

The Association between Mindset and Perceived Psychological Wellbeing within the Armed Forces. A PERMA Model Perspective

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Abstract Research on fixed and growth mindset has primarily focused on goal achievement in such settings as education and sports performance. Although providing critical insights into the positive impacts of mindset, we cannot assume that a growth mindset is desirable in other domains such as psychological wellbeing. This pilot investigation focused on the relationship between growth, fixed mindset, and different components of wellbeing in a military population where unique stressors are anticipated. Sixty-three participants completed online self-report measures of mindset, focused explicitly on intelligence (growth mindset scale), personality (kind of person implicit theory scale) and the PERMA profiler measure of wellbeing. The results indicated that mindset accounted for significant variance in all aspects of wellbeing besides health and loneliness. A multiple regression analysis showed that a growth mindset regarding personality positively predicted positive emotion, engagement, meaning, accomplishment, and overall wellbeing. Interestingly, a growth mindset regarding intelligence was not a significant contributor to any of the PERMA factors. The results indicate that, within the targeted population, a growth mindset of personality is conducive to flourishing, whilst a mindset concerning intelligence is not a significant contributing factor. These data will provide the groundwork for studies exploring methods to support resilience in the armed forces.

Keywords: *mindset, growth mindset, fixed mindset, wellbeing, PERMA profiler, intelligence, personality, armed forces, military*

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1. Introduction

The mindset approach proposes that individuals can be placed on a continuum ranging from fixed (beliefs that human attributes are relatively stable, sometimes referred to as ‘entity theories’) to growth (beliefs that human attributes are relatively malleable, sometimes referred to as ‘incremental theories’; [1]). There is also a suggestion that the same person may hold different mindsets about different psychological attributes [1]. For example, a person may believe that personality is relatively stable but that intelligence is changeable. Furthermore, although a person’s mindset is thought to be relatively consistent over time [1], research suggests that it can be changed through longer-term interventions (e.g., [2,3]) or even with a single laboratory-based task (e.g., [4]). Much of this early research focused on mindset as a tool to achieve a positive impact on task performance in particular contexts such as education or athletics [5]. This was precisely the purpose of the original research on the malleability of personal attributes, conducted by Carol

Dweck [6], where changing a mindset from fixed to growth was a tool to boost academic achievement. In this context, any positive effects of these mindset interventions on wellbeing were attributed to the task success engendered by the intervention rather than a direct causal factor.

While there has been research concerning mindset and wellbeing, it has not always focused on beliefs about a person’s ability to change their psychological characteristics, but instead on whether the attribute is inherently positive or negative. For example, Crum and colleagues [7] applied the concept of mindset to beliefs about stress and found that having a stress-is-enhancing (as opposed to a stress-is-debilitating) mindset has a positive impact on responses to challenging and stressful situations. Keech et al. [8] built on this research and showed that a stress mindset predicts outcomes related to wellbeing through proactive coping behaviours and perceived somatic symptoms (i.e., physiological responses to stress such as changes in heart rate and sweat secretion). Using a population of serving police officers, the research showed that when the health-related outcomes were psychological wellbeing and perceived stress, the association between stress mindset

and health-related outcomes was mediated by both proactive coping behaviours and perceived somatic symptoms. However, when physical wellbeing was the outcome variable, the association between stress mindset and health-related outcomes was only mediated by perceived somatic symptoms and not proactive coping behaviours. This research is important as it builds on our understanding of modifiable factors that impact upon wellbeing and suggests that the mechanisms involved in the relationship between mindset and wellbeing are variable depending on the specific outcomes measured. Our study seeks to pinpoint which aspects of psychological wellbeing are associated with a growth mindset about the psychological attributes of intelligence and personality.

1.1. Mindset

Mindset theory has historically been associated with goal orientation and response to setbacks [9]. Within goal orientation, a growth mindset focuses on actual learning, while a fixed mindset is geared towards performance and achievement. Therefore, how setback is managed becomes different within the theory's confines. Individuals who focus on the process rather than the end goal are far more likely to regard a setback as part of the learning journey.

The study of mindset has largely been the focus of social and developmental psychology [10,11]. More recent work has explored the subject from a clinical psychology perspective, where research has demonstrated a clear link between psychological resilience and a growth mindset [12,13]. One of the original studies in this area [14] reported growth mindset benefits for positive emotions and wellbeing, and a negative impact of low mood in a population of students transitioning into their first year of college. A key limiting factor in this study, and across multiple research papers on implicit theories, is that the focus is on domain specificity, stating that one personal attribute is entirely independent to another regarding mindset. By focusing too closely on a single domain, we risk losing oversight of the individual by focusing too closely on specific elements of their personality.

Mindset has significant implications concerning self-regulation [15]. Using relationships as an example, if a person believes they are limited in their abilities to have and maintain positive relationships, they will be less motivated to engage in these critical opportunities. Individuals who believe their personal traits are malleable are more likely to adapt their behaviour, creating an opportunity for the desired goal. The belief that attaining a positive relationship is possible motivates the processes to achieve it. This is particularly important to wellbeing as it would suggest that someone with a growth mindset will be willing to work and make changes towards perceived higher levels of wellbeing, whilst a fixed mindset would offer little motivation to develop. Van Tongeren and Burnette [16] explored self-regulation with regard to happiness. Their research concluded that for someone to achieve happiness, they must believe that it is attainable. The mindset that offers this will lead to greater satisfaction across a broad spectrum of personal attributes and higher overall wellbeing.

The current research has been designed to explore mindset without observing a specific behavioural response.

Previous research has explored mindset within a results-based context, such as sport [17] or education [18]. The limitation of this is that it produces a trained response to a specific situation which is then associated with higher levels of wellbeing. Developing a mindset that results in higher grades will undoubtedly produce higher levels of wellbeing within an educational context. It does not, however, mean that this mindset can be associated with other elements of an individual's life. By removing the assessment of a specific response, we can understand the association between mindset and wellbeing from a domain-general perspective.

1.2. Wellbeing

Abraham Maslow's [19] theory of self introduced the concept of realizing one's full potential through a hierarchical development of self and was the precursor to more recent conceptualizations of wellbeing. Within the theory of self, the goal for mentally healthy individuals is to be happy and self-fulfilled, having reached the peak of their abilities [20]. Those few individuals that have achieved self-actualization are, therefore, considered to have achieved higher levels of wellbeing. There are multiple conceptualizations of what constitutes wellbeing, although much of the research has focused on the variables associated with it, as opposed to testing theory [21]. Positive psychology has given rise to the exploration of a more balanced view of the multiple dimensions of wellbeing as a construct [22]. It associates wellbeing with happiness, health, and comfort. Seligman [23] broke down the multifaceted concept into five key elements: positive emotion, engagement, relationships, meaning and accomplishment (PERMA). Individuals with elevated levels of these five qualities are said to be 'flourishing'. The model is not without criticism (e.g. [24]). Regardless, Seligman [25] argues that PERMA constitutes the building blocks of wellbeing and that the answer to achieving 'happiness' belongs within these elements, and the focus should not be on the result. The strength of the PERMA model is that it consists of a combination of eudaimonic and hedonic aspects whilst incorporating various elements from other models [26]. Empirical studies have shown that the elements of the PERMA model can be strong predictors of wellbeing within some populations [27].

Wellbeing cannot be considered in terms of a single measure and the field of positive psychology has suggested that wellbeing should be assessed in terms of indicators across multiple domains [28]. The PERMA profiler [29] was developed as a multidimensional measure of wellbeing, using the term 'flourishing', which allows the assessment of the individual elements of the model as well as an overall measure of wellbeing. The internal validity of the PERMA profiler has been demonstrated in multiple studies [30]. The PERMA profiler has also displayed good internal consistency and test-retest reliability [31] and is an excellent indicator of subjective wellbeing which is why it is adopted here [25].

1.3. Military Population

Serving military members are exposed to unique stressors due to the nature of the role. Armed forces are

often associated with conflict in hostile environments, deployments overseas and protecting national interests across the globe. It is unsurprising that much of the research around the impact of military service on mental health focuses on these areas. Non-deployment factors, including role also present a significant occupational health risk to service personnel [32]. Burrell et al. [33] focused on four demands associated with military service: risk of service injury or death, frequent relocations, periodic separations, and foreign residence. Burrell's research states that service separation is negatively associated with physical and psychological wellbeing, satisfaction with service life and marital satisfaction. Fear for the safety of the serving person is negatively associated with physical wellbeing, and the impact of relocations affects satisfaction with service life. These results, however, are taken from questionnaires completed by spouses and not the service person. Although this gives a clear indicator of the stressors placed on service families, it does not give us a clear understanding of the impact from the perspective of the military personnel and their individual wellbeing.

Brooks & Greenberg [32] explored psychological wellbeing within the military and suggested three key areas of stress within service life that could impact wellbeing: relationships with others, role-related stressors and positive impacts. They found that little can be done to reduce role-related stress due to the nature of service. Instead, it indicates that the focus should be on improving relationships across all levels of the command chain, improved management practices, the promotion of cohesion, and personal development training to mitigate the effect of stressful workloads. Physical fitness and exercise were also found to be positively associated with higher levels of wellbeing. These areas of focus are of note as they fit remarkably well into the individual elements of the PERMA model and are one of the key reasons the model was chosen to explore the association between mindset and wellbeing within a military population.

2. The Present Study

The purpose of this pilot study was to identify, within a military population, whether viewing personal attributes as fixed (entity theorists) or malleable (incremental theorists) with respect to personality and intelligence has different relationships with each PERMA element. An important aspect of the study was to measure mindset related to these two psychological constructs together in one study. This enables the investigation of whether any positive effects of a growth mindset in this population on wellbeing are explained by a general tendency to be self-efficacious and believe that 'change is possible', or whether the impact of these fixed vs. malleable beliefs on wellbeing depends on specific psychological attributes. Furthermore, examining different components of wellbeing made it possible to investigate whether the answer to this question varies depending on the components of wellbeing under consideration.

3. Method

3.1. Design

A cross-sectional correlational design was used. The independent variables were fixed and growth mindset as assessed by the Kind of Person Implicit Theory Scale (KPITS; personality) [6] and the 8-item version of the Growth Mindset Scale (GMS; intelligence) [6]. The outcome variable was the five PERMA wellbeing elements [23]: positive emotion, engagement, relationships, meaning, accomplishment, and overall wellbeing, as measured by the PERMA-Profiler [29].

3.2. Participants

Sixty-three adults over 20 years of age completed the study (22 women- Mean age = 36.8 SD = 7.8; 41 men- Mean age = 38.1 SD = 9.4) in full. Nine further participants were removed from the data analysis due to incomplete data. Due to the novelty of this work, a precise power analysis could not be carried out. However, a medium to large effect size was anticipated based on work on growth mindset and wellbeing elsewhere. A priori power analysis revealed an ideal sample size to be between 31 and 67 to achieve 80% power for detecting a medium ($d=0.5$) and large ($d=0.8$) effect at $\alpha = .05$. All participants were serving members of the Armed Forces (The Royal Navy). There were no other exclusion factors in the study. Participants were recruited through emails inviting participation which contained an invite letter, the participant information sheet and link to the Qualtrics questionnaire. No incentives, financial or otherwise, were offered or given.

3.3. Materials

The survey was created through the Qualtrics web-based software (Qualtrics, Provo, UT). Forced responses were enabled for the informed consent questions and all other questions had 'request response' enabled. After informed consent was given, participants were requested to provide demographic information comprising gender, age, and years served in the armed forces.

3.3.1. Mindset

The 'Kind of Person' Implicit Theory Scale (KPITS) [6], was used to measure the extent to which the participants believed attributes associated with their general personality were either fixed or not. The scale is comprised of 8 statements e.g. "People can always substantially change the kind of person they 'are'". Items were rated on a 5-point scale with the end points as (strongly disagree to strongly agree) and were presented as a Likert scale and participants were asked to read the statement and then to mark the column that corresponded with their judgement.

The 8-item version of the Growth Mindset Scale (GMS) [6] was used to measure the extent to which the participant's believed intelligence was fixed or not. The scale has 8 items e.g. "You have a certain amount of intelligence, and you can't really do much to change 'it'".

Items were again rated on a 5-point scale with the end points as (strongly disagree to strongly agree). The items were presented on a Likert scale and the participants were asked to mark the column that reflected their judgment.

3.3.2. Wellbeing

The PERMA Profiler [29] was used to measure wellbeing. The Profiler measures wellbeing through 5 domains: positive emotion, engagement, relationships, meaning and accomplishment, with 3 items per domain. There are a further 8 items which include negative emotions and health (3 items each) and single items for loneliness and overall happiness, totalling 23 items. Examples of the items include, "To what extent do you receive help and support from others when you need it?" and "How often do you become absorbed in what you are doing?". Items were rated on a scale of 0-10 with the end points labelled (labels differed depending on section) terrible to excellent for example. Items were presented on a slider scale and participants were asked to read each item carefully before using the slider to annotate the answer that corresponded to their judgement. Higher scores reflected feelings of possessing more of the characteristics associated with the relevant category and, by association, lower scores reflected less of the characteristic. The PERMA-Profiler has been reported to have acceptable to excellent reliability, with internal consistency (Cronbach's alpha) levels of .88 for positive emotion, .72 for engagement, .82 for relationships, .90 for meaning, .79 for accomplishment, .71 for negative emotion, .92 for health and .94 for overall wellbeing [29].

3.4. Procedure

The Northumbria University's Ethics Committee granted ethical approval, and permission was sought from

the Commanding Officer of People Support within the Royal Navy to request volunteers. Emails were sent directly to individuals' military accounts requesting participants with a link to the survey. To begin, participants were presented with an information sheet which briefly explained the purpose of the study and allowed an informed decision as to whether to continue to the survey itself. The information sheet included the methods to assure anonymity, the process for the participants to remove themselves from the study, contact details for the researcher to answer any further questions and a link to supporting agencies should any of the survey questions have a detrimental impact.

After giving informed consent, participants were asked to provide a unique identification number to identify their data should they wish to withdraw from the study at any point. The survey took approximately 10 minutes in total. On completion, participants were thanked and presented with a debrief form providing further detail of the purpose of the study, information relating to mindset and wellbeing, confirmation of the withdrawal process and the researchers' contact details should they be required.

4. Results

4.1. Treatment of Data

All statistics were calculated using SPSS Version 27 (IBM Corp). Descriptive statistics and Cronbach's alpha were used to measure internal consistency for all subscales, as can be seen in Table 1. All alpha levels for the subscales were > .70 showing good reliability [36] except for accomplishment ($\alpha=.67$), although it will be retained in the research as it displays good internal consistency. Cronbach's alpha could not be calculated for Loneliness and Happiness as they are single score items.

Table 1. Internal consistency and descriptive statistics for the Growth Mindset Scale, the Kind of Person Implicit Theory Scale and PERMA Profiler subscales (N=63)

	Mean	SD	Min Score	Max Score	Cronbach's alpha
Mindset					
GMS	3.45	1.02	1.25	5.00	.94
KPITS	3.28	1.03	1.00	5.00	.96
PERMA					
Positive Emotion	6.00	1.92	2.00	9.00	.87
Engagement	6.49	1.91	2.00	9.33	.77
Relationships	6.87	1.87	1.67	10.00	.70
Meaning	6.38	1.81	2.00	9.33	.88
Accomplishment	6.70	1.40	2.67	9.00	.67
Health	6.97	1.51	2.67	9.00	.87
Negative Emotion	3.97	1.97	.67	7.67	.70
Loneliness	3.63	2.93	.00	10.00	-
Happiness	6.69	2.05	1.00	10.00	-
Overall Wellbeing	6.50	1.57	2.75	8.63	.94

Table 2. Bivariate Pearson's correlations for the Growth Mindset Scale, the Kind of Person Implicit Theory Scale, PERMA Profiler subscales and time served in the military (N=63)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
Mindset													
1. GMS	-												
2. IPT	.68***	-											
PERMA													
3. Positive Emotion	.41***	.61***	-										
4. Engagement	.34**	.55***	.72***	-									
5. Relationships	.35**	.38**	.73***	.59***	-								
6. Meaning	.38**	.47***	.77***	.66***	.76***	-							
7. Accomplishment	.34**	.49***	.73***	.59***	.68***	.76***	-						
8. Overall Wellbeing	.42***	.57***	.92***	.82***	.87***	.90***	.85***	-					
9. Negative Emotion	-.41***	-.47***	-.77***	-.55***	-.58***	-.70***	-.53***	-.73***	-				
10. Health	.03	.14	.39**	.13	.23	.29*	.43***	.34**	-.32**	-			
11. Happiness	.38**	.42***	.86***	.62***	.71***	.74***	.70***	.86***	-.75***	.40**	-		
12. Loneliness	-.14	-.21	-.52***	-.38**	-.56***	-.55***	-.45***	-.58***	.61***	-.16	-.66***	-	
Time Served in Military	.23	.27*	.35**	.28**	.23	.31*	.39**	.36**	-.30*	.00	.35**	-.29*	-

Note: * $p < .05$, ** $p < .01$, *** $p < .001$.

4.2. Bivariate Correlations

Pearson's bivariate correlations were computed to assess the relationship between all variables as can be seen in Table 2. As per Cohen's effect size [37], results from the GMS show a large, significant positive correlation with the KPITS. This indicates a consistency across the two scales as participants tended to reflect either a growth or fixed mindset across both. The GMS and KPITS have significant medium-large positive correlations with positive emotion, engagement, relationships, meaning, accomplishment, overall wellbeing and happiness. The results also show a medium, significant negative correlation between both of the mindset scales and the negative emotion subscale. Interestingly, time served within the military was not strongly correlated with the GMS and KPITS although it did have a medium, significant correlation with positive emotion, accomplishment, overall wellbeing and happiness.

4.3. Multiple Regression Analysis

Linear regression analysis was conducted to explore the components of the PERMA model, as well as overall wellbeing, and the two mindset scales; the GMS and the KPITS. Preliminary analysis was performed to ensure there was no violation of the assumption of normality and linearity. The scatter plots confirmed that the predictor and outcome variable relationships within the six models were all linear. Variance inflation factors were all < 4 and collinearity tolerance were all $> .25$. The assumption of linearity and no multi-collinearity across the models is therefore met. Inspection of the histograms for the positive emotion, engagement, relationship, meaning, accomplishment and overall wellbeing models confirm the residuals of regression are normally distributed for all models.

4.3.1. Positive Emotion

The positive emotion model, with the two predictors, reached significance and was able to account for 35.3% of

the variance in positive emotion ($R^2 = .353$, $F(2,60) = 17.94$, $p < .001$). GMS ($\beta = -.01$; $t = -0.09$, $p = .932$) did not make a significant contribution. KPITS ($\beta = .62$; $t = 4.45$, $p < .001$), however, makes a significant contribution. Positive emotion was therefore predicted by the KPITS.

4.3.2. Engagement

The engagement model, with the two predictors, reached significance and was able to account for 27.8% of the variance in engagement ($R^2 = .278$, $F(2,60) = 12.94$, $p < .001$). GMS ($\beta = -.06$; $t = -0.40$, $p = .693$) again did not make a significant contribution. KPITS ($\beta = .59$; $t = 3.99$, $p < .001$), makes a significant contribution meaning it predicts engagement.

4.3.3. Relationships

The relationships model, with the two predictors, reached significance and was able to account for 13.2% of the variance in relationship variable ($R^2 = .132$, $F(2,60) = 5.72$, $p < .005$). Neither the GMS ($\beta = -.16$; $t = 0.97$, $p = .336$), nor the KPITS ($\beta = .28$; $t = 1.71$, $p = .092$), makes a significant contribution in their own right.

4.3.4. Meaning

The meaning model, with the two predictors, reached significance and was able to account for 19.8% of the variance in meaning ($R^2 = .198$, $F(2,60) = 12.94$, $p < .001$). GMS ($\beta = -.12$; $t = 0.74$, $p = .461$) did not make a significant contribution. KPITS ($\beta = .39$; $t = 2.50$, $p = .015$), makes a significant contribution.

4.3.5. Overall Wellbeing

The overall wellbeing model, with the two predictors, reached significance and was able to account for 30.3% of the variance in overall wellbeing ($R^2 = .303$, $F(2,60) = 14.49$, $p < .001$). GMS ($\beta = .06$; $t = 0.42$, $p = .676$) did not make a significant contribution. KPITS ($\beta = .53$; $t = 3.64$, $p < .001$), again makes a significant contribution.

4.4. Summary

All models reached significance as they were below the .05 alpha level and therefore it can be established that mindset explains a substantial amount of variance across the subcomponents of the PERMA model as well as overall wellbeing. The KPITS was a significant positive contributor to all of the above models apart from relationships. Interestingly, the GMS was not a significant contributor in any of the models.

5. Discussion

The current study aimed to explore the relationship between mindset, using the Growth Mindset (intelligence) and Kind of Person Implicit Theory scales (personality), and subjective wellbeing using the multiple domains of the PERMA model of flourishing [29] within a population of serving military personnel. Specifically, the research focused on whether mindset showed differing relationships with each of the components of PERMA as well as overall subjective wellbeing. It was predicted that both the GMS and KPITS would show a positive relationship with all aspects of the PERMA model of flourishing other than the negative emotion and loneliness scales. This was anticipated due to the fluid nature of the military role and the expectation that those with a more rigid mindset would be less suited to the occupation and, therefore, indicate lower levels of wellbeing.

As expected, the findings revealed a significant positive relationship with both mindset scales and the individual components of PERMA, as well as with overall wellbeing and happiness within the population. The results also confirmed a significant negative relationship between growth mindset and the negative emotion scale. The results indicate a clear positive correlation between a growth mindset and higher levels of subjective wellbeing within the military population. The regression analysis revealed that mindset explains a substantial amount of variance across the individual aspects of the PERMA model and overall wellbeing. Interestingly, however, is that it is mindset associated with personality (KPITS) that was a far more significant positive contributor to positive emotion, engagement, meaning, accomplishment and overall wellbeing than mindset of intelligence (GMS), which did not appear to be significant for any of the PERMA factors. The relationship scale also revealed the least significance with neither mindset scale having a significant impact. The results indicate that, within a military population, a growth mindset is more beneficial for service individuals than a fixed mindset, although personality seems critical.

5.1. Positive Emotion

Mindset has been associated with emotion in relation to two key aspects [38]. The first is how an individual experiences positive and negative emotions across the many circumstances they face throughout life. The second is an individual's implicit belief regarding whether that experience is fixed or not across multiple domains. Previous research has reported that cultivating more

positive emotions increases an individual's levels of resilience and that positive emotions can form a protective factor during periods of negative emotions [39]. Fredrickson [40] stated that negative emotions could hinder one's ability to cope with stress. Her broaden and build model is based on the idea that positive emotion broadens awareness and promotes exploratory thoughts and actions. This allows the individual to look past the immediate stressor, take a wider perspective and subsequently build resilience through problem-solving and finding meaning in life events. Baptist and Nelson-Goff's [41] research stated that a service person's ability to counter negative emotions and stress with positive emotions could reflect their resilience levels. The current research supports this as the two predictors of growth mindset accounted for the most significant variance with positive emotions compared to the other elements of the PERMA model, particularly regarding personality. This indicates, in conjunction with previous research, that having an implicit belief that emotions are not fixed is more suited to dealing with stress and uncertainty, in this case associated with military service.

The association between positive emotion, a growth mindset and flourishing should not just be limited to military service and the results have a wider implication to the general population. From a neuroscience perspective, positive emotions are the building blocks for resilience, flourishing, happiness and life satisfaction, and it is the experience and interpretation of stimuli that ultimately leads to the experience of wellbeing [42]. The current research indicates a significant relationship between mindset and positive emotion in a population that experiences a broad spectrum of unique stressors within potentially short timeframes during 6-9-month deployments or 2-3-year shoreside assignments. The relevance of this to the wider population with regards to the management of life stressors is significant.

5.2. Engagement

A large amount of the research conducted on engagement and mindset has been in an educational context, goal orientation and performance outcomes. Previous studies [43,44] have stated that students who are engaged in developing their levels of competence are found to utilize more strategies, put more effort into their studies and therefore report higher levels of achievement. Those with a fixed mindset are associated with less engagement in the classroom and, therefore, lower levels of achievement [45]. In a non-academic context, the current study supports the previous research as it also indicates a significant relationship between mindset and the variance in engagement. Interestingly, within the military population, it is again a mindset of personality that makes the significant contribution, not intelligence. With regards to wellbeing, this differs significantly from the academic focused research where engagement and achievement is associated with a growth mindset of intelligence and, subsequently, with increased levels of wellbeing [5]. This is likely to do with the perception of valuable attributes within a military population. Ishreen Rawoot et al. [46] reported that personality factors such as self-discipline, focus and conscientiousness were strongly

associated with job performance. The current research supports this with the significant large correlation between the Kind of Person Implicit Theory scale and engagement, alongside the aforementioned contribution of a growth mindset of personality to the variance in the relationship in the engagement model.

The results from the engagement model add further evidence that a growth mindset regarding personality is associated with flourishing within military service and as discussed, is perhaps due to the perceived attributes associated with achievement. From a general population perspective, the results highlight the importance of the goal. In an academic setting for example, the goal is to increase academic performance to which flourishing is then associated. A growth mindset with regards to intelligence therefore becomes beneficial. In the military, personality factors are seen as more valuable for career success and a growth mindset of personality is therefore key. Goal adoption and goal striving are significant to positive personal function [38] and intrinsically linked to wellbeing. From an engagement perspective, the goal for the individual defines the most appropriate mindset which, if developed, will increase engagement leading to higher levels of achievement and subjective wellbeing.

5.3. Relationships

There are several unique stressors to relationships that occur within a military population including missing important milestones within the family, separation, persistent uncertainty, and the effect of operational deployment on the service individual, to name a few. Studies have noted the emotional drain of military service [47] and cognitive dissonance [48], the theory that holding two conflicting cognitions can cause psychological distress. This is particularly relevant when we consider the conflict between service and family life. In previous research, a growth mindset towards relationships has been found to have significant effect on all aspects of wellbeing, contributing particularly to self-acceptance and positive attitudes to self [49] and the belief that a relationship will develop and grow over time. Fixed, or specifically a 'destiny' mindset [50] is associated with the idea that a relationship should be 'right' from the earliest stages. Previous research has associated a growth mindset with adaptive outcomes within relationships, particularly during challenges [38]. The current research supports this in indicating a significant positive relationship between a growth mindset and the relationship variable. The multiple regression, however, shows that the two mindset models account for the least amount of variance in the relationship variable, compared to the other aspects of PERMA and overall wellbeing. Neither a growth mindset of intelligence, nor personality account for a significant variance. It could be argued, therefore, that relationships are not necessarily a good indicator of wellbeing within a military population.

Mindset is perhaps not such a significant factor to positive relationships within the military due to the nature of service and building strong inter-personal relationships from the outset of recruit training. Research has shown resilience is increased through the connection with others [51] and that trust depends on the strength of the

mechanisms involved, including organization [52]. Relationships in the military therefore become established early through shared experiences and continually develop over time, strengthened by operational deployments and exercises. Positive relationships within a military population are therefore not reliant on mindset, so much as on a developed and a persistently reinforced ethos.

5.4. Meaning

The current research indicates a significant strong correlation between meaning and overall wellbeing, whilst the two mindset models account for 19.8% of the variance in the meaning variable. Once again, it is growth mindset with regards to personality that makes the significant contribution. Previous research has highlighted the importance of implicit theories regarding meaning and transcendence associated with increased levels of wellbeing [53]. Transcendence has been noted as offering the source of meaning, whilst understanding gives it the function [54]. Seligman [23] associated meaning with the feeling of belonging and being part of something larger than the self which is particularly relevant when considering a military population. Military identification has been found to be positively associated with job satisfaction and negatively with depression [55].

A significant amount of research has been done on the association between meaning and wellbeing, particularly during the covid pandemic due to isolation measures removing key aspects of people's identity including work, family, and social interaction. Interestingly, meaning was found to be positively associated with better psychological health and lower anxiety and emotional distress during the covid pandemic [56]. The research indicates that meaning in life acts as a method of resilience against stressors. From a military perspective, making meaning of stressful experiences has been linked to improved adaptive behaviours during periods of adjustment [57]. We must also consider the unique nature of 'belonging' within the military, the sense of identity and close social support networks. Research has highlighted the link between social connectedness and quality of life, as well as an indirect link between identity and wellbeing within a military population [58].

The current study supports the previous research. The multiple aspects of meaning create resilience against the unique stressors of service life and indicates that a growth mindset with regards to personality is directly linked to increased levels of meaning, contributing to higher levels of perceived wellbeing within service life.

5.5. Accomplishment

Accomplishment has previously been associated with an incremental mindset [59]; those individuals that believe in accomplishment through effort and mastery-orientated goals. In an educational context, a fixed mindset has predicted poor self-reported grades and greater helplessness attributions [60]. Effectively, the research states that those who believe they can develop their intelligence through effort will reach higher levels of accomplishment than those who view their abilities as fixed. The current research would suggest that this is also

the case within a military population. A growth mindset with regards to personality, rather than intelligence as seen within educational studies as previously referenced, revealed the most significant correlation. The two mindset predictors also accounted for a significant percentage of the variance in accomplishment with the KPITS. Accomplishment is therefore strongly associated with personality within the military population. Literature has stated that personality is intricately linked to flourishing in the workplace and those that flourish tend to have a forward leaning, positive approach to all aspects of work including fellow employees and the tasks given to them [61].

Factors other than the individual themselves must also be considered. Perceived organizational support has been indicated to positively affect work outcomes, including commitment and performance [62]. Positive leadership has also been an indicator of exceptional performance and accomplishment by creating a sense of identity and an example to follow [63]. From a military context, Runge et al. [64] reported that intrinsic rewards, such as being able to use a skill set, were most associated with a positive deployment whilst poor leadership was linked to poor self-reported experiences of a deployment.

The current research supports previous studies that have associated a growth mindset with higher levels of accomplishment. For an individual with a growth mindset to flourish, however, research indicates they require the freedom of creativity, organizational support, and positive leadership to inspire and create an environment to reach their potential. The importance of the organization on an individual's ability to have a sense of accomplishment is relevant in a military context as well as the wider population.

5.6. Growth Mindset of Intelligence and Growth Mindset of Personality

One of the key outcomes of the current research is the significance of a growth mindset of personality, compared to a lack of significance of a growth mindset of intelligence. A prolific amount of research within the field of mindset has focused on intelligence due to the academic subject matter and achievement-based results. However, interventions that promote a growth mindset of personality and intelligence within an academic institution have been recommended [65], due to the association with higher grades, particularly within verbal subjects. The question arises then as to why personality is more significant than intelligence in a military population. Within a workplace context a growth mindset with regards to personality has been strongly associated with engagement, if it is promoted through transformational leadership [66]. This is an extremely interesting concept from both a military, and wider population perspective. Transformational leadership, the theory of a leader working with their team to identify and implement change, has been associated with positive outcomes within a military [67,68] and a general workplace context [69,70], including engagement, improved relationships and meaning. Transformational leadership has been found to be directly associated with perceptions of work-life balance and wellbeing [71]. Aspects of personality,

therefore, can be seen as more desirable than intelligence, within a military and general workplace population due to the association with positive outcomes, not only to the individual, but also the wider team and organization. This is a significant aspect of wellbeing and mindset within a workplace setting where the focus is not simply on individual results, as in academia, but within a wider context of group goals and shared outcomes. The current research results indicate that a growth mindset with regards to personality is associated with higher levels of perceived wellbeing and can be understood within the context of belonging to something bigger than the 'self'.

6. Conclusion

In conclusion, the present findings significantly contribute to the well-researched area of mindset (fixed and growth) and wellbeing by investigating the relationship between the two without the confines of a specific, targeted outcome. The research allowed a domain-general perspective exploration, increasing its relevance to the wider population. The findings support the expectation indicated in previous research [12,13,14], that a growth mindset would be conducive to higher levels of perceived wellbeing, in this case within the military population, due to the fluid nature of the role and the unique stressors involved. The findings challenge the significance of growth mindset of intelligence within a general, work placed population and indicate that developing a growth mindset of personality is conducive to flourishing in a team focused environment. The findings suggest value in further research into growth mindset regarding personality within the workplace and its association with transformational leadership and increasing wellbeing through a cohesive approach.

The current research is also significant with regards to military specific development. The results indicate that methods to encourage a growth mindset within military personnel would produce higher levels of wellbeing within a demanding environment associated with unique stressors. Importantly, further research into methods to encourage a growth mindset within military training and the impact of those methods on overall wellbeing within an armed forces career would have significant value, both to the military and for wider research on mindset and subjective wellbeing. Research on implicit theories has repeatedly demonstrated that 'simple' interventions can lead to long-lasting change [72]. This work mirrors key endeavours in resilience training in the United States Army. Indeed, although in its infancy, this work has focused on a proactive approach to anticipating challenges, and there is an expectation that this will reduce the incidence of stress related disorders and allow individuals to have more internal resources to draw on [73].

References

- [1] Dweck, C. S. (2008). Can personality be changed? The role of beliefs in personality and change. *Current directions in psychological science*, 17(6), 391-394.
- [2] Paunesku, D., Walton, G.M., Romero, C. Smith, E.N., Yeager, D.S., & Dweck, C.S. (2015) Mind-set interventions are a scaleable

- treatment for academic under-achievement. *Psychological Science*, 26(6), 784-793.
- [3] Burnette, J.L., Joseph, B., Banks, G.C., Knouse, L.E., Hoyt, C.L., Pollack, J.M., & Stefanie, S. (2022). A systematic review and meta-analysis of growth mindset interventions: For whom, how, and why might such interventions work? *Psychological Bulletin*, Advance online publication.
 - [4] Alexander, K. M. (2016). Implicit theories and help-seeking (UMI No. 10245-422). [Doctoral dissertation] ProQuest Dissertation and Theses database.
 - [5] Ortiz Alvarado, Rodríguez Ontiveros, M., & Ayala Gaytán, E. A. (2019). Do mindsets shape students' wellbeing and performance? *The Journal of Psychology*, 153(8), 843-859.
 - [6] Dweck, C.S. (1999). Self-theories: Their role in motivation, personality, and development. Philadelphia
 - [7] Crum, Akinola, M., Martin, A., & Fath, S. (2017). The role of stress mindset in shaping cognitive, emotional, and physiological responses to challenging and threatening stress. *Anxiety, Stress, and Coping*, 30(4), 379-395.
 - [8] Keech, Cole, K. L., Hagger, M. S., & Hamilton, K. (2020). The association between stress mindset and physical and psychological wellbeing: testing a stress beliefs model in police officers. *Psychology & Health*, 35(11), 1306-1325.
 - [9] Schroder, H.S. (2021). Mindsets in the clinic: Applying mindset theory to clinical psychology. *Clinical Psychology Review*, 83.
 - [10] Mesler, Corbin, C. M., & Martin, B. H. (2021). Teacher mindset is associated with development of students' growth mindset. *Journal of Applied Developmental Psychology*, 76, 101299.
 - [11] Mills, & Mills, B. S. (2018). Insufficient evidence: mindset intervention in developmental college math. *Social Psychology of Education*, 21(5), 1045-1059.
 - [12] Burnette, Knouse, L. E., Vavra, D. T., O'Boyle, E., & Brooks, M. A. (2020). Growth mindsets and psychological distress: A meta-analysis. *Clinical Psychology Review*, 77, 101816-101816.
 - [13] Schroder, Yalch, M. M., Dawood, S., Callahan, C. P., Brent Donnellan, M., & Moser, J. S. (2017). Growth mindset of anxiety buffers the link between stressful life events and psychological distress and coping strategies. *Personality and Individual Differences*, 110, 23-26.
 - [14] Tamir, J.O.P., Srivastava, S., & Gross, J. J. (2007). Implicit theories of emotion. *Journal of Personality and Social Psychology*, 92(4), 731-744.
 - [15] Burnette, J. L., O'Boyle, E., VanEpps, E. M., Pollack, J. M., & Finkel, E. J. (2013). Mind-sets matter: A meta-analytic review of implicit theories and self-regulation. *Psychological Bulletin*, 139, 655-701.
 - [16] Van Tongeren, & Burnette, J. L. (2018). Do you believe happiness can change? An investigation of the relationship between happiness mindsets, wellbeing, and satisfaction. *The Journal of Positive Psychology*, 13(2), 101-109.
 - [17] Mansell, P.C. (2021). Stress mindset in athletes: Investigating the relationships between beliefs, challenge and threat with psychological wellbeing. *Psychology of Sport and Exercise*, 57, 102020.
 - [18] Yeager, Hanselman, P., Walton, G. M., Murray, J. S., Crosnoe, R., Muller, C., Tipton, E., Schneider, B., Hulleman, C. S., Hinojosa, C. P., Paunesku, D., Romero, C., Flint, K., Roberts, A., Trott, J., Iachan, R., Buontempo, J., Yang, S. M., Carvalho, C. M., Dweck, C. S. (2019). A national experiment reveals where a growth mindset improves achievement. *Nature (London)*, 573(7774), 364-369.
 - [19] Maslow, A. H. (1943). A theory of human motivation. *Psychological Review*, 50(4), 370-396.
 - [20] Healy. (2016). A theory of human motivation by Abraham H. Maslow (1942). *British Journal of Psychiatry*, 208(4), 313-313.
 - [21] Blore, Stokes, M. A., Mellor, D., Firth, L., & Cummins, R. A. (2011). Comparing multiple discrepancies theory to affective models of subjective wellbeing. *Social Indicators Research*, 100(1), 1-16.
 - [22] Veldhoven, Peccei, Veldhoven, Marc Van, & Peccei, Riccardo. (2014). *Wellbeing and performance at work: the role of context*. Taylor and Francis.
 - [23] Seligman. (2011). Flourish : a new understanding of happiness and wellbeing - and how to achieve them. Nicholas Brealey.
 - [24] Goodman, Disabato, D. J., Kashdan, T. B., & Kauffman, S. B. (2018). Measuring wellbeing: A comparison of subjective wellbeing and PERMA. *The Journal of Positive Psychology*, 13(4), 321-332.
 - [25] Seligman. (2018). PERMA and the building blocks of wellbeing. *The Journal of Positive Psychology*, 13(4), 333-335.
 - [26] Birch, H. A., Riby, L. M., & McGann, D., (2019). Perfectionism and PERMA: The benefits of other-oriented perfectionism. *International Journal of Wellbeing*, 9(1), 20-42.
 - [27] Donaldson, Heshmati, S., Lee, J. Y., & Donaldson, S. I. (2021). Examining building blocks of wellbeing beyond PERMA and self-report bias. *The Journal of Positive Psychology*, 16(6), 811-818.
 - [28] Kern, Waters, L. E., Adler, A., & White, M. A. (2015). A multidimensional approach to measuring well- being in students: Application of the PERMA framework. *The Journal of Positive Psychology*, 10(3), 262-271.
 - [29] Butler, J., & Kern, M. L. (2016). The PERMA-Profilier: A brief multidimensional measure of flourishing. *International Journal of Well-being*, 6(3), 1-48.
 - [30] De Carvalho, de Aquino, S. D., & Natividade, J. C. (2021). Flourishing in the Brazilian context: Evidence of the validity of the PERMA-profiler scale. *Current Psychology (New Brunswick, N.J.)*.
 - [31] Grenawalt, Umucu, E., Reyes, A., Baylin, A., Strauser, D. R., Tansey, T. N., & Wagner, S. (2021). Psychometric validation of the PERMA-profiler as a wellbeing measure for young adult survivors of pediatric central nervous system tumor. *Rehabilitation Counseling Bulletin*, 3435522110255.
 - [32] Brooks, S.K., & Greenberg, N. (2018) Non-deployment factors affecting psychological wellbeing in military personnel: literature review. *Journal of Mental Health*, 27(1), 80-90.
 - [33] Burrell, L. M., Adams, G. A., Durand, D. B., & Castro, C. A. (2006). The impact of military lifestyle demands on wellbeing, army, and family outcomes. *Armed Forces & Society*, 33(1), 43-58.
 - [34] Dweck, & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review*, 95(2), 256-273.
 - [35] Yeager, Johnson, R., Spitzer, B. J., Trzesniewski, K. H., Powers, J., & Dweck, C. S. (2014). The far-reaching effects of believing people can change: Implicit theories of personality shape stress, health, and achievement during adolescence. *Journal of Personality and Social Psychology*, 106(6), 867-884.
 - [36] Field. (2017). *Discovering statistics using IBM SPSS statistics* (5th edition).
 - [37] Cohen. (1992). *A Power Primer*. *Psychological Bulletin*, 112(1), 155-159.
 - [38] Howell, A. J. (2016). Implicit theories of personal and social attributes: Fundamental mindsets for a science of wellbeing. *International Journal of Wellbeing*, 6(3), 113-130.
 - [39] Israelashvili. (2021). More positive emotions during the COVID-19 pandemic are associated with better resilience, especially for those experiencing more negative emotions. *Frontiers in Psychology*, 12, 648112-648112.
 - [40] Fredrickson. (2001). The role of positive emotions in positive psychology. *The American Psychologist*, 56(3), 218-226.
 - [41] Baptist, & Nelson Goff, B. S. (2012). An examination of the Broaden-and-Build model of positive emotions in military marriages: An Actor-Partner analysis. *Journal of Couple & Relationship Therapy*, 11(3), 205-220.
 - [42] Alexander, Aragón, O. R., Bookwala, J., Cherbuin, N., Gatt, J. M., Kahrilas, I. J., Kästner, N., Lawrence, A., Lowe, L., Morrison, R. G., Mueller, S. C., Nusslock, R., Papadelis, C., Polnaszek, K. L., Helene Richter, S., Siltan, R. L., & Styliadis, C. (2021). The neuroscience of positive emotions and affect: Implications for cultivating happiness and wellbeing. *Neuroscience and Biobehavioral Reviews*, 121, 220-249.
 - [43] Dupeyrat, & Mariné, C. (2005). Implicit theories of intelligence, goal orientation, cognitive engagement, and achievement: A test of Dweck's model with returning to school adults. *Contemporary Educational Psychology*, 30(1), 43-59.
 - [44] Greene, & Miller, R. B. (1996). Influences on achievement: Goals, perceived ability, and cognitive engagement. *Contemporary Educational Psychology*, 21(2), 181-192.
 - [45] Kim, & Park, S. (2021). Growth of fixed mindset from elementary to middle school: Its relationship with trajectories of academic behavior engagement and academic achievement. *Psychology in the Schools*, 58(11), 2175-2188.

- [46] Ishreen Rawoot, Adelai van Heerden, & Laaiqah Parker. (2017). Operational Forces soldiers' perceptions of attributes and skills for career success. *SA Journal of Industrial Psychology*, 43, e1-e9.
- [47] Wilson, H. M. N., Murray, C. D. (2016). The experience of deployment for partners of military personnel: A qualitative meta-synthesis. *Journal of Couple & Relationship Therapy*, 15, 102-120.
- [48] Monk, Basinger, E. D., & Abendschein, B. (2020). Relational turbulence and psychological distress in romantic relationships in the military. *Journal of Social and Personal Relationships*, 37(3), 942-964.
- [49] Chan, Sun, X., & Chan, L. K. (2021). Domain-specific growth mindsets and dimensions of psychological wellbeing among adolescents in Hong Kong. *Applied Research in Quality of Life*, 17(2), 1137-1156.
- [50] Petty, & Knee, C. R. (2013). Implicit theories of relationships: Destiny and growth beliefs. In *The Oxford Handbook of Close Relationships*. Oxford University Press.
- [51] Griffith, & West, C. (2013). Master resilience training and its relationship to individual wellbeing and stress buffering among Army National Guard soldiers. *The Journal of Behavioral Health Services & Research*, 40(2), 140-155.
- [52] Vanneste, Puranam, P., & Kretschmer, T. (2014). Trust over time in exchange relationships: Meta-analysis and theory. *Strategic Management Journal*, 35(12), 1891-1902.
- [53] Flotman. (2021). Work as meaningful and menacing phenomenon for South African middle managers during the COVID-19 pandemic: The role of self-transcendence in cultivating meaning and wellbeing. *Frontiers in Psychology*, 12, 650060-650060.
- [54] Wong. (2011). Positive Psychology 2.0. *Psychologie Canadienne*, 52(2), 69-81.
- [55] Sani, Herrera, M., Wakefield, J. R. H., Boroch, O., & Gulyas, C. (2012). Comparing social contact and group identification as predictors of mental health. *British Journal of Social Psychology*, 51(4), 781-790.
- [56] Arslan, & Yildirim, M. (2021). A longitudinal examination of the association between meaning in life, resilience, and mental well-being in times of Coronavirus pandemic. *Frontiers in Psychology*, 12, 645597-645597.
- [57] Sullivan, Freer, B. D., & Ulrich, S. (2021). Student veterans and adjustment to college: Making meaning of military experiences. *Journal of American College Health*, 69(5), 503-512.
- [58] Flack, & Kite, L. (2021). Transition from military to civilian: Identity, social connectedness, and veteran wellbeing. *PloS One*, 16(12), e0261634-e0261634.
- [59] Cury, Elliot, A. J., Da Fonseca, D., & Moller, A. C. (2006). The social-cognitive model of achievement motivation and the 2 x 2 achievement goal framework. *Journal of Personality and Social Psychology*, 90(4), 666-679.
- [60] De Castella, & Byrne, D. (2015). My intelligence may be more malleable than yours: the revised implicit theories of intelligence (self-theory) scale is a better predictor of achievement, motivation, and student disengagement. *European Journal of Psychology of Education*, 30(3), 245-267.
- [61] Cameron, & Spreitzer, G. M. (2011). *The Oxford handbook of positive organizational scholarship* (1st ed.). Oxford University Press.
- [62] Mills, R. Fleck, C., & Kozikowski, A. (2013). Positive psychology at work: A conceptual review, state-of-practice assessment, and a look ahead. *The Journal of Positive Psychology*, 8(2), 153-164.
- [63] Lewis. (2011). Positive psychology at work. In *positive psychology at work: how positive leadership and appreciative inquiry create inspiring organizations* (1. Aufl., pp. xxii-xxiii). Wiley-Blackwell.
- [64] Runge, Waller, M. J., Moss, K. M., & Dean, J. A. (2020). Military personnel ratings of a deployment and their positive and negative deployment experiences. *Military Medicine*, 185(9-10), e1615-e1623.
- [65] Fox, C. & Barrera, M. (2020). Beneficial effects of growth mindset of intelligence and growth mindset of personality on academic achievement in school-aged children. *Konteksty Pedagogiczne*, 2(15).
- [66] Caniëls, Semeijn, J. H., & Renders, I. H.. (2018). Mind the mindset! The interaction of proactive personality, transformational leadership and growth mindset for engagement at work. *Career Development International*, 23(1), 48-66.
- [67] Eid, Johnsen, B. H., Brun, W., Laberg, J. C., Nyhus, J. K., & Larsson, G. (2004). Situation awareness and transformational leadership in senior military leaders: An exploratory study. *Military Psychology*, 16(3), 203-209.
- [68] Nissinen, Dormantaitė, A., & Dungveckis, L. (2022). Transformational leadership in military education: Lithuanian Case Study. *Management Theory & Studies for Rural Business & Infrastructure Development*, 44(1), 103-116.
- [69] Jung, & Sosik, J. J. (2002). Transformational leadership in work groups. *Small Group Research*, 33(3), 313-336.
- [70] Ghadi, Fernando, M., & Caputi, P. (2013). Transformational leadership and work engagement: The mediating effect of meaning in work. *Leadership & Organization Development Journal*, 34(6), 532-550.
- [71] Munir, Nielsen, K., Garde, A. H., Albertsen, K., & Carneiro, I. G. (2012). Mediating the effects of work life conflict between transformational leadership and health-care workers' job satisfaction and psychological wellbeing. *Journal of Nursing Management*, 20(4), 512-521.
- [72] Aronson, Fried, C. B., & Good, C. (2002). Reducing the effects of stereotype threat on African American college students by shaping theories of intelligence. *Journal of Experimental Social Psychology*, 38(2), 113-125.
- [73] Cornum, Matthews, M. D., & Seligman, M. E. P. (2011). Comprehensive soldier fitness. *The American Psychologist*, 66(1), 4-9.

