



Resilience and the Cognitive Triad: Associations with Psychological Well-being

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ABSTRACT

Building upon existing research, this study aimed to test potential relationships between trait resilience, the cognitive triad (view of the self, view of the world and view of the future) and psychological well-being (PWB). Participants ($N = 94$, 25 men and 69 women) were volunteer sampled via online distribution of an anonymous link to the questionnaire. Data was analysed using two-step hierarchical regressions for each of the six PWB outcomes. In all regressions, trait resilience was entered at step one and the cognitive triad variables were introduced in step two. Findings indicated that independently, trait resilience significantly predicts all PWB outcomes. For the majority of outcomes, addition of the cognitive triad increased variance in the criterion variable. The individual elements of the cognitive triad varied in predictive utility across outcomes, except for purpose in life and self-acceptance, where all cognitive triad aspects were statistically significant. Overall, the results of this research support the hypotheses, however further investigation is required to fully understand the underlying mechanisms. The present study discusses the relationships between each predictor variable and each criterion variable, as well as future implications.

KEY WORDS:	TRAIT RESILIENCE	COGNITIVE TRIAD	PSYCHOLOGICAL WELL-BEING		
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Introduction Resilience

Resilience has been widely addressed across an abundance of research; however, a lack of a cohesive definition means much of this research is fragmented (Shean, 2015). Typically, resilience describes one's capacity to draw from both internal and external resources to withstand, bounce back, and flourish against adversity (Mak et al, 2011). However, this generic definition can be critiqued for its ambiguity, as it is unclear if recovery describes one returning to their pre-adversity state, or becoming stronger because of their adversities (Liu et al., 2017). Moreover, Neenan (2009) argues that adversity is subjective; therefore deeming an individual resilient may demean another's hardships. Wamser-Nanney et al. (2018) explored similar ideas where degree of adversity, distinguished by trauma type, was reported to be of significant importance in moderating psychological outcomes after experiencing adverse events. However, these findings may be inaccurate, as data was collected from self-report methods, thus preventing the discussed hardships from being operationalised.

Examining resilience research as a whole, this construct can largely be categorised into two key competing theories, trait resilience versus resilience as a process (Liu et al., 2014). Process concepts consider resilience an allostatic response incited by negative experiences (Crawford et al., 2006). Individuals are thought to actively engage in person-environment interactions, which confront stressors in ways that aim to maintain or restore stability (Schulz-Lutter et al., 2016). Each time one overcomes difficulties, resilience is developed and reinforced (Luthar and Zelazo, 2003).

Alternatively, trait resilience is a multi-dimensional construct (Mak et al., 2011) which brands resilience as a high-order personality characteristic (Block and Kremen, 1996). Argued to be present in those with strong psychological functioning, trait resilience is demonstrated by beneficial adaptive changes across various social contexts (Prince-Embury and Saklofske, 2013). Trait approach thus suggests an innate, stable, genetic element to resiliency (Lawton-Smith, 2016), of which exists without exposure to hardship, but may be subsequently cultivated by such difficulties.

Trait resilience has been argued to be intertwined with dispositional positivity. Tugade and Fredrickson (2004) argued that trait positivity and resiliency mutually encourage each other, prompting individuals to better physiologically rebound from negative incidences. However, trait approach is critiqued as some argue that exhibiting behaviours of a resilient nature across different life events does not delineate it as a personality trait (Schoon, 2006).

In essence, trait models pose resilience as a stable dispositional quality which is valuable to adaptive functioning (Mak et al., 2011) whereas process models explore dynamic concepts of resilience as a survival technique (Wright et al., 2013). Both concepts explore the protective associations of resilience. Trait resilience provides individuals with a form of 'immunity' from mental distress in times of adversity (Schulz-Lutter et al., 2016). Whereas process resilience involves

assessing resource-risk interactions and interaction-effect (Schoon, 2006; Strycharczyk and Clough, 2015).

Although opposing perspectives of resilience, both approaches suggest that individuals that are able to navigate successfully through adversity, whilst sustaining high levels of functionality, epitomise resilience (Cosco et al., 2017). It is managing to uphold ones functioning, and to 'bounce back' from adversity that is most commonly mentioned when describing resilience (Strycharczyk and Clough, 2015).

The effect of resilience is demonstrated in recovery from adversity. More resilient individuals have been found to suffer briefer periods of initial negativity, and later experience more positive outcomes overall (Harms, 2015). Moreover, the ability to propel forward into the future, despite disruptive events is not only essential in everyday life, but also invaluable in pressure-prone environments (Dolan, 2007). Resilient behaviours have proved advantageous across a plethora of situations, including pedagogic areas (Putwain et al., 2013), sporting careers and high-power businesses (Strycharczyk and Clough, 2015).

Therefore, understanding the constructs underpinning resilience is crucial to human adaptation, as resilience is found to cushion individuals from the negative impacts of hardship (Mak et al., 2011). However, it is also important to consider that moderate levels of adversity can prove beneficial to many adults (Seery et al., 2010). Studies have shown that enduring difficulties is associated with improved mental health and well-being, and encourages a propensity to better deal with adversity more effectively in the future (Seery, 2011). Furthermore, utilising social support to confront adversity reaffirms relationships and group memberships, which further boosts self-esteem and improves psychological well-being (Cocking et al., 2018).

Psychological Well-being

Psychological well-being (PWB) is a multi-faceted construct (Ryan and Deci, 2001). Well-being is commonly discussed interchangeably with life quality (Diener et al., 2003), which is often further deconstructed into life satisfaction, happiness and equilibrium of positive and negative affect (Dewe and Cooper, 2012). However, Ryff (1989, 1995) challenged such hedonic approaches, in place of a eudaimonic definition to holistically conceptualise PWB as a product of fundamental functioning, rather than an overall happiness-related outcomes. However, arguments have been made that eudaimonic approaches of well-being may not be suitable for all demographics due to culture differences (Church et al., 2014).

Ryff (1989, 1995) outlined six core dimensions of well-being: self-acceptance, positive relationships with other people, autonomy, environmental mastery, purpose in life, and personal growth. Prior to the development of this model, PWB was considered to be indicated through life satisfaction score and positive and negative affect (Ryff and Keyes, 1995). However, such factors were argued to neglect fundamental components of positive functioning, which had previously been discussed across a plethora of literature. Therefore, Ryff's model (1989, 1995) is considered to improve upon previous well-being concepts as it comprehensively addresses core theories (Figure 1) such as self-actualisation (Maslow, 1968),

individuation (Jung, 1933), fully functioning individuals (Rogers, 1961) and personal development (Erikson, 1959).

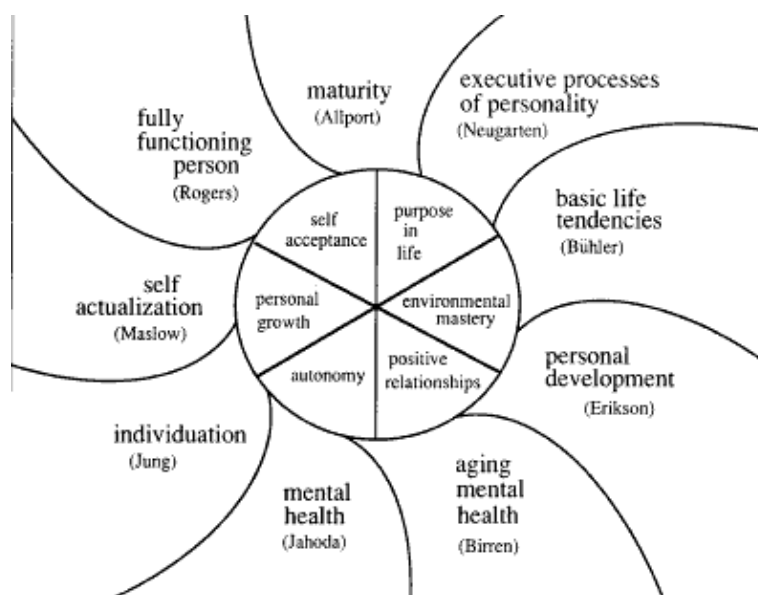


Figure 1: Core dimensions of well-being and their theoretical origins (Ryff, 1995: online).

Comparisons have been made between Ryff's (1989, 1995) model of PWB and The PERMA model (Seligman, 2011). Aside from positive emotion, both models identified similar, over-lapping themes concerning well-being, such as, engagement, relationships, meaning, and accomplishment (Schultze-Lutter et al., 2016). These eudaimonic approaches to PWB are positively regarded for considering each of the physical, psychological, cognitive, social and economic aspects of well-being (Kern et al., 2015).

According to Ishige and Muto (2005), resilience is a contributing factor involved in the broader process of maintaining PWB. Such ideas are also denoted in the Wellbeing Paradox (Svence and Majors, 2016), which states that as individuals progress across the lifespan, they will experience increasing levels of adversity, yet also report greater levels of quality of life and well-being (Cosco et al., 2017). This indicates a positive correlation between PWB and resilience (Svence and Majors, 2015; Mehta et al., 2018), as individuals must be more resilient to cope with adversity, and therefore remain psychologically well (Ishige and Muto, 2005; Cosco et al., 2017). The positive correlation between resilience and well-being has been further scrutinised, as McCrea et al. (2016) argues resilience levels are more indicative of future well-being rather than ones current psychological state.

This idea of resilience promoting wellbeing is exemplified in Matzka et al.'s (2016) self-report study of adults living with a cancer diagnosis. Despite contending with their illnesses, the older participants exhibited signs of high resilience, and less psychological distress. Meaning better psychological adjustment results from greater resilience, shown in older adults reporting low distress and high life satisfaction (Liu et al., 2014). Longitudinal research conducted by Pinqart (2009) and Siu et al.

(2009) echoes these findings. Therefore, the outcomes are considered fairly stable and consistent over time, thus supporting the validity of the assumed resilience-well-being relationship. Moreover, studies have found that behaving in a resilient manner successfully fosters more positive emotion (Lai and Mak, 2009) and increases ultimate well-being (Avey et al., 2011; Mak et al., 2011).

The Cognitive Triad

The cognitive triad is a concept first outlined by Beck (1987). His paper examined individuals suffering with depression, and found that participants held negative views of themselves, the world, and their futures (Pössel, 2009). These three aspects were referred to as the 'cognitive triad' and have since been applied to a plethora of research, either as individual constructs or most commonly, from a unified negative angle (Mehta et al., 2018). However, despite recent increases in positive approaches to psychological research (Shean, 2015), exploration into positive perspectives of the cognitive triad is limited (Mehta et al., 2018).

The first aspect of the cognitive triad explores an individual's view of themselves. Studies that review this element generally do so by establishing levels of self-esteem. There have been multitudes of studies, which have examined themes surrounding self-esteem and resilience. A study of 412 participants (Liu et al., 2014), revealed self-esteem as a mediator between resilience and life satisfaction versus distress. However, despite finding self-compassion scores to significantly indicate higher self-reported resilience, Schulz et al. (2018) identified an inverse relationship between self-esteem and resilience across 139 participants. This draws attention to the need for further research into these aspects.

Mehta et al. (2018) proposed a bi-directional relationship between resilience and self-esteem, and further added that possessing high self-esteem, as well as other contributing factors may encourage better PWB. This supports other studies, which have found a positive correlation between positive self-regard and general health well-being (Walsh and Banaji, 1997; McCullough et al., 2000; Schulz et al., 2018). Multiple researchers have expressed a positive association between resiliency and strong self-esteem indicators (Amstadter et al., 2016), such as positive self-imagery (Mak et al., 2011). Moreover, Mak et al. (2011) illuminated that individuals with high self-esteem tend to implement strategies, which are beneficial in the promotion of growth. As aforementioned, personal development is a key element to the model of PWB (Ryff, 1989, 1995) therefore highlighting the connection between self-esteem and well-being.

The second element of the cognitive triad examines ones views of the future, which is considered synonymously with the concept of hope. Optimism has been outlined as a strong presence alongside resilience in adverse circumstances (Carver et al., 2010). Research has shown individuals with high hope, or views of their future, are less affected by stressors (Zaleski et al., 1998). Denovan and Macaskill (2016) exemplified this, underscoring that optimistic attitudes can significantly buffer the stress that adjusting to university life places on ones well-being. Despite some differences, in terms of the magnitude of the affect optimism has, Souril and Hasanirad (2011) nonetheless identified optimism to act as a mediator between resilience and PWB.

Moreover, those with greater hope are found to utilise more advanced problem-solving strategies and exhibit greater coping ability (Horton and Wallander, 2001). Such tools equip individuals to tackle their stress (Ong et al., 2006), and thus overcome these obstacles, implying that they have acted more resiliently. This is further illustrated as resilience has been found to positively predict higher levels of hope (Short and Russell-Mayhew, 2009) and well-being (Satici, 2016).

The third and final component of the cognitive triad explores the individual's view of the world around them. This includes their relationships, surrounding environments and general outlook on life. According to Beck (1987), the way in which individuals interpret adverse situations has a direct impact on their feelings of their biosphere. Studies indicate that participants that are deemed more resilient also tend to possess more positive attitudes about life (Buikstra et al., 2010). Due to this positive regard of the world, such individuals are more likely to display resiliency, and bounce back from hardship (Mak et al., 2011). Therefore, as people who hold positive reflections on their environment overcome difficulty more easily, this has a constructive effect on their PWB, and makes such individuals adopt help-seeking behaviours more readily (Wang, 2009).

Resilience, the cognitive triad, and psychological well-being

Uniting resilience, the cognitive triad and PWB, Tugade and Fredrickson (2004) identified that highly resilient individuals tend to have greater self-confidence, be hopeful for their future, and consider the world more positively. Correlational analyses supported these positive interrelations, although causation cannot be assumed. These findings were later extended by Mak et al. (2011), who explored these factors in relation to depression and life satisfaction outcomes in a Chinese student population. Results supported the positive relationship between the cognitive triad and resilience, and further proposed a mediator role of the cognitive triad to achieving higher reports of satisfaction and lower descriptions of depression. However, this paper lacked clear explanation of the underlying mechanism and could not be generalised to other westernised populations. Mehta et al. (2018) replicated this study within an American sample, although the sample size was 13.95% of that used by Mak et al. (2011). Nonetheless, their findings supported the original study, again identifying the positive cognitive triad as a significant mediator between resilience and life satisfaction.

However, PWB is a complex, multi-faceted construct, which cannot be reduced to a depression-satisfaction dichotomy (Fava and Tomba, 2009). Therefore, this study attempts to develop the aforementioned findings, but examining the individual components of Ryff's (1989, 1995) PWB, rather than depression and life satisfaction (Mak et al., 2011; Mehta et al., 2018). In doing so, the research attempts to fathom if the cognitive triad can positively predict a more holistic understanding of well-being. In turn, it is hoped that the results of this study will serve as an invaluable resource for tailoring future interventions designed to optimise quality of life (Tugade and Fredrickson, 2004).

Although paradigms of PWB and resilience vary in manifestation across different subgroups (McGinnis, 2018), these variables are relevant to all populations, irrespective of age, gender, or socio-economic circumstances. Therefore, it is

imperative for researchers to further understand the underlying mechanisms of resilience (Mak et al., 2011). Understanding the core relationships as well as other potential factors, such as mental illness or personal development (Mehta et al., 2018) should aid establishment of practical interventions which can promote PWB (Fava and Tomba, 2009; Lawton-Smith, 2016).

The present study

Despite much existing research into the individual constructs of the cognitive triad, studies focusing positively on the cognitive triad cohesively are scarce. Therefore, the current study aims to extend existing research, which examined the cognitive triad and resilience, to consider a British population as well as approaching broader aspects of PWB. Resilience will be considered from a trait model, as in Mak et al., (2011) and Mehta et al. (2018). This enables comparison of findings and may be more suggestive of potential underlying mechanisms due to trait stability, rather than process resilience, which is subjective to change.

This present study expects results to indicate that higher trait resilience will predict greater PWB. Additionally, higher trait resilience will be positively associated with the aspects of the cognitive triad (view of the self, the world, and the future). Lastly, it is anticipated that greater scores of the cognitive triad will predict increased PWB among the sample, and meaningfully add to the predictive relationship between trait resilience and PWB.

Method

Design

This study operated within a non-experimental, correlational design, exploring the relationship between five variables. The criterion variable 'psychological well-being' was considered in relation to four predictor variables: 'view of the self', 'view of the world', 'view of the future' and 'trait resilience.'

Sample

This study utilised volunteer sampling, whereby an anonymous link to the survey was posted across various social media platforms, including Facebook and Twitter, as well as a post on Manchester Metropolitan University's participation pool. Review of the collected data revealed that 21 of 115 respondents did not complete the questionnaire therefore their data was removed. The final sample ($N = 94$) was comprised of 69 Females and 25 males, ranging in age from 19-71 years old ($M = 32.22$, $SD = 14.90$). This data sample satisfied the recommended number of 82 participants (Green, 1991).

Materials

Participants completed the series of questionnaires online, using the Qualtrics software. Each of the variables were measured using well-established questionnaires, which were common to previous research in this area. PWB was tested using the Ryff (1989, 1995) psychological well-being scale, while trait resilience was investigated using Block and Kremen's (1996) Ego-resiliency scale. Each element of the cognitive triad was explored using independent scales, as opposed to the cognitive triad inventory (Beckham et al., 1986). The state hope scale

(Snyder et al., 1996) was implemented to test the 'view of the future' variable, whereas Rosenberg's Self-esteem scale (1989) tested 'view of the self', and finally the 'view of the world' variable was studied using the relevant questions from Beckham et al. (1986) cognitive triad inventory.

Procedure and Ethical Considerations

Prior to undertaking this study, ethical approval (Appendix 1) was acquired from Manchester Metropolitan University's, thus ensuring the study satisfied university ethical guidelines and adhered to the British Psychological Society (2018) code of ethics and conduct.

Qualtrics software was used to create an online-accessible questionnaire. Before commencing the questionnaire, participants were given an information sheet (Appendix 4) detailing the aims of the study, ensuring fully informed consent was obtained. Responses were recorded along Likert scales, which were determined by the established scale. 'Force response' was implemented for each question to avoid incomplete answers. Upon completion of the questionnaire, participants were instructed to provide a unique identifier code. This ensured participants remained anonymous while enabling the right to withdraw, if requested. The last page of the survey provided a debrief (Appendix 6), which further detailed the data removal process and reminded participants of researcher contact details, should they have any questions. Qualtrics then generated an anonymous link, which was shared on various social media platforms, as well as uploaded to the university participation pool. Responses were gathered directly to the password-protected Qualtrics account and later exported to SPSS. Files were saved to a password-protected computer, which only the researcher had access to, complying with confidentiality.

Analysis plan

Using SPSS 25, a two-step hierarchical multiple regression analysis examined the predictive relationships between trait resilience, the cognitive triad and PWB. Findings from this analysis indicated the additive contribution of the cognitive triad, to the relationship between trait resilience and PWB. The predictor variables were entered in this order in line with previous research, which similarly explored resilience and the cognitive triad (Mehta et al., 2018).

Results

Preliminary Analyses

An internal consistency analysis was performed on each scale employed within the study, in order to assess the reliability of measurements of the variables. Each of the scales used to test the predictor variables were found to have high internal reliability, (resilience, $\alpha = .71$; view of the future, $\alpha = .85$; view of the self, $\alpha = .91$; view of the world, $\alpha = .78$). While the Cronbach's alpha value for the criterion variable, PWB was good, $\alpha = .93$, because the hierarchical regressions examine each of the six sub-categories of PWB, the questions for each component were tested individually. All of the facets were of good internal consistency (autonomy, $\alpha = .84$; personal growth, $\alpha = .77$; relations with others, $\alpha = .79$; purpose in life, $\alpha = .82$; self-acceptance, $\alpha = .89$) except for environmental mastery, $\alpha = .50$, which was low.

As displayed in Table 1, correlational analysis revealed that there are statistically significant positive relationships between all of the studied variables, except for autonomy and relations with others. The majority of the positive correlations are moderate-strong (Cohen, 1994). These results validate the exploration of relationships between these variables within the study.

Table 1
Descriptive statistics and Pearson's correlations (r)

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10
1. Trait Resilience	40.48	5.15		.37**	.32*	.41**	.37**	.24*	.58**	.41**	.27*	.42**
2. View of the Future	33.51	7.44			.57**	.60**	.26*	.63**	.56**	.52**	.70**	.63**
3. View of the World	48.99	8.75				.63**	.27*	.59**	.61**	.70**	.66**	.67**
4. View of the Self	26.66	5.90					.49**	.74**	.60**	.61**	.67**	.88**
5. Autonomy	32.04	7.83						.29*	.45**	.14	.24*	.51**
6. Environmental Mastery	31.61	5.56							.47**	.51**	.64**	.73**
7. Personal Growth	35.65	6.27								.56**	.58**	.68**
8. Relations with Others	35.04	7.46									.55**	.63**
9. Purpose in Life	33.30	7.78										.70**
10. Self-acceptance	29.02	8.98										

Note. $N = 92$, * $p < .05$, ** $p < .001$.

Preliminary screening of the data tested the parametric assumptions in order to ensure a hierarchical multiple regression was a valid means of analysis. Assumptions of absence of outliers, multicollinearity, independent errors, homoscedasticity and linearity of data were tested. Review of standardised residuals did not identify any outliers among the PWB outcomes (all standardised residuals were found to be below 3.29 and above -3.29), with the exception of personal growth (*Std. Residual Min* = -3.32, *Std. Residual Max* = 3.57) and purpose in life (*Std. Residual Min* = -3.56, *Std. Residual Max* = 2.05). To rectify this, removal of two data points resulted in no outliers.

The collinearity assumption was satisfied as reports indicated absence of multicollinearity across all PWB outcomes (trait resilience, *Tolerance* = .81, *VIF* = 1.24; view of the future, *Tolerance* = .57, *VIF* = 1.75; view of the world, *Tolerance* = .55, *VIF* = 1.83; view of the self, *Tolerance* = .49, *VIF* = 2.01). Data also met the assumption of independent errors (autonomy, *Durbin-Watson* = 1.61; environmental mastery, *Durbin-Watson* = 2.03; personal growth, *Durbin-Watson* = 1.38; relations with others, *Durbin-Watson* = 1.61; purpose in life, *Durbin-Watson* = 2.13; self-acceptance, *Durbin-Watson* = 2.22). Lastly, the scatterplot of standardised residuals generally displayed no heteroscedasticity (Appendix 7).

Table 2**Summary of hierarchical regression analysis with trait resilience and the cognitive triad as predictors of psychological well-being**

	Autonomy		Environmental Mastery		Personal Growth		Relations with Others		Purpose in Life		Self-Acceptance	
Step 1	$F(1,90) = 11.26^*$		$F(1,90) = 6.83^*$		$F(1,90) = 45.03^{**}$		$F(1,90) = 14.72^{**}$		$F(1,90) = 6.86^*$		$F(1,90) = 22.54^{**}$	
	$R_{adj}^2 = .099$		$R_{adj}^2 = .059$		$R_{adj}^2 = .325$		$R_{adj}^2 = .129$		$R_{adj}^2 = .060$		$R_{adj}^2 = .188$	
Step 2	$F(4,87) = 7.39^{**}$		$F(4,87) = 38.54^{**}$		$F(4,87) = 29.85^{**}$		$F(4,87) = 23.90^{**}$		$F(4,87) = 38.05^{**}$		$F(4,87) = 92.44^{**}$	
	$R_{adj}^2 = .216$		$R_{adj}^2 = .618$		$R_{adj}^2 = .559$		$R_{adj}^2 = .496$		$R_{adj}^2 = .62$		$R_{adj}^2 = .797$	
	β	t	β	t	β	t	β	t	β	t	β	t
Trait Resilience (Step 1)	.33	3.36*	.26	2.61*	.58	6.71**	.37	3.84**	.27	2.62*	.44	4.75**
Trait Resilience (Step 2)	.19	1.88	-.13	-1.76	.35	4.53**	.11	1.32	-.09	-1.29	.05	1.01
View of the Future	-1.39	-1.13	.30	3.46*	.16	1.76	.02	.16	.40	4.62**	.14	2.21*
View of the World	-.03	-2.76	.13	1.49	.29	3.12*	.50	5.06**	.28	3.24*	.14	2.21*
View of the Self	.48	3.70**	.54	5.90**	.18	1.77	.21	2.04*	.30	3.22*	.68	10.24**

Note. $N=92$: * $p < .05$; ** $p < .001$.

Hierarchical Regression Analyses

SPSS was utilised to perform six two-step hierarchical regressions on the collected data. This enabled each element of PWB, autonomy, environmental mastery, personal growth, relations with others, purpose in life and self-acceptance (Ryff, 1989, 1995) to be studied.

For each regression, the first step examined only the predictor variable, trait resilience against the PWB facet. The second step additionally considered the cognitive triad (view of the future, view of the world, view of the self). For all regressions, please refer to Table 2.

The first hierarchical regression examined autonomy as the criterion variable. Trait resilience was entered in the first step, and results showed it accounted for 10.9% of variance ($R^2 = .11, F(1,90) = 11.26, p = .001$). In step two, the cognitive triad variables (view of the future, view of the world and view of the self) were entered. This showed the four predictor model was statistically significant and explained 24.9% of variance in autonomy, ($R^2 = .25, F(4,87) = 7.39, p < .001$). Controlling for trait resilience, the cognitive triad explained an additional 14% of variance, $R^2 \text{ change} = .14, F(3,87) = 5.55, p = .002$. Examining the coefficients revealed that 'view of the self' was the only statistically significant predictor variable within the autonomy model, $\beta = .48, t = 3.70, p < .001$.

With environmental mastery as the outcome, step one identified that trait resilience explained 69% of variance ($R^2 = .07, F(1,90) = 6.83, p = .010$). The introduction of the cognitive triad variables in step two revealed the model as a whole was statistically significant and accounted for 63.4% of environmental mastery variance, ($R^2 = .63, F(4,87) = 38.54, p < .001$). The cognitive triad explained an additional 56.5% of variance, ($R^2 \text{ change} = .57, F(3,87) = 45.78, p < .001$). Of the four predictor variables, 'view of the future' and 'view of the self' were found to significantly contribute to the model, $\beta = .30, t = 3.46, p = .001$ and $\beta = .54, t = 5.90, p < .001$, respectively.

Personal growth was the criterion for the third regression, in which model one reported trait resilience explained 33% of variance ($R^2 = .33, F(1,90) = 45.03, p < .001$). Entering the cognitive triad variables in step two showed the model as a whole accounted for 57.8% of variance in environmental mastery ($R^2 = .58, F(4,87) = 29.85, p < .001$). Controlling for trait resilience, the cognitive triad alone explained an additional 24.5% of variance, ($R^2 \text{ change} = .25, F(3,87) = 16.85, p < .001$). Trait resilience was the most significant predictor variable, $\beta = .35, t = 4.53, p < .001$, followed by view of the world, $\beta = .29, t = 3.12, p = .002$.

Upon examination of one's relations with others as the criterion variable, the first block showed trait resilience explained 13.8% of variance ($R^2 = .14, F(1,90) = 14.72, p < .001$). Block two of the regression showed the model as a whole accounted for 51.8% in variance of the PWB outcome ($R^2 = .52, F(4,87) = 23.90, p < .001$). The cognitive triad explained an additional 38% of the variance ($R^2 \text{ change} = .38, F(3,87) = 23.38, p < .001$). View of the world was the most statistically significant predictor of environmental mastery, $\beta = .50, t = 5.06, p < .001$, then view of the self, $\beta = .21, t = 2.04, p = .044$.

Step one of the fifth hierarchical regression showed that trait resilience accounted for 71% of variance in the purpose in life outcome ($R^2 = .07, F(1,90) = 6.86, p = .010$). Introduction of the cognitive triad variables in step two, found that the model as a whole explained 63.6% of variance in the criterion ($R^2 = .64, F(4,87) = 38.05, p < .001$). The cognitive triad alone accounted for an additional 56.6% of variance ($R^2 \text{ change} = .57, F(3,87) = 45.09, p < .001$). Although trait resilience was non-significant, all of the cognitive triad variables were statistically significant in predicting purpose in life. View of the future was the greatest predictor variable, $\beta = .40, t = 4.62, p < .001$. View of the world was the second best predictor, $\beta = .28, t = 3.24, p = .002$ followed by view of the self, $\beta = .30, t = 3.22, p = .002$.

The final hierarchical regression examined self-acceptance as the criterion variable. In step one; trait resilience reportedly explained 19.7% of variance ($R^2 = .20, F(1,90) = 22.54, p < .001$). The second step of the regression found the model as a whole accounted for 80.6% of variance ($R^2 = .81, F(4,87) = 92.44, p < .001$). When controlling for trait resilience, the cognitive triad alone explained an additional 60.9% of variance in self-acceptance ($R^2 \text{ change} = .61, F(3,87) = 93.17, p < .001$). Review of the coefficients revealed that view of the self was the most significant predictor variable, $\beta = .68, t = 10.24, p < .001$, followed by view of the future, $\beta = .14, t = 2.27, p = .025$, and lastly, view of the world, $\beta = .14, t = 2.21, p = .030$.

Discussion

The present study aimed to explore the predictive relationship between trait resilience, view of the future, view of the world and view of the self (cognitive triad) on PWB. Results from the studies found trait resilience was statistically significant in positively predicting each of the six PWB outcomes in step one of all hierarchical regressions. These findings expand upon consistent existing research, which identified positive correlations between resilience and PWB (Svence and Majors, 2015; Mehta et al., 2018). Moreover, the predictive power of the resilience variable arguably indicates that resilience as a trait, can act as a protective factor against hardship, thus maintaining an individual's PWB (Masten, 2014).

However, when exploring the predictive ability of the variables in stage two of each hierarchical regression, trait resilience was statistically significant only in the personal growth outcome. This may indicate that trait resilience is most influential in determining developmental aspects of an individual's PWB. This somewhat agrees with McCrea et al. (2016), whom suggested that resilience better directs future well-being, as opposed to present.

Furthermore, longitudinal research has shown that greater psychological adjustment arises from higher resilience levels (Liu et al., 2014; Pinquart, 2009). Considering this, it could be argued that due to possessing greater levels of trait resilience, individuals are better equipped to overcome adversities, thus they can successfully progress through stages of their psychological development. Conversely, less resilient individuals may show poorer personal growth aspects of PWB, as an inability to conquer their stressors effectively may inhibit them from progressing further than the current stage of the lifespan development (Erikson, 1959).

For the majority of PWB outcomes (autonomy, personal growth, relations with others and self-acceptance) when the cognitive triad was combined with trait resilience in step two of the hierarchical regression, the explained variance increased. Common to each of these analyses, was view of the self as a significant predictor of the PWB outcome. Self-esteem was the greatest predictor of autonomy and self-acceptance, which was expected as each of these variables explore one's view of themselves. However, Cocking et al. (2018) proposed that using social connections as resources to overcome hardship enhances self-esteem, in turn promoting PWB. Therefore, this somewhat contradicts the predictive ability of self-esteem on autonomy.

View of the self also significantly predicted purpose in life. Overall, these findings suggest that self-esteem had significant predictive utility in positively predicting PWB in the sample. To some extent, this reflects findings from Liu et al. (2014), whom identified self-esteem as a mediator of the relationship between resilience and well-being. However, findings from the present study are not directly comparable, as the current study examined PWB using a six-outcome scale (Ryff, 1995), whereas the former examined life satisfaction scores and levels of distress.

Nonetheless, the significant predictive power of one's view of the self on PWB is concurrent with existing literature, which also studied the positive cognitive triad (Mak et al., 2011; Mehta et al., 2018). Both studies reported a positive association between resilience and self-esteem, which in turn was indicative of greater PWB. However, Mehta et al. (2018) also acknowledged the potential influence of other contributing factors, external to view of the self.

View of the future was statistically significant in predicting the self-acceptance outcome, and the foremost predictor for both environmental mastery (EM) and purpose in life (PL) aspects of PWB. Although further mediation analysis is required to say with certainty, these findings are indicative of supporting Souri and Hasanrid (2011), who found optimism to mediate the resilience-PWB relationship.

Also notably, hierarchical regressions of EM and PL as criterion variables produced highly similar variance statistics. In step one, trait resilience accounted for 69% of variance in the EM outcome, and 71% in the PL outcome. Addition of the cognitive triad variables in step two found the whole model accounted for 63.4% of variance in EM, and 63.6% variance in PL. Lastly, the cognitive triad explained an additional 56.5% of variance in the EM outcome, and 56.6% in the PL outcome. Such similar results may indicate a close relationship between environmental mastery and purpose in life, if not some overlap within the concepts.

Ryff (1989, 1995) differentiates these two aspects of PWB, in terms of EM as the ability to actively engage with one's surroundings and resources to meet one's own needs, whereas PL explores the concept of meaningful goal setting. Therefore, participants may have subconsciously interlinked EM and PL when responding to items of the PWB scale, as they may evaluate their EM in relation to successful goal attainment in PL.

This arguably contributes to explaining how optimistic individuals are considered more resilient (Buikstra et al., 2010). Those that are more hopeful tend to employ problem-solving tools more readily (Wang, 2009; Horton and Wallander, 2001). This enables them to tackle adversity efficiently and act resiliently (Ong et al., 2006), which buffers the effect of stressors (Carver et al., 2010; Zaleski et al., 1998).

Hence predicting greater PWB (Short and Russell-Mayhew, 2009; Satici, 2016), as shown in these EM and PL outcomes.

Overall, the findings regarding the view of the future variable indicates that individuals whom are optimistic about the future have greater acceptance of themselves, feel their life has meaning and feel actively engaged within their environments.

The last element of the cognitive triad, view of the world, had significant predictive utility for the majority of PWB outcomes (relations with others, personal growth, purpose in life and self-acceptance). Moreover, the view of the world variable was the most key significant predictive variable in the relations with others (RWO) outcome. The original cognitive triad (Beck, 1987) details that one's view of the world addresses their current life circumstances, including their environment and the people within it. Therefore, the findings of the present study suggest that individuals that are more resilient tend to have a positive regard for their surroundings and society, which is supported by Buikstra et al. (2010). The resiliency of the individual and their attitude towards others then significantly predicts their PWB, in terms of their relations with others.

Mak et al. (2011) reported concurrent findings, further explaining that those with positive views of the world recover from adversity more efficiently, indicating that view of the world can significantly predict the resilience-RWO relationship. This may be explained in that one's perspective of others determines the extent to which they utilise their social network as a resource to aid them through times of adversity, thus affecting their level of PWB (Avey et al., 2011).

Of all six hierarchical regressions performed, environmental mastery and purpose in life were the only outcomes where addition of the cognitive triad in block two resulted in a decrease in explained variance in the model. These results may suggest that for these PWB facets, the cognitive triad overruled the influence of trait resilience in predicting PWB. Furthermore, purpose in life and self-acceptance were the only outcomes of the six-dimensional model of PWB that all three cognitive triad elements were shown to possess significant predictive utility.

These results add to the limited existing research into the positive cognitive triad in relation to resilience and well-being. Although Tugade and Fredrickson (2004) identified positive correlations between resiliency and the positive cognitive triad, use of hierarchical regression in the current study enables better understanding of inter-variable relationships in relation to PWB. Additionally, Mak et al. (2011) and Mehtal et al. (2018) built upon the correlational study (Tugade and Fredrickson, 2004) to propose the cognitive triad acts as a mediator between resilience and life satisfaction versus depression.

Therefore, the present study somewhat challenges this research, as current findings tentatively suggest the cognitive triad is responsible for partial mediation between resilience and PWB, as opposed to full mediation. However, it is important to recognise that the present study explored well-being using Ryff's (1989, 1995) six psychological dimensions, whereas the former papers examined well-being as life satisfaction versus distress. Thus, despite the studies not being directly comparable, it can be argued that the present study provides greater insight as it adopts a more comprehensive approach in attempts to understand the complexities of PWB (Kern

et al., 2015). However, such conclusions cannot be drawn without extending analyses beyond hierarchical regression to explore a mediation model.

Implications

The present study suggests a predictive relationship of trait resilience, positive views of the self, world and future on PWB. This would suggest that fostering positive attitudes on each of the cognitive triad aspects in individuals should increase their resiliency levels, and their PWB. Therefore, actively encouraging positive cognitions, whether that be during therapy sessions, public campaigns, or incorporated into educational curriculums (Mak et al., 2011) should benefit PWB. Furthermore, whilst targeting each cognitive triad element individually should optimise well-being outcomes, due to the existing inter-variable relationships, targeting one component of the model should influence the other areas. For example, aiding individuals to set and achieve attainable goals can boost their self-esteem, optimism and views of the future. Moreover, the support they receive in the process may encourage positive world perceptions. However, as positive cognitive triad research is presently limited, it is somewhat premature to presume the effectiveness of the above recommendations. Lastly, adopting a positive approach to PWB, rather than a deficit model, is suggested to maximise intervention efficacy (Ng, 2015).

Limitations and Future Research

The present study had a number of limitations. As the survey was distributed online, it is not possible to ascertain how many of those who saw the study advertisement responded. Moreover, participation was voluntary which may indicate self-selected sample bias. Also, a large majority of the participants were female ($n = 69$) as opposed to male ($n = 25$), which may delineate to gender bias. To overcome this, future research should utilise random sampling so that the sample may be more representative.

Secondly, resilience was addressed from a trait perspective using the ego-resiliency scale (Block and Kremen, 1996). Resilience has been shown to be a multi-faceted concept; therefore, future studies should consider factors affecting resilience. For example, the relationship between resilience and PWB may vary according to the level of stress induced by adversity type (Wamser-Nanney et al., 2018), so it may prove beneficial to examine resilience in individuals who have experienced traumatic events versus daily-stressor resilience. This may provide further insight into the potential mediating role of the positive cognitive triad between resilience and PWB. Moreover, this could subsequently add to resilience theory, as if individuals have high resiliency scores yet report little experience of adversity, this would indicate resilience is a trait. However, if individuals who have overcome more hardship are more resilient, this could be indicative of resilience as a process (Parsons et al., 2016).

As well as expanding upon the current hierarchical regression to incorporate a mediation model, it may also be of interest to conduct a longitudinal study into the resilience-PWB relationship. This could examine the possibility of trait resilience levels altering across the lifespan (McCrea et al., 2016), and if this is due to personal growth aspects of PWB, or dependent on the level of adversity faced.

Furthermore, the present study is the third of its kind to explore trait resilience, the positive cognitive triad and PWB and the first of which to approach well-being using Ryff's dimension (1989, 1995). Therefore, while it may be considered groundbreaking in its field, future research into this area is encouraged in order to establish whether these findings are reliable. Moreover, studies which have examined the discussed concepts have been conducted on student populations in China (Mak et al., 2011) and America (Mehta et al., 2018). The present study was conducted on a British sample, with no specific target demographic. Therefore, it may be valuable to explore student populations within Britain in order to compare the results cross-culturally.

Lastly, Church et al. (2014) proposed that in Western countries, where populations live more independently, well-being is best indicated through psychological, eudaimonic measures. Whereas, in collectivist cultures hedonic well-being is more appropriate. Therefore, while Mehta et al. (2018) replicated Mak et al.'s (2011) research, it could be criticised for using hedonic well-being outcomes within an American sample. Ultimately, although it is necessary for research to study a broader range of participant variables (such as age, occupation and adversity-related experiences) in order for findings to be more representative and generalisable to populations, the potential impact of cultural differences should be acknowledged.

Conclusion

In summary, the results of the present study indicate that view of the self and view of the world are positively predictive of the majority of PWB outcomes (personal growth, relations with others, self-acceptance and autonomy for view of the self and purpose in life for view of the world).

Meanwhile, view of the future is positively predictive of environmental mastery, purpose in life and self-acceptance. Therefore, although not all three cognitive triad elements are predictive of all six PWB aspects, overall, trait resilience and the cognitive triad demonstrate significant predictive utility on PWB.

Examining the cognitive triad in relation to the resilience-PWB relationships, some evidence exists towards supporting of potential mediation. Specifically, when the cognitive triad variables were entered into analysis of the PWB outcomes, environmental mastery and purpose in life, the relationship between trait resilience and PWB lessened and was no longer statistically significant. This supports existing studies, which proposes the positive cognitive triad mediates resilience and life satisfaction (Mak et al., 2011; Mehta et al., 2018). However, the present study examined PWB in accordance to Ryff's model (1989, 1995). Therefore, future researchers are encouraged to extend upon this study to statistically test mediation in this context.

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