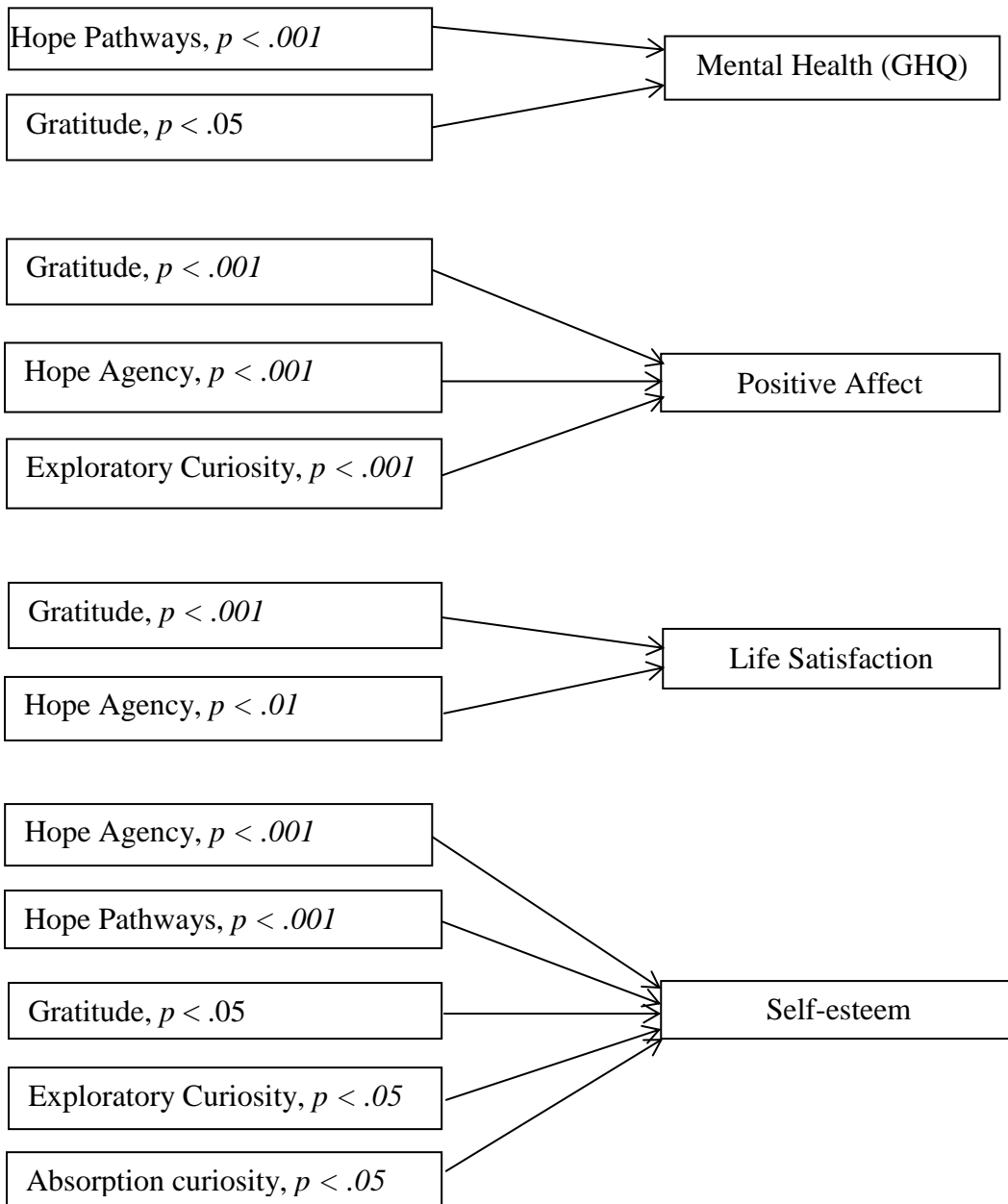| Hope Agency, *p < .001* | → | Self-esteem |
Hope Pathways, *p < .001*		
Gratitude, *p < .05*		
Exploratory Curiosity, *p < .05*		
Absorption curiosity, *p < .05*		

Figure 1. Summary of the character strengths that are unique significant predictors of mental health (GHQ), positive affect, life satisfaction, and self-esteem.