



A-HERO: Integrating Authenticity into the Psychological Capital Model

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Abstract

Authenticity was proposed as a potential addition to the Psychological Capital construct several years ago, but the PsyCap model has not yet been expanded. We review the theoretical and empirical support for the inclusion of authenticity and test this proposal in two studies. Study 1 examines the structural model of A-HERO (Authenticity, Hope, Efficacy, Resilience, Optimism) as an extended representation of the PsyCap construct. Study 2 tests the extent to which A-HERO may explain well-being. CFA demonstrates that the addition of authenticity provides slight improvement in overall PsyCap model fit. Hierarchical regression shows that the addition of authenticity to the PsyCap model improves the explanation of well-being, with beta values of comparable size to optimism and greater than efficacy. We therefore recommend that authenticity be included in PsyCap to provide a more holistic understanding of personal resources and to enable the further identification of interactions and potential synergies amongst A-HERO components.

Keywords Authenticity · PsyCap · Hope · Optimism · Resilience · Efficacy

1 Introduction

Psychological capital (PsyCap), a model of positive human capacities of particular value in the workplace, is associated with a range of desirable outcomes. It promotes well-being and performance over time, is positively associated with many employee attitudes and outcomes and acts to buffer the negative effects of stress (Avey et al., 2010, 2011; Cheung et al., 2011). The utility of this higher-order construct and its constituent personal resources (hope, efficacy, resilience and optimism, aka HERO) has been demonstrated across cultures and settings (Luthans & Youssef-Morgan,

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2017). These resources meet the criteria for positive organisational behaviour (POB) concepts, that is, they can be reliably and validly measured, they are open to development, and they have an impact on performance (Luthans et al., 2015). Yet they are not the only concepts that meet these criteria.

Authenticity is also finding significant support as a potential personal resource, demonstrating many similar relationships with outcomes as PsyCap. It can be measured, is malleable and has an impact on performance, being associated with well-being, engagement in work, performance and many other beneficial outcomes (Metin et al., 2016; Song et al., 2021; Sutton, 2020). And yet, despite being proposed as the positive construct most likely to meet all the necessary criteria for inclusion in the PsyCap model (Luthans et al., 2015), authenticity is not yet incorporated into the framework.

In this paper, therefore, we review the theoretical and empirical support for the inclusion of authenticity in PsyCap and test the proposal in two further studies. Study 1 examines the structural model of authenticity-HERO (A-HERO; Oja et al., 2019) as an extended representation of the PsyCap construct, among a community adult sample. Study 2 tests the extent to which this A-HERO model explains well-being, while controlling for personality traits.

1.1 Psychological Capital

Positive psychology approaches have led to considerable development in the field of psychology by broadening the field of psychological research to understanding well-being and optimal functioning (Seligman & Csikszentmihalyi, 2000). Similarly, Positive Organisational Behaviour (POB) provides a paradigm for the identification and management of positive human capacities in the workplace (Luthans et al., 2015). Rather than focusing on the negative and seeking to 'fix' it, POB seeks to understand and expand on positive approaches to organisational and management behaviour (Luthans & Youssef-Morgan, 2017). For example, while organisations have traditionally focused on resources such as financial capital or advanced technology that lead to success, POB encourages a switch in focus towards more dynamic, human-based, resources that can be acquired and reconfigured quickly and responsively in order to gain competitive advantage (Luthans et al., 2015).

Central to this POB approach is the identification of positive constructs that help organisations and employees to develop and meet challenges; these positive capacities must be measurable, malleable and impactful (Luthans et al., 2015). That is, they must have reliable and valid measures, be state-like or open to development rather than trait-like constructs more reminiscent of positive psychology approaches, and should be related to outcomes of relevance for work performance. Perhaps the most well-developed model of these capacities is Psychological Capital (PsyCap), which can be distinguished from traditional economic capital, human capital (in terms of employee knowledge and skills) and social capital (consisting of networks and relationships) (Luthans et al., 2004). PsyCap is a higher-order construct consisting of the personal resources of hope, self-efficacy, resilience and optimism (often abbreviated to HERO). PsyCap is now well established as a predictor of many desirable work outcomes, such as job satisfaction, well-being and performance (Avey et al., 2011; Luthans et al., 2007b).

As part of the higher-order construct, individual HERO resources share similarities yet also have unique characteristics. Hope is defined as a motivational state, that is, it provides both the willpower and waypower to pursue goals. Self-efficacy is a person's confidence in their abilities to complete a task while resilience is a person's capacity to bounce back from adversity or failure. Finally, optimism is an explanatory style whereby the individual attributes positive events to personal and more permanent causes and negative events to external and more fleeting causes. Together, these four personal resources work synergistically, having in common a sense of personal control and intention in pursuing goals (Luthans & Youssef-Morgan, 2017).

1.2 Authenticity as a Potential Addition to PsyCap

In their seminal book on Psychological Capital, Luthans and colleagues (2015) emphasised that PsyCap might include other positive capacities beyond HERO that contribute to human thriving and well-being. They proposed seven criteria that could be used to assess whether a positive construct fits with PsyCap, namely whether it is: theory-based, state-like/malleable, measurable, related to work performance, related to other work outcomes, agentic and involves positive appraisals. Some efforts have been made to expand the PsyCap construct (Kim et al., 2023; Oja et al., 2019; Zubair & Kamal, 2015) but unfortunately, consensus on increasing the number of resources has yet to be reached.

One potential positive capacity, and indeed the capacity identified as the one with the most promise for including in the PsyCap construct, is authenticity (Luthans et al., 2015). Authenticity is defined as being true to oneself (Sutton, 2020), having a sense of self-awareness and being able to express oneself (Knoll et al., 2015). An expanded model of PsyCap which includes authenticity, named A-HERO (authenticity, hope, efficacy, resilience and optimism) by earlier researchers (Oja et al., 2019), has proven useful in building competitive advantage in the sports OB field (Kim et al., 2023) and we suggest that this model should not be limited to sports workplaces but can in fact be utilised more broadly. We therefore briefly review the seven criteria outlined by Luthans et al. to demonstrate how the accruing evidence supports the addition of authenticity to the HERO resources already recognised in PsyCap.

First, authenticity is theory-based. The history of psychological research and theoretical development of the construct of authenticity is extensive (Sutton, 2020). As noted by Wood et al. (2008) in their seminal paper, authenticity is considered an essential component of many psychological perspectives, from the psychodynamic to positive psychology. While there are some differences in how authenticity is measured and conceptualised, the most prominent theoretical approach defines authenticity in terms of being true to oneself and recognises it as a process of developing or maintaining coherence and congruence in the self. This approach has built on Rogers' (1961) understanding of congruence, wherein authenticity consists of congruence between one's awareness of one's inner world and expressing one's true self in the outer world. This coherence or congruence

theory of authenticity also holds for self-determination theory (SDT; Deci & Ryan, 1980) where to be authentic means to act out of autonomous motivation rather than compulsion.

Second, authenticity is measurable and state-like / malleable. There are several established and well-supported measures of authenticity, including the Authenticity Scale (Wood et al., 2008) and the Authenticity Inventory (Kernis & Goldman, 2006), that have been used in hundreds of studies worldwide. While these measures tend to treat authenticity in terms of a trait or disposition, other research has emphasised the state-like properties of authenticity (Sedikides et al., 2019). Individual authenticity has been shown to vary across different roles and contexts, with state authenticity measures developed for, among others, the workplace (van den Bosch & Taris, 2014a) and relationships (Wang, 2016). Indeed, recent work has indicated that authenticity is also directly malleable, even when measured with established trait questionnaires, and can change in response to specific interventions (Authors, in press).

Authenticity also meets the requirements for potential expansion of PsyCap outlined by Luthans et al. (2015) by showing relationships with work performance (Song et al., 2021; van den Bosch & Taris, 2014b) and other work outcomes, such as engagement (Sutton, 2020), organisational citizenship behaviours, turnover intention and job satisfaction (Song et al., 2021).

Finally, authenticity meets the expectation that any proposed addition to the PsyCap construct is expected to share the commonalities of agency and positive appraisals with the HERO resources (Luthans & Youssef-Morgan, 2017). As we have seen, authenticity is defined in terms of autonomous motivation for one's actions, i.e., choosing to engage in certain activities or behaviours in order to reach a personal goal (e.g., SDT). Similarly, authenticity is typically measured as both being aware of one's inner world and acting in congruence with it (e.g. Wood et al., 2008), that is, taking confident and agentic action. Further research to support the strong link between authenticity and agency or intentionality comes from studies investigating the interaction of power and authenticity at work. For example, an experimental study demonstrated that individuals with greater social power, that is, with more control of their environment and increased freedom of self-expression, reported higher levels of authenticity than those with low power (Kraus et al., 2011).

While authenticity has gained increased attention in the organisational literature, there are critiques to its potential inclusion in the PsyCap model. First, the definition and operationalisation of authenticity can vary across studies which can lead to a lack of conceptual clarity (Harter, 2002). Second, while there are several well-established measures of authenticity, it remains a subjective concept reliant for measurement on one's accurate self-knowledge and is therefore subject to self-report measurement challenges (e.g. Sutton & Medvedev, 2023). Similarly, different measures of authenticity incorporate different facets or dimensions, such as self-awareness, congruence or self-understanding (Kernis & Goldman, 2006; Wood et al., 2008). Third, authenticity may be culturally dependent, with different cultures emphasising different aspects of authenticity. For example, a meta-analysis indicated that the relationship between authenticity and well-being was moderated by culture (Sutton, 2020). Thus, while there is growing interest in authenticity within positive

organisational behaviour, much remains to be done to establish the relevance of the construct to PsyCap.

1.3 Synergistic Effects of PsyCap Resources

A key characteristic of PsyCap is that the resources have unique contributions, but also work together to create a synergistic effect (Luthans & Youssef-Morgan, 2017). From a theoretical point of view, authenticity is expected to function synergistically with the HERO resources. Authenticity and self-efficacy both provide a person with confidence regarding their abilities: a person with high authenticity knows their strengths and weaknesses and is therefore either confident in taking on a specific task or able to acknowledge where abilities are deficient and what can be done to address these. Similarly, a hopeful person who is also authentic is likely to be able to identify solutions to a problem that align with their values, strengths and beliefs and can thus successfully attain their goals. Optimism, as characterised in the PsyCap literature, must be realistic. Authentic individuals, who have a high sense of self-awareness, are more likely to be realistically optimistic and acknowledge factors that are within their control and factors that are outside of their control. Finally, authenticity and resilience have in common that one's values and beliefs play an important role in dealing with adversity and achieving personal growth.

There is empirical evidence to support this theoretical expectation of synergy between PsyCap and authenticity (Luthans et al., 2015). Song et al. (2021), for example, conducted a three-wave study that indicated authenticity acted on work outcomes at least partially by increasing PsyCap, that is, authenticity can increase the HERO resources. They also conducted a post-hoc study to test the competing hypothesis: that PsyCap could increase authenticity. Their time-lagged survey found some evidence to support this hypothesis too, though noted that the effect of authenticity on PsyCap was somewhat stronger than PsyCap on authenticity, which provides some support for their conclusion that PsyCap is a partial mediator of authenticity's effects. However, this kind of complex relationship might also be explained by authenticity being part of the higher order construct of PsyCap, with all five resources interacting to increase each other, though perhaps in different ways and to different extents.

Further research has explored the relationships between authenticity and specific HERO resources. In a series of studies, the role of authenticity in the relationship between hope and future time perspective was explored (Davis & Hicks, 2013). Hope and authenticity were positively related, and the authors suggested that being more authentic allows people to remain hopeful when they perceive time is limited. Similarly, in a paper developing a scale of compassionate self-identity, authenticity was found to be positively related to both efficacy and resilience (Wayment et al., 2015). A qualitative study with head teachers found that a strengths-based intervention improved both authenticity in their professional roles and their resilience (Cooper & Woods, 2017), while quantitative studies have found also found positive relationships between authenticity and resilience and demonstrated that these resources are not interchangeable, that is, they have unique effects (Auer et al., 2022;

Katz et al., 2023). For example, while authenticity was found to buffer the negative effects of discrimination on bi+ adults, resilience did not (Katz et al., 2023). In a quasi-experimental design, Auer et al. (2022) found that coaching during crisis increased authenticity and optimism together and Zhang et al. (2019) established that optimism was a partial pathway for increased authenticity.

Overall, then, there is strong evidence for the positive relationships between authenticity and HERO, and emerging evidence of synergy between the resources. Combined with Luthans et al.'s (2015) proposal that authenticity is the most promising positive construct to consider including in an expanded PsyCap model, we would expect that a second-order construct consisting of A-HERO would be a better fit to the data than the current HERO model.

Hypothesis 1: Authenticity will correlate positively with all four PsyCap components (hope, efficacy, resilience and optimism).

Hypothesis 2: A model of PsyCap that includes authenticity (i.e., A-HERO) will provide better relative fit than the current model of PsyCap (i.e., HERO).

1.4 PsyCap mechanisms and outcomes

Finally, we turn our attention to proposed mechanisms for PsyCap's influence on outcomes and how authenticity may contribute in similar ways. Well-being is one of the key outcomes of much research in PsyCap as it is central to the underlying theoretical proposition of PsyCap as a model of positive human capacity. Indeed, PsyCap has been shown to contribute to employee well-being over time (Avey et al., 2010) and meta-analysis has demonstrated that authenticity, too, has a medium-sized relationship with well-being across many studies (Sutton, 2020).

As summarised by Luthans and Youssef-Morgan (2017), there are several key mechanisms whereby PsyCap improves well-being and we propose that authenticity may act in the same way. First, PsyCap influences positive appraisals of events and well-being is shaped by these appraisals. Similarly, authenticity serves to help positively frame neutral or negative events. People view their 'authentic' selves in a positive light (Fleeson & Wilt, 2010), just as they may reframe difficulties as challenges if they are optimistic. In addition, people who engage in surface acting (i.e., 'faking' emotions for work) but reframe that acting as a sign of their authentic compassion or benevolence towards a customer, feel more authentic and avoid the usual negative effects of inauthenticity on well-being (Yagil, 2020).

Second, PsyCap is associated with satisfaction in the work domain (Luthans et al., 2015), which contributes significantly to overall well-being. Likewise, authenticity is associated with workplace well-being and engagement in work (Sutton, 2020). And third, PsyCap supports the selective retention and recall of positive memories that contribute to well-being: while the research on authenticity and memory is nascent, there are indications that recall of a memory can increase well-being via authenticity (Kelley et al., 2022).

A final theorised mechanism for the salutary effects of PsyCap is that HERO resources act to increase positive emotions (Luthans & Youssef-Morgan, 2017):

by engaging and enhancing positive emotions, PsyCap contributes to broadening-and-building thought-action repertoires (see: Fredrickson, 2001). Authenticity too is associated with high positive and low negative affect (Fleeson & Wilt, 2010). There is also some early indication that reflecting on work successes stimulates people to increase their authenticity and build their resources via the broaden-and-build mechanism (Matsuo, 2020), whereby positive emotions serve to expand people's thought-action repertoires and thus build their resources (Fredrickson, 2001).

In this way, a model of PsyCap including authenticity has been shown to increase creativity in sport employees (Kim et al., 2023). The authors of this study used SEM, based on self-report measures of PsyCap and authenticity, to empirically validate the A-HERO construct and demonstrate its role in the pathway between job identification and creativity. In this study we seek to replicate and expand on these findings by using a similar analytic approach but different, more extensive measures of PsyCap and authenticity, as well as by considering the relationship between the A-HERO model and well-being.

While the mechanisms reviewed thus far indicate similarities between PsyCap and authenticity, it is also possible that authenticity may influence well-being via different paths too. For example, emerging research suggests that reflecting on times one was authentic or inauthentic at work may make use of different autobiographical memory functions, which themselves relate to well-being (Sutton, 2022). Research in this area is nascent but certainly indicates that further efforts may uncover distinct mechanisms.

We therefore hypothesise that a model of PsyCap including authenticity will provide better prediction of well-being than the current HERO model.

Hypothesis 3: The A-HERO model of PsyCap will predict significantly greater variance in well-being than the HERO model of PsyCap.

In summary, there is supportive evidence that authenticity meets the suggested criteria for PsyCap resources and is a strong candidate for inclusion in the construct. In this paper, we test this proposal further using two studies. In the first, we examine the structural model of authenticity-HERO (A-HERO) as an extended representation of the PsyCap construct among a community adult sample. In the second study, we examine the predictive validity of this extended PsyCap model by testing the extent to which the A-HERO model is associated with well-being.

2 Study 1

This study investigates the potential structural model of an A-HERO representation of the PsyCap construct using a community adult sample. We use established measures of PsyCap and authenticity and subject the data to CFA (Confirmatory Factor Analysis) to test the relative fit of the two models.

2.1 Method

2.1.1 Participants

Participants ($N=288$) were recruited through Amazon's Mechanical Turk (MTurk) online crowdsourcing software and compensated USD 1 for completing the survey. A-priori power analysis indicated a minimum sample size of 100 to test model fit (Soper, 2017). After data cleaning (outlined below), data from 208 participants were retained: 54% women, 43% men, 2% other / prefer not to say. The sample had a mean age of 34 years ($SD=15$). Most (66%) identified as White/Caucasian, 11% as Black/African American, 9% as Asian, 7% as Hispanic and the remaining 6% as other / mixed ethnicities. The majority of the sample (80%) were in part or full-time employment, with mean tenure of 9.6 years ($SD=9$). They worked primarily in office / clerical roles (19%), healthcare (12%) manufacturing (12%) or education (12%).

2.1.2 Procedure and Measures

Participants completed an online questionnaire consisting of demographic questions (gender, age, ethnicity, employment status, job tenure and employment sector) and the following measures, with order counterbalanced across the sample. This was part of a larger data collection effort (approved by the authors' institutional ethics committee) which included further measures for a different study.

Psychological Capital The Psychological Capital Questionnaire (PCQ, Luthans et al., 2007a) measures each of the four resources (hope, efficacy, resilience and optimism) with six items each (e.g., I feel confident analyzing a long-term problem to find a solution) on a five point response scale from 1 = strongly disagree to 5 = strongly agree. Scores were calculated for each resource as well as an overall PsyCap score.

Authenticity The Integrated-Authenticity Scale (IAS) measures authenticity using 8 items (e.g., For better or worse, I know who I really am) on a response scale from 1 = never to 5 = almost always (Knoll et al., 2015). All items are combined to give an overall authenticity score ($\alpha > 0.8$ in Knoll et al.'s study).

2.1.3 Data Analysis

Data were excluded based on: completion times faster than 50% of the median ($N=53$), an indication of potentially poor quality responding (Greszki et al., 2014); identification as multivariate outliers ($N=3$) based on Mahalanobis distance with a conservative cut-off of $p < 0.001$ (Tabachnick & Fidell, 2001); failing an attention check question ($N=10$). No participants returned responses with $> 5\%$ missing data. This resulted in a final sample size of 208.

Cronbach alphas were calculated for all variables and indicated good to excellent reliability (Table 1). To address Hypothesis 1, Pearson's correlations were calculated

Table 1 Descriptives and bivariate correlations of study 1 variables, with Cronbach alphas in brackets on the diagonal

	M	SD	1	2	3	4	5	6
1. Authenticity	3.87	.63	(.77)					
2. Hope	4.69	.82	.486**	(.87)				
3. Efficacy	4.69	.89	.499**	.746**	(.91)			
4. Resilience	4.68	.77	.560**	.658**	.599**	(.77)		
5. Optimism	4.37	.92	.464**	.663**	.593**	.639**	(.82)	
6. PsyCap	4.61	.73	.583**	.890**	.859**	.833**	.851**	(.94)

** = $p < .01$. Cronbach alpha given in brackets on the diagonal. *PsyCap* Psychological Capital full scale

to examine the pattern of relationships between HERO / PsyCap and authenticity. Finally, CFA was undertaken to test a measurement model of PsyCap that included authenticity as a fifth component (Hypothesis 2). JASP 0.18.1 was used to conduct CFA. While WLSMV (weighted least square mean and variance adjusted) is the preferred estimator for ordinal data (Brauer et al., 2023), it can only be used with complete datasets. Our dataset had a small amount of missing data (no cases with > 5% missing data), which was determined to be missing at random, so we used the MLR (robust maximum likelihood) estimator, which also has the advantage that it may outperform WLSMV with datasets around $N=200$ (Li, 2016). We opted for the MLR estimator due to its robustness to violations of normality assumptions and its ability to handle missing data through full information maximum likelihood (FIML) estimation. FIML allows for the inclusion of all available data in the analysis without imputation or listwise deletion, thus minimizing potential biases associated with missing data. By employing the MLR estimator with FIML, we aimed to maximize the utilization of available information while minimizing the impact of missing data on parameter estimates and standard errors.

3 Results

Table 1 shows the descriptive statistics and bivariate correlations for all variables in this study. Providing support for Hypothesis 1, authenticity correlates positively with the HERO components ($r=0.46$ to 0.56) though at slightly lower magnitudes than HERO inter-correlations ($r=.59$ to 0.75). Similarly, authenticity shows positive correlations with the overall PsyCap scale though at a lower magnitude than the individual HERO components.¹

To test hypothesis 2, we examined the proposed A-HERO model of PsyCap using CFA. In model 1 (HERO), we tested whether the hope, efficacy, resilience and optimism variables loaded as expected on the PsyCap construct. In model 2 (A-HERO), we also included the authenticity variable. Factor loadings are given in Table 2.

¹ This higher correlation between HERO components and PsyCap is to be expected given that the PsyCap scale is constructed from the individual components.

Table 2 Factor loadings A-HERO model of PsyCap

Latent variable	Indicator	Estimate	Std. Error	z-value	<i>p</i>
Authenticity	ASA_1	1	0		
	ASA_2	1.19	0.11	10.49	<.001
	ASA_3	1.1	0.11	10.15	<.001
	ASA_4R	0.64	0.14	4.76	<.001
	ASE_5	0.96	0.12	8.33	<.001
	ASE_6R	0.62	0.14	4.3	<.001
	ASE_7R	0.72	0.15	4.82	<.001
	ASE_8	0.71	0.14	5.07	<.001
Efficacy	EFF_1	1	0		
	EFF_2	1.26	0.11	11.53	<.001
	EFF_3	1.25	0.1	12.15	<.001
	EFF_4	1.13	0.1	11.81	<.001
	EFF_5	1.31	0.12	10.76	<.001
	EFF_6	1.38	0.11	12.54	<.001
Hope	HOPE_7	1	0		
	HOPE_8	1.05	0.12	8.97	<.001
	HOPE_9	1.04	0.11	9.85	<.001
	HOPE_10	1.04	0.1	10	<.001
	HOPE_11	1.21	0.11	11.42	<.001
	HOPE_12	0.95	0.1	9.84	<.001
Optimism	OPT_19	1	0		
	OPT_20R	0.55	0.11	5.09	<.001
	OPT_21	1.01	0.08	12.78	<.001
	OPT_22	0.96	0.08	12.33	<.001
	OPT_23R	0.61	0.1	5.89	<.001
	OPT_24	0.93	0.08	11.62	<.001
Resilience	RESIL_13R	1	0		
	RESIL_14	1.46	0.33	4.49	<.001
	RESIL_15	1.11	0.26	4.27	<.001
	RESIL_16	1.47	0.34	4.33	<.001
	RESIL_17	1.5	0.33	4.52	<.001
	RESIL_18	1.26	0.29	4.36	<.001
A-HERO	Efficacy	1	0		
	Hope	0.74	0.21	3.46	<.001
	Resilience	0.41	0.16	2.57	0.01
	Optimism	0.76	0.22	3.41	<.001
	Authenticity	0.75	0.22	3.38	<.001

We followed best practice recommendations for assessing construct / composite reliability, convergent validity and discriminant validity (Cheung et al., 2023). McDonald's ω exceeded the suggested level of 0.7 (Bagozzi & Yi, 1988), indicating

good reliability for the first-order constructs. AVE values for efficacy and hope indicated no concern with convergent validity, being >0.5 (Cheung et al., 2023). While the remaining constructs had AVE values <0.5 , indicating some concern, all standardized factor loadings were significant (Anderson & Gerbing, 1988) and >0.4 for all but two of the indicators (Stevens, 2002), indicating acceptable convergent validity. Finally, the heterotrait-monotrait (HTMT) ratio was below 0.9 for all factors and all bivariate correlations were below a conservative cut-off of 0.8, indicating good discriminant validity (Cheung et al., 2023).

The χ^2 test indicated poor fit for both models (Model 1 HERO $\chi^2(244)=642$, $p<0.001$; Model 2 A-HERO $\chi^2(261)=1077$, $p<0.001$) with a significant increase in χ^2 for model 2 ($\Delta\chi^2=435.14$, $p<0.001$). However, the χ^2 test of model fit is over-sensitive with relatively large sample sizes and it is therefore recommended to report SRMR and RMSEA as further fit indices (Hooper et al., 2008; Hu & Bentler, 1999). SRMR indicated good fit (Schumacker & Lomax, 2016) for both models (HERO $SRMR=0.07$, A-HERO $SRMR=0.07$) and RMSEA also approached the suggested guideline of <0.07 (Schumacker & Lomax, 2016), and decreased slightly for Model 2, indicating improved fit (Xia & Yang, 2019) (HERO $RMSEA=0.09$, A-HERO $RMSEA=0.08$). Overall, these fit indices provide some support for hypothesis 2.

Study 1 therefore indicates that authenticity loads onto a single higher order factor of PsyCap along with the four established resources of hope, efficacy, resilience and optimism. We now turn to consider the extent to which authenticity is associated with outcomes similarly to HERO.

4 Study 2

In this study, we test the extent to which the proposed A-HERO model of PsyCap contributes to well-being and optimal functioning (Hypothesis 3). As noted in the introduction, people tend to feel more authentic when they are behaving in a manner that is more socially desirable, that is, extraverted, agreeable, conscientious, emotionally stable and open to experience (Fleeson & Wilt, 2010). In addition, the Big Five are known to be associated with reported well-being (Anglim et al., 2020). We therefore controlled for personality traits in the following study.

4.1 Method

4.1.1 Participants

First year psychology students ($N=219$) from New Zealand participated in the study in exchange for partial course credit. A-priori power analysis (Soper, 2017) indicated a minimum sample size of 143 would have 95% power to detect a medium effect ($F^2=0.15$) in hierarchical multiple regression, with 5 variables each in set A (personality traits) and B (PsyCap and authenticity). After data cleaning

(outlined below), data from 187 participants were retained, 76% women, 24% men and with a mean age of 23 years ($SD=8$). Most (47%) identified as New Zealand European, 4% as Māori, 18% as other (including mixed ethnicity) and the remaining 31% chose not to provide their ethnicity. The majority of the sample (60%) were in part or full-time employment, primarily in the retail (19%) and hospitality (20%) sectors.

4.1.2 Procedure and Measures

Participants completed an online questionnaire consisting of demographic questions, PsyCap and authenticity as in Study 1, and the following additional measures.

Personality Traits The IPIP-BFM-20 is a 20 item self-report questionnaire to measure the Big Five personality traits with 4 items each (e.g., *I am the life of the party*) rated on a scale from 1 = strongly disagree to 5 = strongly agree (Donnellan et al., 2006). Reported alphas for each trait range from 0.65 to 0.77.

Well-being The Warwick-Edinburgh Mental Well-being Scale (WEMWBS; Tennant et al., 2007) is a unidimensional measure consisting of 14 items (e.g., *I've been feeling cheerful*) measuring eudaimonic and hedonic well-being, rated on a 5-point Likert scale (1 = none of the time; 5 = all the time). It has a reported alpha of 0.89 for a student sample and good test–retest reliability (0.83 over one week) (Tennant et al., 2007).

4.1.3 Data Analysis

Data were cleaned as outlined in Study 1, resulting in a final sample size of $N=187$. Cronbach alphas were calculated for all scales and indicated good (>0.7) to excellent (>0.8) reliability for all variables except conscientiousness ($\alpha=0.67$), neuroticism ($\alpha=0.56$), resilience ($\alpha=0.62$) and optimism ($\alpha=0.51$). Although these alphas are below the commonly used cut-off of 0.7, we retained these scales for two reasons. First, the effect of personality traits on well-being is well established, so controlling for these basic individual differences is essential if we are to identify the unique contributions of psychological capital. Second, despite some reliabilities dropping below the 0.70 cutoff, short measures to assess the well established traits and constructs are of substantial practical value in reducing participant fatigue and providing a straightforward means to constructs (Donnellan et al., 2006).

To test the validity of authenticity as a component of the PsyCap model in accounting for well-being variance, we ran hierarchical regression in SPSS v 29 using three blocks: 1) personality variables, 2) HERO components and 3) authenticity. Change in R^2 for each step in the model and β values of individual components were evaluated.

5 Results

Table 3 shows the means, SD, bivariate correlations and internal consistency of all variables in this study. Replicating the findings of Study 1 and providing further support for Hypothesis 1, authenticity shows positive correlations with the HERO components ($r=0.30$ to 0.55), at slightly lower magnitudes than the HERO inter-correlations ($r=0.39$ to 0.69). Again, the strength of the correlation between authenticity and the overall PsyCap concept ($r=0.55$) is stronger than that between authenticity and the HERO components.

To test how well the A-HERO model statistically predicts well-being (Hypothesis 3), hierarchical regression analysis was conducted (Table 4). Although correlations between the variables are moderate-to-strong, VIF values ranged between 1.19–2.76, well below the conservative cut-off value of 5 (Garson, 2012) and therefore indicated no problems with multicollinearity.

The first model, with personality traits acting as control variables accounted for 30% of variance in well-being, ($F(5,181)=15.60, p<0.001$). The second model, in which the HERO components were added, accounted for a further 16% of variance in the outcome ($F(9,177)=16.94, p<0.001$). Finally, the addition of authenticity accounted for a further small (3%) but significant increase in variance ($F(10, 176)=17.11, p<0.001$). In this final model, the β value of authenticity ($\beta=0.223, p=0.001$) is smaller than hope ($\beta=0.342, p<0.001$), of a comparable magnitude to resilience ($\beta=-0.237, p<0.001$), and larger than efficacy ($\beta=0.103, p=0.201$) and optimism ($\beta=0.095, p=0.156$). Unexpectedly, resilience was negatively associated with well-being and we examine this further in the discussion section.

6 Discussion

In this paper we argue that authenticity is a strong candidate for inclusion in the PsyCap construct and, building on previous work in the sports OB field (Kim et al., 2023; Oja et al., 2019), provide further supportive evidence for this theoretical assertion. First, across two different samples (undergraduate NZ students and US adults) authenticity showed medium to strong correlations with the established personal resources of PsyCap: hope, efficacy, resilience and optimism. These two distinct samples, with their own cultures and contexts, may well be expected to show distinct relationships between variables. For instance, community adults may access more diverse social support networks than first-year psychology students, affecting perceptions of resilience (Li & Li, 2024). Moreover, varying life circumstances, such as academic pressures for students and work-related stress for adults, could interact with levels of optimism and overall well-being (Lee et al., 2022). Overall, however, the correlational associations between authenticity and the HERO resources are of similar strength in the two samples, providing some support for the generalisability of these findings.

Table 3 Descriptives and bivariate correlations of study 2 variables, with Cronbach alphas in brackets on the diagonal

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Extroversion	2.90	.893	(.81)											
2. Agreeableness	3.93	.683	.401**	(.70)										
3. Conscientiousness	3.34	.774	.179*	.274**	(.67)									
4. Neuroticism	3.31	.710	-.200**	-.057	-.121	(.56)								
5. Openness	3.75	.710	.116	.280**	.082	-.118	(.70)							
6. Hope	4.31	.863	.428**	.330**	.321**	-.330**	.130	(.83)						
7. Efficacy	4.12	1.013	.392**	.368**	.290**	-.323**	.206**	.686**	(.88)					
8. Resilience	4.32	.672	.283**	.266**	.306**	-.198**	.046	.608**	.484**	(.62)				
9. Optimism	3.60	.628	.381**	.277**	.181*	-.240**	-.032	.520**	.491**	.386**	(.51)			
10. PsyCap	4.09	.647	.463**	.391**	.344**	-.347**	.128	.886**	.865**	.746**	.709**	(.93)		
11. Authenticity	3.44	.615	.268**	.137	.232**	-.381**	.210**	.546**	.518**	.355**	.302**	.550**	(.78)	
12. Wellbeing	3.20	.697	.351**	.218**	.180*	-.456**	.198**	.559**	.505**	.208**	.385**	.532**	.528**	(.91)

* $p < .05$ ** $p < .01$. *PsyCap* Psychological capital, higher order scale consisting of hope, efficacy, resilience and optimism

Table 4 Hierarchical regression analysis predicting well-being

		B	SE	β	t	LL	UL
Model 1 Controls	Extraversion	.176	.054	.226	3.258***	.069	.283
	Agreeableness	.059	.074	.058	.801	-.086	.204
	Conscientiousness	.062	.059	.069	1.057	-.054	.177
	Neuroticism	-.380	.063	-.387	-6.038***	-.504	-.256
	Openness	.102	.064	.104	1.594	-.024	.228
	R ²	.30					
Model 2 PsyCap	Extraversion	.066	.051	.085	1.294	-.035	.166
	Agreeableness	-.015	.067	-.015	-.223	-.147	.117
	Conscientiousness	.006	.054	.007	.113	-.100	.112
	Neuroticism	-.261	.059	-.266	-4.449***	-.377	-.145
	Openness	.086	.058	.088	1.488	-.028	.201
	Hope	.106	.056	.155	1.908	-.004	.216
	Efficacy	.333	.072	.413	4.652***	.192	.474
	Resilience	-.240	.074	-.232	-3.269**	-.385	-.095
	Optimism	.104	.076	.094	1.362	-.047	.254
	ΔR^2	.16					
Model 3 A-HERO	Extraversion	.061	.050	.078	1.221	-.037	.159
	Agreeableness	.014	.066	.014	.219	-.116	.144
	Conscientiousness	-.005	.053	-.006	-.102	-.109	.098
	Neuroticism	-.222	.058	-.226	-3.793***	-.337	-.106
	Openness	.058	.057	.060	1.022	-.055	.171
	Hope	.071	.055	.103	1.283	-.038	.180
	Efficacy	.276	.072	.342	3.844***	.135	.418
	Resilience	-.246	.072	-.237	-3.429***	-.387	-.104
	Optimism	.106	.074	.095	1.425	-.041	.253
	Authenticity	.253	.078	.223	3.234***	.099	.407
	ΔR^2	.03					

** $p < .01$; *** $p < .001$

In the first study, using confirmatory factor analysis, we demonstrated that the A-HERO model of PsyCap is a good fit to the data and perhaps offers a slightly better fit than the HERO model. These findings serve to replicate and expand on previous work (Kim et al., 2023) which first demonstrated that an expanded A-HERO model of PsyCap could be validated and applied to understanding work outcomes. Whereas Kim et al. used brief measures of each of the A-HERO concepts (12 items for PsyCap and 4 for authenticity), we used more comprehensive measures (24 and 8 items respectively) as well as an alternate conceptualisation of authenticity to cross-validate their findings. Taken together, these results imply that the A-HERO model may be robust across different settings and measures.

In the second study, we tested the validity of the A-HERO model in accounting for participant well-being. Hierarchical analysis showed that, after controlling

for personality traits (predominantly neuroticism), the A-HERO model accounts for about a fifth of the variance in well-being. The hierarchical regression also confirmed that the PsyCap components had unique individual contributions to well-being, as expected (Luthans & Youssef-Morgan, 2017).

Investigation of the individual PsyCap resources demonstrated that authenticity outperformed efficacy and optimism, provided a contribution to the model comparable to the remaining resilience and was somewhat lower than hope in the original PsyCap model. Authenticity may have a more profound relationship with overall well-being compared to self-efficacy and optimism, as it taps into fundamental aspects of personal fulfillment and satisfaction. Authenticity allows individuals to experience a sense of coherence and purpose in their lives, which according to self-determination theory, can contribute to greater satisfaction and fulfillment (Deci & Ryan, 1980). In contrast, while self-efficacy may enhance one's ability to accomplish specific tasks, and optimism is an explanatory style that helps the individual interpret events, neither necessarily address existential concerns or provide a deep sense of meaning.

Overall, these findings contribute to the increasing body of work suggesting that authenticity should be added to the HERO model of PsyCap (Kim et al., 2023; Oja et al., 2019). Authenticity meets the criteria for inclusion as a positive capacity in that it is malleable, measurable and research-based. We have also shown that a model of A-HERO is structurally sound and has value in accounting for well-being levels.

6.1 Practical Implications

PsyCap capacities are of practical value in the two settings (work and university) that we used for our samples in this paper. First, PsyCap was developed in the context of POB as a way of capturing the positive capacities of particular importance at work, providing employees with personal resources on which they may draw to deal with challenges (Luthans & Youssef-Morgan, 2017). The inclusion of authenticity as one of these PsyCap components provides practitioners with an additional point of intervention to enhance employee resources. For example, previous work has recommended the promotion of organisational cultures that value and encourage authenticity at work to help ensure a workforce is better able to meet challenges and deliver high quality work (Reis et al., 2016).

Second, higher education is a particularly good time for the development of PsyCap. Indeed, academics view the development of resilience and other PsyCap resources as a key aim of university education (Morris et al., 2023). Dealing positively with setbacks and failure, as well as taking agency for engaging with one's own goals, are essential to university success and set students up well for their future careers. The PsyCap resources are synergistic and encourage each others' development, such that an improvement in authenticity is likely to contribute to an improvement in other resources. Universities and individual academics value a culture of authenticity highly (Cannizzo, 2018), indicating that they may be particularly well placed to guide and assist students with developing their A-HERO resources. Given

that there is evidence that younger generations of university students have lowered resilience compared to older generations (Takács et al., 2021), any improvements in this area are likely to be highly sought after.

Furthermore, interventions targeting PsyCap are well-documented and deliver promising outcomes. For example, a 2–3 h micro-intervention that targeted HERO development resulted in a significant increase in PsyCap (Luthans et al., 2006) and a meta-analysis of 41 trials found significant small to medium-sized effects for the development of PsyCap and its constituent components, alongside positive impacts on well-being and performance (Lupşa et al., 2020). These interventions could be expanded by including components targeting authenticity, for example the development of self-awareness (e.g., Sutton et al., 2015). Adding the self-awareness and self-expression components of authenticity to PsyCap interventions may add value to the overall development of PsyCap and have a positive impact on outcome variables such as well-being and performance.

6.2 Theoretical implications

In their chapter on potential additions to the PsyCap construct, Luthans et al. (2015) identified authenticity as the positive construct most likely to meet all the necessary criteria to be added to the PsyCap model. There is mounting evidence to support all these assertions, as reviewed in the introduction, and some indications that this expanded model of A-HERO (Oja et al., 2019) is associated with increased creativity in sports organisations and thereby improves competitive advantage (Kim et al., 2023). Despite this, there has been little effort in the literature to expand the PsyCap model. In the studies reported here, we have demonstrated that authenticity is a) related as expected to other PsyCap resources, b) fits well within an extended PsyCap measurement model and c) accounts for well-being at a comparable level to the established HERO resources. Authenticity not only meets the criteria for being a positive capacity within the POB framework, it also meets the specific criteria laid down for inclusion in the PsyCap construct. We therefore recommend that authenticity is included in measures of PsyCap to provide a more holistic understanding of personal resources as well as to enable the further identification of interactions and potential synergies amongst the A-HERO components.

Including authenticity within PsyCap further extends our understanding of psychological capital by including an evaluation of one's knowledge of and ability to be true to oneself. Previous work has shown that authenticity is directly associated with well-being (Sutton, 2020) as well as acting as a buffer to threats to well-being (Luthar & Ciciolla, 2015; Riggle et al., 2017). Being true to oneself is clearly a personal resource similar to hope, efficacy, resilience and optimism that individuals may draw upon in meeting the challenges of life.

6.3 Limitations and Future Research

In both our studies, the strength of the relationships between authenticity and HERO was weaker than relationships between the established PsyCap resources. Notably,

a similar pattern was found in the previous test of the A-HERO model (Kim et al., 2023), probably because the PsyCap questionnaire was developed to assess the HERO resources specifically as part of the PsyCap construct. The measure of authenticity we used here was developed as a brief measure tapping the theoretically established and verified domains of authenticity measures (Kernis & Goldman, 2006; Wood et al., 2008). It would be valuable to test these relationships further with different measures of authenticity, especially those specifically based on a conceptualization of authenticity as a malleable and agentic capacity, as required by PsyCap theory.

The measurement model in Study 1, although exhibiting excellent composite reliability and discriminant validity, had some aspects of concern with regards to convergent validity even within the established PsyCap measures. We recommend that future studies of the A-HERO model might evaluate different measures of the concepts in order to develop a more robust measure that can adequately assess the individual resources. Similarly, some measures had lower than expected reliabilities in our second sample (NZ undergraduate students) and we therefore had to remove some of the items. Reliability for the conscientiousness and neuroticism scales remained lower than ideal and we therefore recommend that the findings with regard to these specific traits are treated with caution.

While not the focus of this paper, it is noteworthy that resilience was negatively associated with well-being, similarly to neuroticism. This could be an idiosyncratic finding for our sample, as PsyCap is generally associated with increased well-being, but there are some indications that resilience may play an ambiguous role in this relationship. As noted in the introduction, resilience alone is not sufficient to buffer against the negative effect of discrimination on well-being (Katz et al., 2023). Similarly, levels of exposure to childhood trauma interact with levels of resilience to predict well-being (Dong et al., 2023). Further, in a study of resilience factors and youth mental health, it was found that resilience was associated with reduced depression but higher levels of conduct disorder in adolescents (Somefun et al., 2023). These studies all indicated that factors in the wider environment were likely to interact with individual resilience levels to determine well-being. The student data we used in this study was collected during one of the periods of uncertainty in New Zealand associated with pandemic lockdowns and therefore might indicate wider environmental factors that could interact with resilience. We recommend further research to investigate the time-based effects and interactions of the A-HERO model.

7 Conclusion

Several years ago, authenticity was suggested as a potential positive construct on a par with hope, efficacy, resilience and optimism that could be included in the higher-order construct of PsyCap. In this paper, we review the theoretical arguments and evidence for this expansion of the construct and provide further support for the A-HERO model of PsyCap by ascertaining its effectiveness as both a measurement model and contributor to well-being.

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Author Contribution The authors confirm joint responsibility for study conception and design, data analysis and manuscript preparation.

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Data Availability All data have been made publicly available at the OSF and can be accessed at <https://osf.io/s89cp/>.

Declarations

Ethics Approval The studies in this paper were approved by the first author's institutional Human Research Ethics Committee (approval number: FS2022-01). Informed consent was given after reading an information sheet on the online questionnaire.

Conflict of Interest The authors have no conflict of interest to declare.

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