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Abstract

Enormous research efforts have been done to investigate the various benefits of positive psychology to the general public's well-being, happiness, and the flourishing of social development. Positive psychological capital (PsyCap) embodies four salient aspects of mental strength: self-efficacy, optimism, hope, and resilience. Although the critical role of PsyCap in personnel growth has been extensively acknowledged, little is known about what fosters or inhibits the development of PsyCap and the cognitive mechanisms that intervenes in the processes. Curiosity and imagination are the cognitive attributes that reflect individuals' attitudes toward uncertainty and the intellectual flexibility of idea generation. Using a longitudinal sample of 519 respondents from various employment, social and educational backgrounds, we found that individuals' curiosity positively impacts psychological capital. More interestingly, our findings suggest that the three dimensions of individuals' imagination as the moderators can either strengthen or weaken the relationship between their curiosity and psychological capital.

Keywords: Curiosity, Psychological Capital, PsyCap, Imagination

Word count: 7,049

Introduction

During the COVID-19 outbreak, governments around the world have taken precautions to prevent the diseases from spreading, such as social distancing, self-isolation, and city lockdown, etc. These policy efforts have been affecting every aspect of the economy and society. For example, the policy has restricted people's freedom of moving in and out of their residential areas. In organizations, employees are asked to work from home and are exposed to the risk of losing their jobs. Not only have the social dynamics and economic volatility caused by the pandemic rattled the world, but they have also brought about various negative impacts on people's lives and psychological status. In other words, the unknown about the virus and the overloaded negative information and news let people be on tenterhooks, also leads people's mental health to get worse. In addition, not only for the pandemic influence, for a long time, the uncertain of future and insecurity of external environment also is the main effect to the individuals' mental state. Also, people receive kinds of information via various platforms in contemporary society. However, the overloaded information also interferes with the individuals' emotional stability and mental health. During the times of significant social shocks and world crisis, the excessive uncertainty of the future may lead to various negative psychological states, such as anxiety and depression. Research shows the general public's depression and anxiety have a profound influence on economic growth and social development throughout the world (Malone & Wachholtz, 2018; Murray et al., 2012). Specifically, individuals with negative emotions or depression show decreased productivity (Simon et al., 2000). Depression and anxiety diminished the individuals' functioning in both social behavior and professional activities at work (Wittchen, 2002).

Fredrickson and Joiner (2002) found that the general public's positive emotions and psychological health can enhance a society's prosperity by facilitating its physical strength. Based on the theory of positive psychological capital (Luthans et al., 2007), this study aims to understand the power of positive thinking, which has been shown to improve individuals' mental health and motivation for life growth. Therefore, this study investigates individuals' mental robustness by adopting the view of positive psychological capital (Luthans et al., 2007), which posits that an individual's positive mental status includes self-efficacy, optimism, hope, and resilience. Psychological capital is the psychological state that reflects individuals' mental strength and determines their cognitive functioning. According to the existing stream of work in positive psychology, the tolerance of uncertainty, motivations to explore the unknown, and the ability to exert imagination are the contributing factors to individuals' psychological well-being (Gallagher & Lopez, 2007). Curiosity and imagination are two essential cognitive attributes that unleash an individual's intellectual ability and

mental robustness under turbulent circumstances (Puente-Díaz & Cavazos-Arroyo, 2017). Nevertheless, little work has empirically examined the perceptual and cognitive mechanisms through which curiosity and imagination affect individuals' psychological well-being.

Specifically, curiosity triggers individuals' tendency to embrace uncertainty and see challenging situations as the opportunity for growth through encouraging their explorative attempts to explore the unknown and gain new experience (Kashdan & Silvia, 2009). As Albert Einstein once said, *"I have no special talents. I'm just passionately curious."* Trait curiosity is driven by innate motives to obtain novel information and knowledge to satisfy the intrinsic need for new experiences and solve the unpleasant feelings of ignorance (Litman & Mussel, 2013). Prior work has found that individuals exhibiting a high level of curiosity in daily life are more likely to develop positive emotions and have a lower chance to suffer from depression and anxiety (Kidd & Hayden, 2015). Indeed, research shows the sense of fulfillment that comes with curiosity is the catalyst for mental strength by enriching life's meanings (Crego et al., 2019; Grossnickle, 2016; Kashdan & Silvia, 2009).

The curiosity towards the unknown contributes to individuals' positive psychological state due to the joy of gaining novel experience. Prior research shows that it is equally important to possess the ability to unleash the imagination that enriches the fresh experience acquired by the explorative behaviors (Liang et al., 2012). Imagination conduces to individuals' intellectual functioning, psychological well-being, and work performance (Naylor & Simonds, 2015). As Albert Einstein (1924) once said, *"imagination is more important than knowledge."* From the view of the theory of mind, imagination is the human ability to daydream and fantasize, which benefits artistic work (e.g. drawing, filming, novel), and the competence in unconventional problem solving (Baron-Cohen, 2001). More essentially, imagination may complement curiosity's beneficial effect in boosting an individual's mental strength. Curious individuals enjoy the pleasant feelings that come with discovering the unknown. Their imagination is the crucial cognitive mechanism that combines the various experiences to fantasize the joyful situations. Imagination embodies the individual ability to transform a fragmented situation into a meaningful whole by retrieving past actual experiences and mixing them with their conceived alternative possibilities (Passmore, 1985).

Through engaging in imaginary thinking, people have the chance to reflect on the true feelings in their mind and better control the development of things (Baron-Cohen, 2001; Finke et al., 1992). Not only is imagination a crucial mental process for psychological health, but it also signifies the individual ability to develop creative ideas and sensations without any inflow of external ideas. With imagination, people can convey an abstract idea by expressing it through a concrete approach. A growing body

of research explores the beneficial effects of imaginative involvement on positive emotion through facilitating fantasy and daydreaming (Naylor & Simonds, 2015). Although excessive daydreaming may deprive individuals' ability to differentiate between reality and fantasy, a moderate level of imaginative absorption creates the fantasy that enables individuals to escape from the stressful reality, bounce back from the setback at work, and distract from the negative emotions.

From the view of broaden and build theory (Fredrickson, 1998, 2001) which is mentioned the positive emotions will broadening the individuals' novel thoughts, curiosity is the personality trait that encourages individuals to pursue novel and uncertain situations. In contrast, imagination is the ability to comprehend the complexity involved in new experiences and turn it into a meaningful sensation. As individuals are capable of creating situational awareness under the ambiguous circumstance, they are more likely to regulate their emotions and see things from a positive angle. Therefore, the imaginative ability may influence how individual curiosity impacts their positive mental states. Even though curiosity and imagination have often been found to increase happiness and reduce anxiety, little work has investigated their combined effects on people's positive psychological states, resulting in an unsolved research question in the extant literature. Based on the above logic, this study explores a moderated model which shows the intricate interaction between the two dimensions of curiosity (i.e., stretching and embracing) and three aspects of imagination (i.e., initiating, conceiving, transforming).

Literature review and Hypotheses development

Broaden-and-Build Theory and Psychological Capital

Fredrickson's broaden-and-build theory shows that positive emotions broadening the individuals' novel thoughts, individuals in the good mood during work, also maintain their physical, mental, and social health (Fredrickson, 1998). This theory explored lots of benefits from positive emotions which can broaden an individual's cognitive agility and encourage novel and exploratory thoughts. Also, positive emotions can serve as a buffering mechanism to relieve the individuals' negative mental symptoms and ill health (Fredrickson, 2000). Several studies in psychology found that positive emotion can strengthen motivation and diminish the indecisive mindset when an individual needs to make critical decisions for challenging problems (Løvoll et al., 2017). In addition, positive emotions can stimulate life satisfaction and raise hope for the future (Chang et al., 2019; Fredrickson & Joiner, 2002). Following the previous research, positive emotions have strongly relative to psychological capital, including hope, optimism, resilience, and self-efficacy (Luthans et al., 2007).

There is growing evidence that positive emotions influence individuals' behavior in workplaces. For example, the individuals who have positive emotions also have

positive beliefs, higher level of creativity, and more work engagement (Diener et al., 2020). Luthans et al. (2007) defined the PsyCap as a positive motivational state (Luthans et al., 2006; Luthans et al., 2005; Snyder, 2002). Furthermore, the PsyCap construct makes a more comprehensive explanation of the individual's mental state and behavior. In other words, PsyCap has been shown to be positively related to desired outcomes, such as job performance, organizational behavior, and to help to decrease turnover intentions (Avey et al., 2011) and it can be enhanced by a supportive climate (Luthans et al., 2008), positive leadership style (McMurray et al., 2010), and psychological capital intervention (Dello Russo & Stoykova, 2015). PsyCap has been established as a four-dimensional construct consisting of hope, resilience, optimism, and self-efficacy (Luthans et al., 2007).

Following the seminal work of Luthans et al. (2007), we focus on the multi-dimensional conceptualization of positive psychological capital. First, hope is defined as a positive motivational state that is based on an interactively derived sense of success (Snyder, 2002). It also refers to the degree of employees' goal-directed energy in performing a task and the means by which the task is accomplished (Snyder et al., 1991). According to three components within Snyder's Hope Theory, most people behave in pursuit of a goal (goal-oriented) to be the first step, a goal can provide a direction in people's life. After setting a goal, individuals can focus on the specific goal to schedule or plan different pathways to achieve the goal (pathways thinking). Finally, individuals will encourage themselves to keep going, no matter obstacles or setbacks destroy the goals (agency thinking). As stated by Goodman and colleagues conducted a prospective study, the hopeful individual is resilient. Furthermore, according to Luthans (2002) and Masten and Reed (2002) research show, resilience is a capacity to heal or bounce back from significant adversity, risk, failure, and increased responsibility. It is the human capacity to cope with stress and adversity that commonly refers to individuals' ability to bounce back from a turbulent work environment, and they with favorable outcomes when their adaptation or development faces serious threats (Bonanno, 2005; Luthans, 2002).

Third, optimism refers to a positive explanation style of good and bad events, a general tendency to expect favorable events and positive outcomes to occur in the future more than negative ones (Carver and Scheier, 2002). According to Busseri (2013) research shows that compared with pessimists the optimist is one who tends to expect positive and desirable things in the future, also more effective in achieving their positive anticipated future and successful career (Grotkowski & Miller, 2019). Finally, self-efficacy is an one personal characteristic which that individuals estimate their capability to execute a task, including the positive and negative physical, social, and self-evaluative outcomes (Bandura, 2006). Self-efficacy refers to employees' confidence

regarding their abilities to mobilize their motivation, cognitive resources, and courses of action so they can perform well in a specific task activity (Stajkovic and Luthans, 1998).

The broaden-and-build theory shows that positive emotions broaden "people's momentary thought-action repertoires" (Isen, 2000), which means positive emotions widen the range of individuals' thoughts and actions that come to mind. Also, positive emotions can undo lingering negative emotions. The research from Fredrickson (2004) found a kind of approach to broadening the individuals' state of positive emotions. For example, individuals can be trained by the events or games (such as child play) to arouse intellectual capability and creativity, etc. From the view of broaden-and-build theory, the nexus between positive psychology and curiosity is a self-reinforcing loop, where the novel thoughts contribute to individuals' positivity and thus feed back to the desire to absorb new knowledge. Fredrickson's broaden-and-build theory shows that positive emotions broadening the individuals' novel thoughts, and then influence enduring personal resources (e.g., social support, resilience, skills, and knowledge); the peak is the enhancing health and psychological fulfillment, and feeding back to positive emotions again. Following the logic mentioned above, the desire to learning new knowledge and embracing uncertainty can cultivate a self-reinforcing psychological process will result in an individual's subjective well-being, which feed back to stimulate the positive experience of learning. The literature implies a upward spiral loop of the relationship between curiosity and positive psychology. However, there is insufficient theoretical understanding about the psycho-cognitive mechanism through which curiosity affects individuals' positive psychology.

Curiosity and Psychological Capital

Echoing the broaden-and-build theory, Kashdan's research shows that curiosity has a strong relation to individuals' mindfulness; both of the theoretical views suggest that positive emotion influences individuals' curiosity, and thus impacts their psychological capital (Kashdan, 2009). Curiosity is one of the most critical attributes in people's cognitive growth. Depicted as curious explorer by Kashdan et al. (2009), highly curious individuals are more likely to perceive the joy of explorative activities, tolerate ambiguity and remain mentally stable even in volatile situations (Kashdan, 2009; Kashdan & Silvia, 2009). Therefore, curiosity may lead to mental robustness by fortifying people's self-efficacy and resilience during difficult times as well as inspiring them to always look on the bright side to cultivate hope and optimism. Trait curiosity impacts various aspects of human development throughout their lifespan, including internal character and external development, such as pursuit, and self-regulation, sociability, aesthetics, working, and learning attitude, among others. No matter in which field people can get positive outcomes, as long as they remain flexible and open mind

to explore new experiences, trait curiosity is also considered an enhanceable character strength (Kashdan, 2009; Kashdan & Fincham, 2004). Consequently, this study explores the relationship between trait curiosity and psychological capital. Trait curiosity has been established as a two-dimensional construct consisting of competence stretching and embracing uncertainty (Kashdan et al., 2009).

According to Kashdan and his colleagues' conceptualization, competence stretching embodies the personality trait that motivates the pursuit of new knowledge and experience for personal growth, whereas embracing uncertainty signifies the ability to enjoy the unpredictable nature of life. Curiosity encourages people to interpret challenging situations as an opportunity and thereby endows them with a better ability to think beyond the existing intellectual boundaries through enhancing their creative thinking skills (Chang & Shih, 2019; Silvia, 2006). There is a potential connection between high curiosity and self-efficacy. People with these qualities are more likely to view difficult situations as challenges than threats and even thrive in challenging situations (Almeida et al., 2008). Furthermore, the research shows that individuals' curiosity also impacts their distress tolerance. When experiencing distressing situations, curious explorers demonstrate more bravery because they process adversity with mindfulness and a constructive attitude (Denneson et al., 2017; Kashdan & Fincham, 2004). Therefore, curiosity may also enhance individuals' resilience; the prior studies offer the relevant evidence that curiosity reduces people's pressure, anxiety, and negative thoughts (Denneson et al., 2017). Accordingly, we hypothesized that trait curiosity (stretching and embracing) is positively related to psychological capital.

Hypothesis 1: Individuals' stretching trait curiosity is positively related to psychological capital.

Hypothesis 2: Individuals' embracing trait curiosity is positively related to psychological capital.

Moderating Role of Imagination

Following the above, the curiosity trait not only affects the creative thinking abilities of individuals but also influences their psychological capital and affects people's personal development. Curiosity is the source of novel knowledge and new experience that contribute to positive psychological capital by facilitating psychological fulfillment (Kashdan et al., 2009). According to the recent work of Kim and Choo (2023), imagination is the essential cognitive activities that convert the curiosity-induced experience into intellectual stimulus for joyful exploration of new knowledge and the remedy for reducing the unpleasant feeling of ignorance. Research by Kashdan (2009) shows that an inquisitive mindset is the embodiment of individuals' curiosity traits, which may play a more profound role in building psychological capital when they exert imaginative activities. The enrichment of experiential horizons

resulting from curiosity may be amplified by imaginative thinking. Indeed, "*for knowledge is limited, whereas imagination embraces the entire world, stimulating progress, giving birth to evolution (Albert Einstein, 1924)*". The existing literature implies that curiosity (cognitive input) and imagination (cognitive process) jointly affect an individual's psychological output (Kashdan et al., 2009; Lin et al., 2021).

According to Lin, Hsu, and Liang (2014), imagination has evolved as a construct with three dimensions, namely initiating imagination, conceiving imagination, and transforming imagination. Initiating imagination expresses the innate ability to explore the unknown, to generate novel ideas, and to find creative solutions to problems (Lin et al., 2014). Initiating imagination creates diversified ideas by exploring different possibilities for a given situation, and it is also conducive to individuals' performance and personal development (Folkman, 2010; Lin et al., 2014; Liu & Noppe-Brandon, 2009). Therefore, people with high levels of initiating imagination tend to embrace an open-minded attitudes new experiences, which is an integral part of psychological capital. Overall, initiating imagination may strengthen curiosity's positive effect on psychological capital by reaping the joyful experience of learning and experiencing. Therefore, we propose:

Hypothesis 3-1: Initiating imagination will strengthen the positive relationship between stretching trait curiosity and psychological capital.

Hypothesis 3-2: Initiating imagination will strengthen the positive relationship between embracing trait curiosity and psychological capital.

Conceiving imagination is the cognitive activity that converts abstract thoughts into a sensible ideas based on logical reasoning and convergent thinking (Cartwright & Noone, 2006; Reiner & Gilbert, 2000). Individuals with higher levels of conceiving imagination tend to rely on their intuition and sensitivity. People with high conceiving imagination can concentrate on the implicit meanings behind an ambiguous phenomenon and efficiently extract useful messages to make appropriate decisions or derive effective solutions (Cartwright & Noone, 2006; Reiner & Gilbert, 2000). Researchers have evidenced that conceiving imagination is the vital ability that leads people to explore new solutions, perspectives, and opportunities that may not be immediately apparent or obvious; thereby it has a positive and direct effect on individuals' performance (Liang et al., 2013; Yueh et al., 2013). In general, individuals who engage in conceiving imagination may enhance their psychological capital by developing their creativity, problem-solving skills, and sense of purpose and meaning. Curiosity exploration may expose individuals to ambiguous and bizarre experiences, which require their capability in conceiving imagination to make sense of the unknown

situations and extract meaningfulness. With the above-mentioned logic, we propose:

Hypothesis 4-1: Conceiving imagination will strengthen the positive relationship between stretching trait curiosity and psychological capital.

Hypothesis 4-2: Conceiving imagination will strengthen the positive relationship between embracing trait curiosity and psychological capital.

Transforming imagination, on the other hand, is the ability to crystallize conceptual ideas that are complicated and elusive (Liang et al., 2012) by forming the connection between conceptual dots that are seemingly unrelated to reproduce new understanding of the reality (Liu & Noppe-Brandon, 2009; Vygotsky, 2004). Stretching curiosity leads to the absorption of complicated and abstract information, and individuals with high transforming imagination may have better ability to resolve the inherent complexity for making sense of the unknown situations (Kashdan et al., 2009). Individuals with high transforming imagination are better able to develop their idiosyncratic interpretation of the new phenomenon, leading to capitalize on the epistemic benefit of stretching curiosity. In contrast, people with embracing curiosity do not make judgments and assumptions towards the new experience, and adopt an open-minded attitudes towards any possibilities. Nevertheless, transforming imagination may diminish the relationship between embracing curiosity and psychological capital by making the individual perceive new experiences from the sensory framework they form based on the prior life experience. As a result, the novelty value of embracing new experiences is diluted by individuals' oversimplified interpretation and the experience-based judgmental mindset (Lin et al., 2014). Therefore, we posit:

Hypothesis 5-1: Transforming imagination will strengthen the positive relationship between stretching trait curiosity and psychological capital.

Hypothesis 5-2: Transforming imagination will weaken the positive relationship between embracing trait curiosity and psychological capital.

Fig. 1. Conceptual framework of this study.

Insert Figure 1 about here

Methods

Procedure and Participants

To include individuals from various backgrounds, we used a sample covering

people with different jobs, professions, and social statuses. Volunteering services, through which individuals contribute their personal resources, knowledge, and time to non-acquainted people for non-utilitarian purposes, have been considered the approach to building personal fulfilment, positive emotions, and psychological well-being (Chew et al., 2022; Xu et al., 2021). Therefore, participants of volunteering programs are the promising candidates for exploring the antecedents of positive psychological capital. To test the hypotheses developed in this paper, the sample was established by surveying 519 participants of volunteering programs sponsored by the Taiwan Ministry of Education, through which the qualified volunteers deliver science knowledge to children in rural regions around Taiwan. We collected the data through a two-stage questionnaire survey with a time interval of six months. Participants were mainly from the four areas of student (57.4%), full-time employee (21%), government employee (6%), and housekeeper (15.6%). Table 1 shows their demographic profile.

 Insert Table 1 about here

Measures

Trait curiosity

Following the conceptualization developed by Kashdan et al. (2009), we refer to the Curiosity and Exploration Inventory-II scale to measure the two dimensions of individual curiosity which is an individuals' personality cognitive input trait, namely stretching curiosity and embracing curiosity (Kashdan et al., 2009; Kashdan et al., 2004). Trait curiosity was evaluated in the first-stage of the survey. To measure stretching curiosity that reflects people's activeness in learning new information and gaining novel experiences, we adopted a four-item instrument developed in previous research (Kashdan et al., 2009). Sample items include: "I actively seek as much information as I can in new situations" and "I am at my best when doing something that is complex or challenging". Stretching curiosity was measured through a 7-point Likert-style scale, ranging from 1, "strongly disagree" to 7, "strongly agree" (Cronbach's $\alpha = .91$).

Furthermore, to gauge the individuals' embracing curiosity, participants were asked to evaluate the extent to which they enjoy embracing uncertain and unpredictable nature of everyday life. The scale adopts a 7-point Likert-style design, ranging from 1, "strongly disagree" to 7, "strongly agree" (Cronbach's $\alpha = .88$). Sample items are "I am the type of person who really enjoys the uncertainty of everyday life" and "Everywhere I go, I am out looking for new things or experiences."

Imaginations

Imagination is a bridge of connecting individuals' reality and the unknown, is a

cognitive process that individual produces new elucidations by integrating experiences (Vygotsky, 2004). This study measured the imagination by the three-factor structure of the Imaginative Capacity Scale (ICS), including initiating imagination, conceiving imagination, transforming imagination (Liang et al., 2012; Lin et al., 2014).

Initiating imagination is the capability to discover the unprecedented ideas and innovative thinking. This study adopted a six-item scale developed in prior research (Lin et al., 2014). Sample items include: "I often have unique ideas compared to others" and "I can develop ideas by examining different perspectives". The study uses a 7-point Likert scale ranging from 1, "strongly disagree" to 7, "strongly agree" (Cronbach's $\alpha = .97$).

To measure conceiving imagination of individuals, we adopted a four-item scale from Imaginative Capacity Scale (ICS) (Lin et al., 2014), which assesses the individual ability to form new mental images by personal intuition and sensibility. A sample item like "I know how to concentrate on imagination and prevent myself from distraction". We use a 7-point Likert scale ranging from 1, "strongly disagree" to 7, "strongly agree" (Cronbach's $\alpha = .94$).

Likewise, transforming imagination is a capability to visualize things with existing experiences. The sample items include "I often express my feelings by using concrete ideas" and "I can express abstract ideas by using examples from daily life". We use 7-point Likert scale ranging from 1, "strongly disagree" to 7, "strongly agree" (Cronbach's $\alpha = .96$).

Psychological capital (PsyCap)

This study measured psychological capital using the PsyCap Questionnaire (PCQ) (Luthans et al., 2007), which has four dimensions: hope, resilience, optimism, and self-efficacy. PsyCap is an individual's positive psychological state (Luthans et al., 2007). To avoid the potential threat of common method bias, we measured the participants' PsyCap at stage II data collection by adopting a six-month interval. Specifically, the concept of hope can be defined as a positive motivational state that is derived from a sense of success that is interactive in nature (Snyder, 2002). Sample items including, "At the present time, I am energetically pursuing my work goals." and "I can think of many ways to reach my current work goals." This study uses a 7-point Likert scale ranging from 1, "strongly disagree," to 7, "strongly agree" (Cronbach's $\alpha = .95$).

Optimism indicates the personal belief in achieving short-term and long-term success (Luthans et al., 2007). The measures used in this study were adapted from the Life Orientation Test (Scheier & Carver, 1985) and PsyCap Questionnaires (Luthans et al., 2007), comprising six items (Cronbach's $\alpha = 0.91$). The sample items include, "When things are uncertain for me at work, I usually expect the best" and "It's easy for me to take it easy". We measured optimism on a 7-point Likert scale, ranging from 1,

"strongly disagree", to 7, "strongly agree".

Resilience refers to individuals' ability to engage in self-control for emotional adjustment (Wagnild & Young, 1993). Individuals' resilience influence their capability to bounce back when experiencing failure and setbacks. By adapting the PsyCap Questionnaire (Luthans et al., 2007), four items were used to evaluate individuals' resilience on a 7-point Likert scale, ranging from 1, "strongly disagree," to 7, "strongly agree" (Cronbach's $\alpha = 0.86$).

Self-efficacy is individuals' belief in their personal competence in accomplishing the challenging assignments and tasks. To capture the contextual contingencies of our target sample, we revised the self-efficacy scale from PsyCap of Luthans et al. (2007). Eight items were included in our measures for assessing individuals' self-efficacy on a 7-point Likert scale ranging from 1, "strongly disagree," to 7, "strongly agree" (Cronbach's $\alpha = 0.97$). Sample items including, "I can get through difficult times at work because I've experienced difficulty before." and "I usually manage difficulties one way or another at work."

Control variables

We controlled for demographic variables that might substantially affect individuals' curiosity, imaginations, and psychological capital, including gender (0= male, 1= female), age, and job status.

Analytical Procedures

Initially, we employed confirmatory factor analysis with IBM AMOS 18 to establish the construct measures' validity. The findings demonstrated that the factor loading of the three constructs exceeded 0.7. Furthermore, the values of the average variance extracted (AVE) surpassed 0.6, and the values of the composite reliability (CR) surpassed 0.8, thereby indicating that the measurement items ($\chi^2/df = 3.237$, CFI=.921, NFI=.890, RFI=.882, IFI=.921, RMSEA=.066) satisfied the validity requirements (Hair, 2010). We utilized hierarchical regression analysis in SPSS Statistics 22 to investigate the direct and moderating effects implied in our hypothetical model. In order to ensure that our research model is not affected by common method bias, we employed both procedural and statistical methods recommended by Podsakoff et al. (2003). To reduce evaluation apprehension, we assured respondents of anonymity and confidentiality during the survey. We also conducted Harman's one-factor test, which resulted in six distinct factors that accounted for 77 percent of the total variance, with the first factor explaining only 22 percent. This indicates that no single factor or any factor can account for most of the variance, which suggests that common method bias is unlikely to be a significant issue. To further validate these findings, we performed additional tests that controlled for the effects of a single unmeasured latent method factor, as recommended by Podsakoff et al. (2003). The results show that adding a common variable will

improve the model fit ($\chi^2/df = 3.120$, CFI = .925, NFI = .894, RFI = .887, IFI = .925, RMSEA = .064), thus we do not need to intentionally add common factors to adjust our model (Spector, 2006). Overall, these results indicate that there is only a slight possibility of common method variance, which supports the validity of our measures. Table 2 shows the confirmatory factor analysis results.

Insert Table 2 about here

Results

Descriptive Statistical Analysis

In Table 3, we present the mean values, standard deviations, and correlation coefficients of the variables in this study. Table 3 indicates that stretching curiosity, embracing curiosity, initiating imagination, conceiving imagination, transforming imagination and psychological capital were positively correlated, providing the statistical basis for the following hypotheses testing.

Insert Table 3 about here

In addition, our preliminary results suggest that stretching trait curiosity ($\beta = .01$, $p < .05$) and embracing trait curiosity ($\beta = .30$, $p < .001$) have a significantly positive effect on individuals' psychological capital, were supported Hypothesis 1 and 2.

Insert Figure 2 about here

Moderating Effects

Table 4 presents the testing results of moderating effects. Hypothesis 3-1 posited that initiating imagination has a positive moderating effect on the relationship between stretching curiosity and PsyCap; results revealed that the moderating effect was not significant ($\beta = -.13$, n.s.), so Hypothesis 3-1 is not supported. In contrast, Hypothesis 3-2 posited that initiating imagination has a positive moderating effect on the relationship between embracing imagination and PsyCap; the results indicated that this hypothesis was supported ($\beta = .24$, $p < .10$), supporting Hypothesis 3-2. In Figure 3, we present the interaction effect between initiating imagination and embracing curiosity in affecting the individuals' PsyCap. The conditional effect indicated that stretching curiosity affects PsyCap when initiating imagination is high.

Insert Table 4 about here

Insert Figure 3 about here

Hypothesis 4-1 predicts that a positive association between individuals' stretching curiosity and PsyCap is strengthened by conceiving imagination ability. According to Table 4, conceiving imagination exerted a significant negative moderating effect on the positive relationship between stretching curiosity and PsyCap ($\beta = -.23, p < .05$), is not supported the assertion of Hypothesis 4-1. On the other hand, Hypothesis 4-2 supposed that conceiving imagination will strengthen the positive relationship between embracing trait curiosity and psychological capital. Results show that the moderating effect was positively significant ($\beta = .24, p < .05$), so Hypothesis 4-2 is supported. Moreover, we also present Fig. 4 and Fig. 5 for clarity on the enhancement and inhibition function with moderating of conceiving imagination in the relationship between stretching/embracing curiosity and PsyCap.

Insert Figure 4 about here

Insert Figure 5 about here

Interestingly, the moderating role of imagination both enhances and inhibits the relationship between individual curiosity and psychological capital, as Hypothesis 5-1 supposed that transforming imagination will strengthen the positive relationship between stretching trait curiosity and psychological capital. In Table 4, transforming imagination exerted a significant positive moderating effect on the positive relationship between stretching curiosity and PsyCap ($\beta = .30, p < .05$). Additionally, Hypothesis 5-2 surmised that transforming imagination will weaken the relationship between embracing trait curiosity and psychological capital; the results shown conceiving imagination significantly reduces the connection between embracing curiosity and PsyCap ($\beta = -.40, p < .001$). Hence, Hypotheses 5-1 and 5-2 are supported. Figure 5 and Fig. 6 shown the clarity moferating effect of transforming imagination.

Insert Figure 5 about here

Insert Figure 6 about here

Discussion

This study's results demonstrate a close interconnection between psychological capital, curiosity, and imagination. The importance of psychological capital lies in its ability to help individuals cope with challenges, achieve goals, perform at their best, and experience greater well-being (Luthans et al., 2007). Fostering positive psychological capital can facilitate personal and professional development and enable individuals to contribute significantly to their communities and society as a whole. The broaden-and-build theory proposes that positive emotions, such as "joy, interest, and curiosity," broaden an individual's thought-action repertoire, leading to increased creativity, resilience, and problem-solving abilities (Fredrickson, 2004).

Broaden-and-build theory implies that curiosity and imagination are the broadening mechanism for positive emotions that lead to novel thoughts and enhanced personal fulfilment, feeding back to the stronger drive for intellectual exploration. This cyclical process consists of two critical stages, namely the broaden stage and the build stage, which are self-reinforcing since positive emotions lead to increased personal resources, which in turn generate more positive emotions (Fredrickson, 2001, 2004). Ultimately, this self-reinforcing process leads to personal growth and career development.

To extend the existing literature built upon the broaden-and-build theory, we adopt a cognitive lens that incorporates individual curiosity and imagination to explore the mental mechanism for enhancing psychological capital. Specifically, curiosity, which broadens an individual's cognitive horizon, drives the joyous attempt to explore the unknown and to gain new experience (Fredrickson, 2000). Our findings suggest that the curious exploration is conducive to stronger psychological capital when the new knowledge/experience is assimilated through the individuals' imaginative activities that establish meaningfulness of the newly obtained knowledge towards their lives and careers. The interaction between curiosity and imagination, therefore, determines the broaden-and-build dynamics in determining the upward spiral leading to personal fulfilment and emotional positivity.

Theoretical contributions

This study yields interesting findings by identifying curiosity as a cognitive antecedent that elevates PsyCap. Through a longitudinal approach with a six-month interval, we found that individuals with a higher level of stretching curiosity and embracing curiosity are more likely to develop higher levels of PsyCap. This underscores the significant influence of curiosity on PsyCap and indicates that individuals with an inquisitive and receptive mindset are more likely to demonstrate a positive PsyCap. The present study aligns with the work of Kidd and Hayden (2015), who posited that individuals with an elevated sense of curiosity are inclined toward

positive affect and are less prone to experiencing depression and anxiety. Furthermore, empirical evidence suggests that curiosity plays a pivotal role in fostering psychological resilience by endowing life with greater meaning and direction (Crego et al., 2019).

Our findings reveal an interesting aspect regarding the relationship between initiating imagination, stretching curiosity, and PsyCap. Our study shows that although the negative effect of initiating imagination on stretching curiosity and PsyCap is not significant, it is still noteworthy. Specifically, stretching curiosity involves exploring existing knowledge, while initiating imagination involves unrestrained and expansive thinking that may conflict with the process of stretching curiosity. However, as previous research suggests, we also found that individuals with high levels of initiating imagination tend to be open-minded and receptive to new experiences, and initiating imagination can enhance the relationship between embracing curiosity and PsyCap. (Folkmann, 2010; Lin et al., 2014). Thus, individuals can increase the positive PsyCap by embracing novel experiences and unleashing the imagination to be more open-minded.

Additionally, the findings indicate that conceiving imagination weakens the positive association between stretching curiosity and PsyCap, shedding a new light to the imagination studies. Individuals with higher levels of conceiving imagination tend to rely more on their intuition and sensitivity rather than systematic and logical thinking. This tendency leads to a decline in the relationship between stretching curiosity and PsyCap because stretching curiosity requires fundamental logical abilities. Consequently, individuals who possess stretching curiosity will experience a reduction in their PsyCap due to elevated levels of conceiving imagination. Nonetheless, conceiving imagination has a favorable effect on embracing curiosity and psychological capital. Consistent with prior research, conceiving imagination offers a means of embracing novel solutions and perspectives (Liang et al., 2013; Yueh et al., 2013), thus stimulating the positive impact on embracing curiosity and PsyCap.

Our findings suggest that transforming imagination has a positive effect on the relationship between stretching curiosity and PsyCap. Individuals can intentionally engage and combine various experiences in transforming imagination to boost the relationship between stretching curiosity and PsyCap. Individuals will refer to previous experiences and think logically and systematically to ease the insecurity that comes with exploring the unknown and increase their PsyCap. This is consistent with previous research indicating that stretching curiosity leads to the absorption of information, and individuals with high levels of transforming imagination may be better equipped to make sense of unknown situations (Kashdan et al., 2009). However, our study also revealed an interesting negative impact of transforming imagination on the relationship between embracing curiosity and PsyCap. Individuals with transforming

imagination ability may forecast the difficulties and obstacles associated with a task, leading to a decrease in their psychological capital. Same to previous research, transforming imagination may lead to oversimplified interpretations and a judgmental mindset, which dilutes the novelty value of embracing new experiences (Lin et al., 2014).

Managerial implications

We found that both stretching and embracing curiosity are positively linked with PsyCap. This provides valuable guidance for managers and educators on how to enhance individuals' curiosity. To foster curiosity, managers and educators can create a culture of experimentation that endorses questioning and inquiry. This can be achieved by challenging assumptions, promoting experimentation and risk-taking, and embracing failures as learning opportunities. Organizations should provide opportunities for learning and development, encourage collaboration and diversity, and recognize the achievements of curious individuals. Educators and leaders should model curiosity by asking questions, soliciting feedback, and demonstrating an openness to new ideas. By doing so, they can promote a culture of innovation and create an environment where curiosity is valued and encouraged.

In this study, we propose that imagination plays a crucial role in fostering the relationship between individuals' curiosity and PsyCap. Our findings have practical implications for practitioners in the fields of management and education. Firstly, we suggest that encouraging curiosity among employees can lead to increased acceptance of new ideas, diverse opinions, the latest technology and skills, and creative thinking, resulting in enhanced innovation performance. Therefore, we propose that employees should engage in initiating imagination, which involves divergent thinking and enables individuals to generate unconstrained ideas, leading to positive impacts on their psychological capital. To maintain a balance in the levels of initiating imagination among employees, organizations should focus on cultivating a growth mindset, establishing clear boundaries and guidelines, and fostering a culture that promotes innovation. These strategies can help employees with high levels of initiating imagination sustain their curiosity and imagination while also adhering to established regulations, expanding their knowledge base, and enhancing their psychological capital. Moreover, workers whose tasks require high creative thinking can enhance their psychological capital by embracing curiosity and generating unfettered ideas (i.e. initiating imagination). On the contrary, based on the findings, we recommend workers requiring high creativity inputs to comply with established regulations, expand their domain-relevant knowledge, and collaborate with others. For instance, creative workers can adjust themselves to fit into current trends, experiment with new tools, or try out

new experiences that can help expand their imagination; collaborating with people from diverse backgrounds can also help spark new insights and ideas.

Secondly, employees with high conceiving imagination tend to rely on intuition and sensibility, which can lead to excessively optimistic or pessimistic thinking, negatively impacting their psychological capital. To address this issue, organizations can promote logical thinking, encourage innovation, provide feedback and guidance. By implementing these strategies, employees can develop their imaginative thinking skills and expand their knowledge and skills, enabling them to maintain a rational and calm approach when exploring unknown things. For example, scenario planning, which involves creating plausible future scenarios and analyzing how they might affect the organization, is an example of promoting conceiving imagination. This exercise can help employees identify potential challenges and opportunities, enhance their strategic thinking abilities, and maintain a rational and calm approach when exploring unknown things.

Thirdly, organizations can capitalize on employees' imagination through training and development programs, establishing a culture of experimentation, providing opportunities for diverse experiences, promoting self-reflection and self-awareness, and fostering a learning culture. By relying solely on previous experiences to solve problems and make decisions, employees may be deterred by the uncertainty and ambiguity in adopting new ideas. Fostering employees' transforming imagination appears to be a remedy for the detrimental effect of the curse of knowledge. Hence, organizations can offer mentorship opportunities, training programs, and advocate the culture of embracing novelty. Additionally, promoting employees' self-reflection and self-awareness can help foster a culture of personal and professional growth, encouraging employees to remain open to new perspectives and experiences. For example, we recommend the organizational leaders offer employees with constructive feedback on their performance, highlighting areas where they have excelled and areas where they can improve. It is equally important for leaders to demonstrate empathy towards their subordinates so that employees are more willing to share their thoughts and feelings.

Furthermore, education policy-makers and frontline educators should more focus on balancing students' stretching and embracing curiosity and imagination to promote effective and well-rounded learning outcomes. This can be achieved by implementing strategies that emphasize reflection and self-assessment, foster a culture of inquiry and collaboration, and provide opportunities for open-ended problem-solving tasks. To balance initiating imagination, educators can encourage a growth mindset and emphasize reflection and self-assessment, while also promoting critical thinking to train students' conceiving imagination. Additionally, educators can establish a culture of

innovation, provide guidelines and feedback, and encourage collaboration to help students develop their analytical and critical thinking skills, explore new solutions and perspectives, and understand when and where to use their conceiving imagination. Finally, to balance transforming imagination, educators can design learning experiences that challenge students to engage in open-ended problem-solving tasks, while also encouraging them to seek out and explore new ideas and perspectives. Providing opportunities for reflection and self-assessment can help students develop their metacognitive skills and become more aware of their own thought processes and learning strategies.

Overall, this paper is among the first attempts in applied psychology research to articulate the relationship between curiosity, imagination, and individuals' positive psychological capital. Our findings underscores the importance of developing the cognitive skills to consciously regulate and engage in imaginative thinkings. Positive psychological capital and long-term well-being may result from optimal interaction between curiosity and imagination.

Limitations

This study has some limitations that can point to the directions for future research. Firstly, the study relied solely on questionnaire responses from participants in volunteering programs sponsored by the Taiwan Ministry of Education, which may constrain the generalizability of our findings to different task environments. To overcome this limitation, future studies could consider collecting data from participants in diverse work categories or cultural backgrounds.

Secondly, the participants in our study were volunteers who performed unpaid tasks, and it may be necessary to reassess the impact of the concept on employees in general work environments. It remains uncertain if those volunteers are inherently curious or their curiosity contributes to their intention for the volunteering tasks. Therefore, future research could incorporate work motivation as an additional aspect and compare the differences between unpaid and paid individuals.

Finally, our data were collected through survey questionnaires, and our participants' primary task was scientific education and knowledge dissemination (e.g. teaching scientific knowledge to underprivileged children). The professional identity associated with these tasks may have led participants to express personal positive personality traits, causing potential bias into the data. To address the latent threats of evaluation apprehension, future research could adopt more robust approaches to control for the conceptual bias, such as experiment and mixed methods.

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Figure 1. Hypothesized model

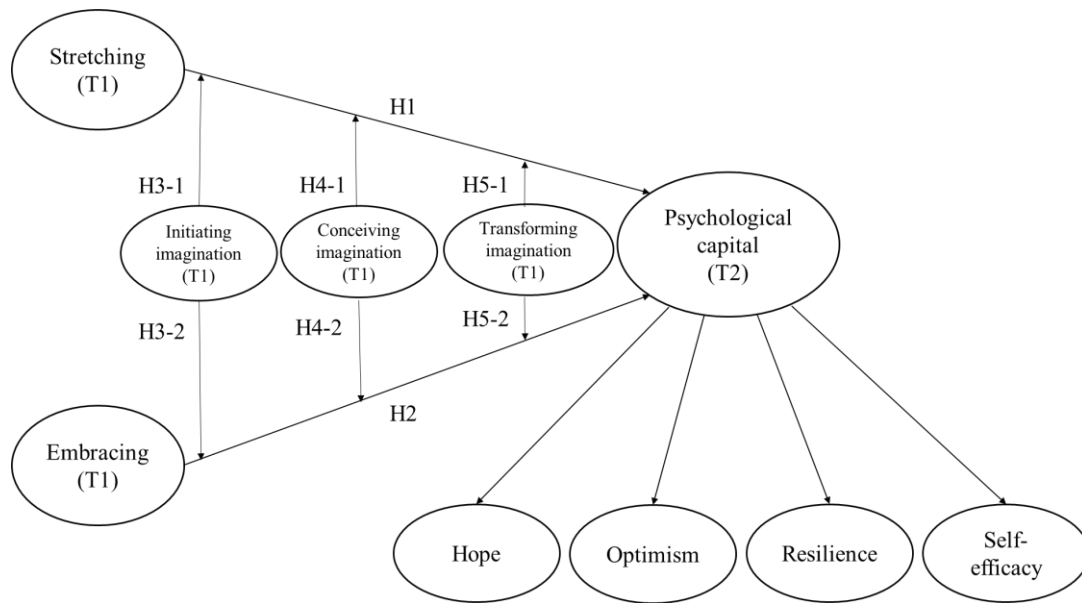
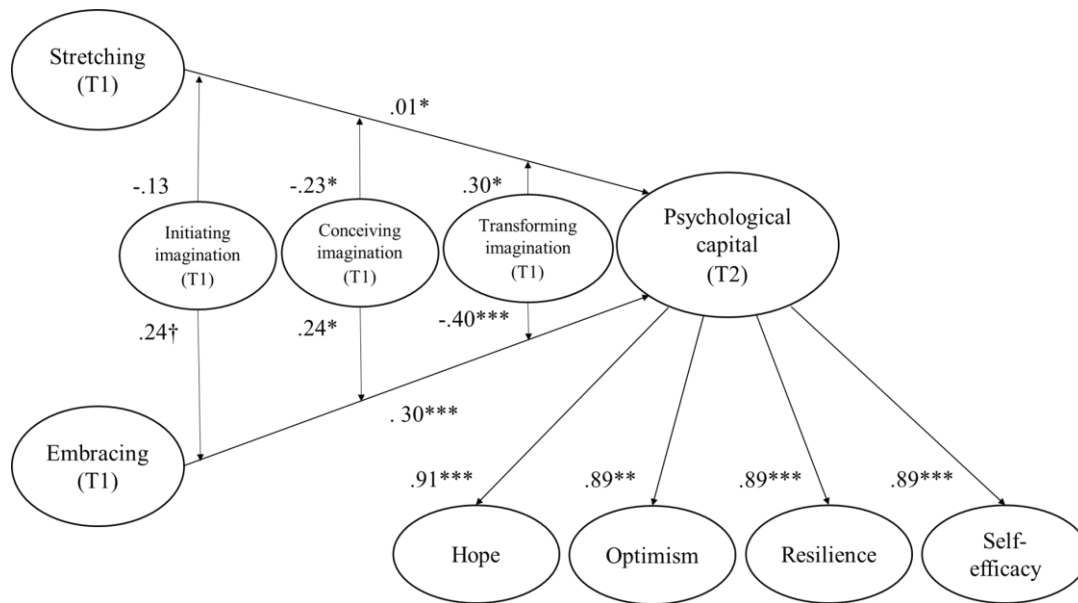


Figure 2. Results of moderated hierarchical regression analysis



Note. n = 519; † represents $p < .1$; * $p < .05$; ** $p < .01$; *** $p < .001$.

Figure 3. Moderating effect of initiating imagination on the relationship between embracing curiosity and PsyCap

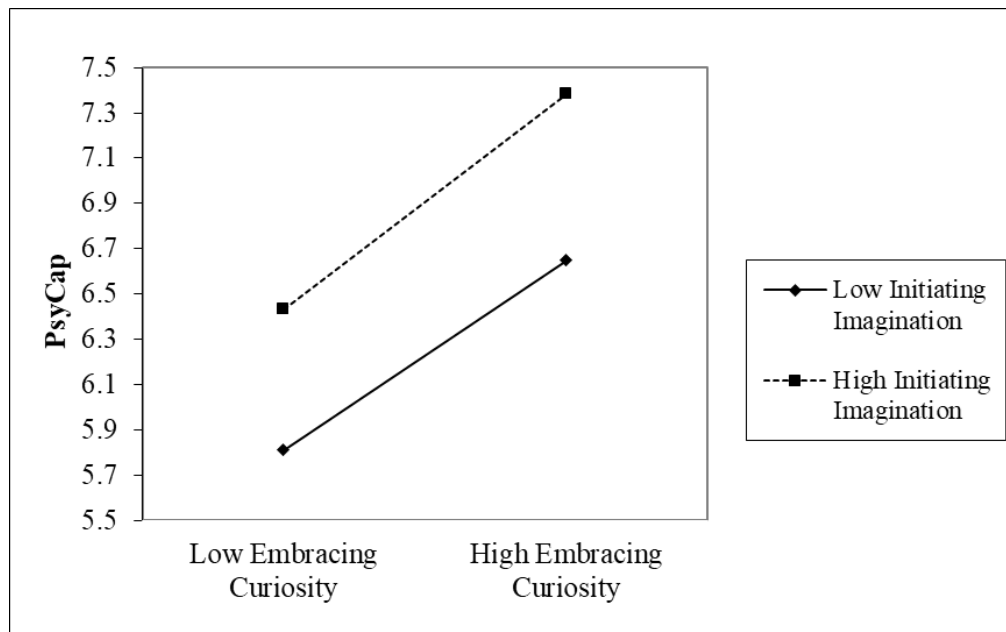


Figure 4. Moderating effect of conceiving imagination on the relationship between stretching curiosity and PsyCap

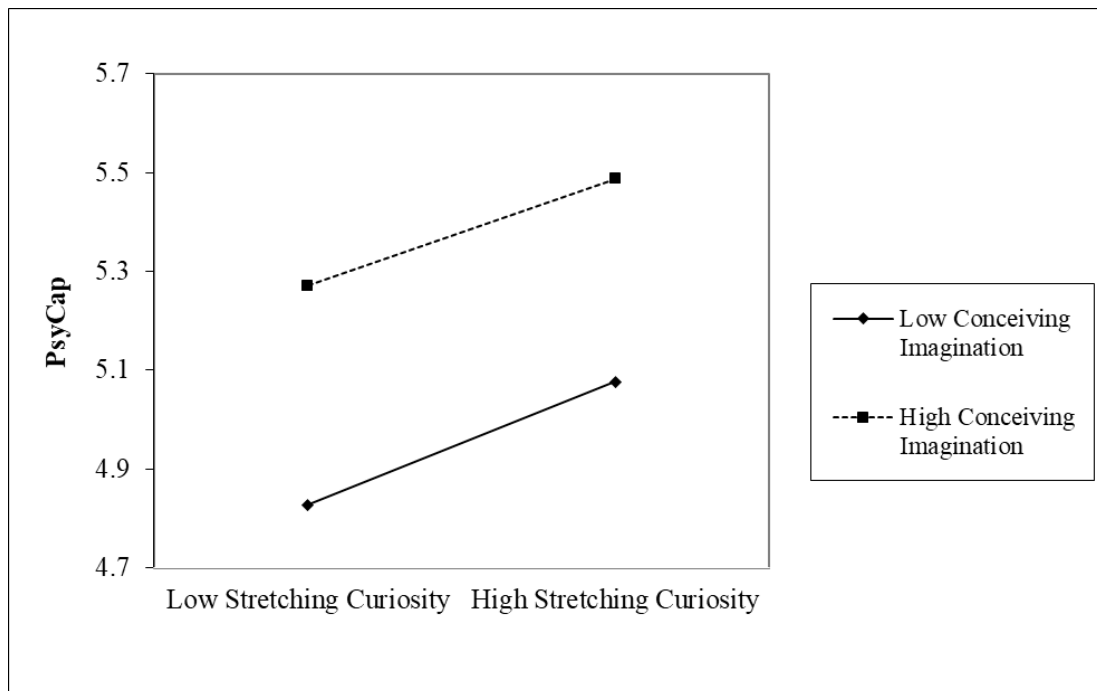


Figure 5. Moderating effect of conceiving imagination on the relationship between embracing curiosity and psycap

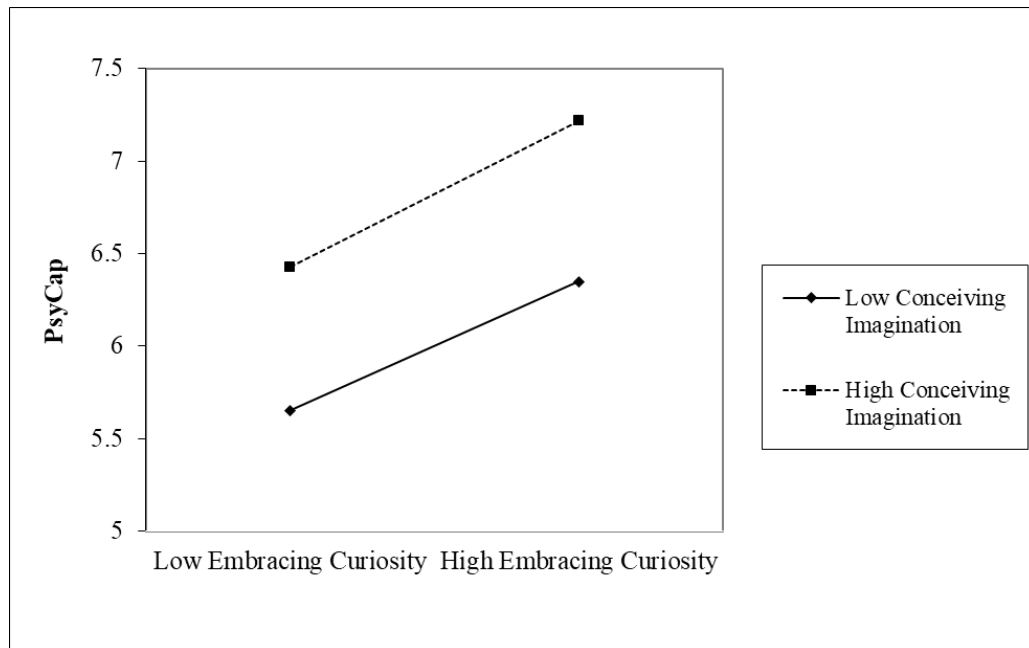


Figure 6. Moderating effect of transforming imagination on the relationship between stretching curiosity and PsyCap

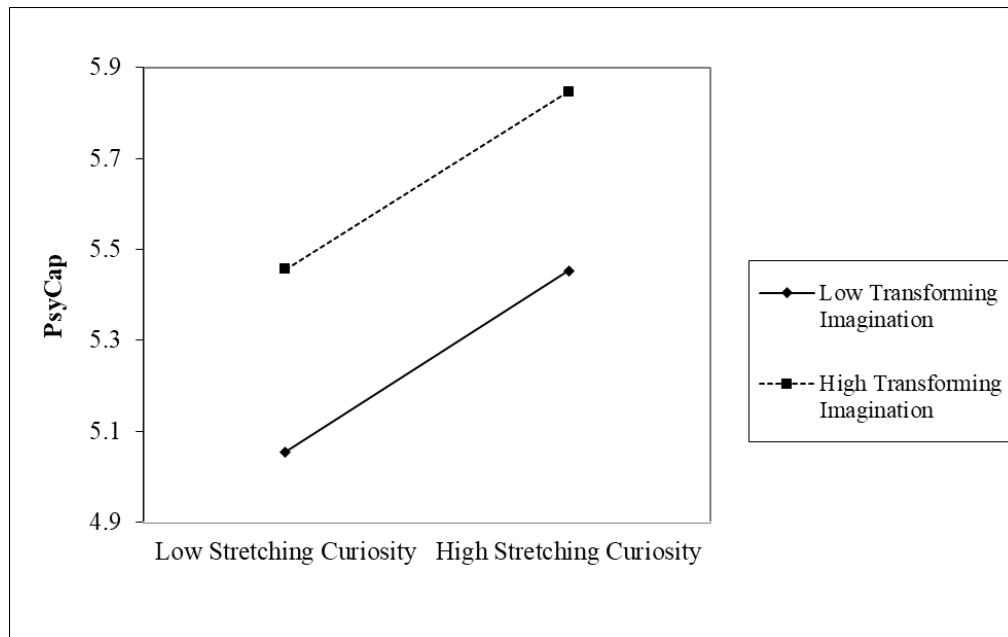


Figure 7. Moderating effect of transforming imagination on the relationship between embracing curiosity and PsyCap

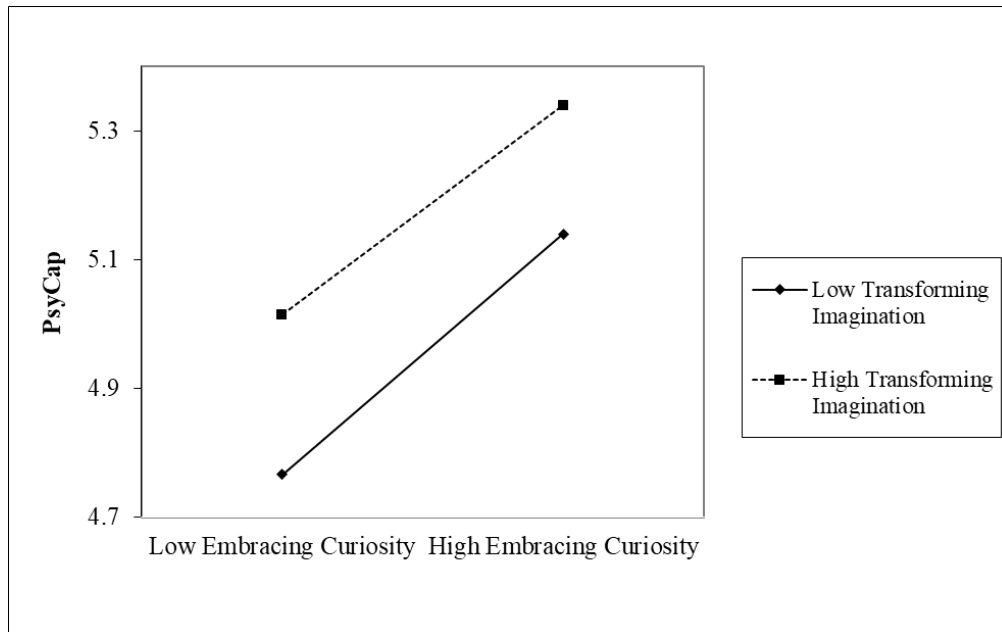


Table 1. Demographic profile

Variable	Category	<i>n</i>	Percentage (%)
<i>Age (years)</i>	≤ 20	184	35.5%
	21-30	127	24.5%
	31-40	28	5.4%
	41-50	100	19.3%
	≥ 51	80	15.4%
<i>Education</i>	Below high school	148	28.5%
	Bachelor's degree	321	61.8%
	Above master's degree	50	9.6%
<i>Gender</i>	Female	342	65.9%
	Male	177	34.1%
<i>Tenure</i>	<1 year	260	50.1%
	1-4 year	144	27.7%
	≥ 5 year	115	22.2%
<i>Job status</i>	Student	298	57.4%
	Full-time employee	109	21%
	Government employee	31	6.0%
	Housekeeper and others	81	15.6%

Table 2. Confirmatory factor analysis results

Dimensions	Item	Factor loading	AVE	CR
Stretching curiosity (T1)	1. I actively seek as much information as I can in new situations	.886	.79	.94
	2. I am at my best when doing something that is complex or challenging	.874		
	3. I view challenging situations as an opportunity to grow and learn	.881		
	4. I frequently seek out opportunities to challenge myself and grow as a person	.916		
Embracing curiosity (T1)	1. I am the type of person who really enjoys the uncertainty of everyday life	.853	.75	.92
	2. Everywhere I go, I am out looking for new things or experiences	.916		
	3. I like to do things that are a little frightening	.830		
	4. I am the kind of person who embraces unfamiliar people, events, and places	.860		
Initiating imagination (T1)	1. I often have unique ideas compared to others	.926	.87	.98
	2. I can develop ideas by examining different perspectives	.937		
	3. I often try untraditional approaches in a project	.932		
	4. I often have a rich diversity of ideas	.943		
	5. I often use a variety of ways to express ideas	.929		
	6. I can constantly come up with various ways to do a project	.926		
Conceiving imagination (T1)	1. I know how to concentrate on imagination and prevent myself from distraction	.926	.85	.96
	2. I can continue to focus on a project until the ideas are formed	.921		
	3. I often invest prolonged time on the project until a resolution is found	.932		
	4. I constantly revise my ideas to reach satisfactory results	.904		
Transforming imagination (T1)	1. I often express my feelings by using concrete ideas	.926	.87	.97
	2. I can express abstract ideas by using examples from daily life	.931		
	3. I can illustrate difficult ideas with some key concepts	.926		
	4. I can explain unfamiliar concepts with examples common to a target audience	.950		
	5. I can transfer similar ideas to various situations	.938		
Hope (T2)	1. If I should find myself in a jam at work, I could think of many ways to get out of it.	.867	.79	.96
	2. At the present time, I am energetically pursuing my work goals.	.893		
	3. I can think of many ways to reach my current work goals.	.914		
	4. At this time, I am meeting the work goals that I have set for myself.	.907		
	5. Right now I see myself as being pretty successful at work.	.864		
	6. There are lots of ways around any problem.	.889		
Optimism (T2)	1. When things are uncertain for me at work, I usually expect the best.	.868	.71	.93
	2. It's easy for me to take it easy.	.868		
	3. If something can go wrong for me work-wise, it will. (R)	.451		
	4. I'm optimistic about what will happen to me in the future as it pertains to work.	.928		
	5. I always look on the bright side of things regarding my job.	.923		
	6. I approach this job as if "every cloud has a silver lining."	.898		
Resilience (T2)	1. It does not take me long to recover from a stressful event	.885	.73	.91
	2. I usually take stressful things at work in stride.	.924		

	3. I tend to bounce back quickly after hard times	.934		
	4. When I have a setback at work, I have trouble recovering from it, moving on. (R)	.645		
Self-efficacy (T2)	1. I feel I can handle many things at a time at this job.	.905		
	2. I have enough energy to join other activities related to the work.	.894		
	3. I can manage the time to join other activities related to the work.	.875		
	4. I can efficiently solve over loading tasks from work.	.934		
	5. I can get through difficult times at work because I've experienced difficulty before	.908	.82	.97
	6. I can understand the knowledge related to the work.	.919		
	7. I usually manage difficulties one way or another at work	.907		
	8. I can be "on my own," so to speak, at work if I have to	.909		

Note: (R) indicates reversed items.

Table 3. Correlation analysis and descriptive statistics

	Variable	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.	Age	2.55	1.51	-														
2.	Gender	1.66	.48	.22**	-													
3.	Student	.57	.49	-.89**	-.22**	-												
4.	Full-time employee	.21	.41	.49**	.10	-.60**	-											
5.	Government employee	.06	.24	.24**	-.06	-.29**	-.13**	-										
6.	Housekeeper and others	.16	.36	.53**	.22**	-.50**	-.22**	-.11*	-									
7.	Stretching curiosity	6.14	.76	.11**	-.03	-.12**	.03	.15**	.03	-								
8.	Embracing curiosity	5.86	.91	.14**	-.02	-.15**	.08	.13**	.03	.79**	-							
9.	Initiating imagination	5.67	.98	.08	-.04	-.07	-.00	.13**	.01	.67**	.65**	-						
10.	Conceiving imagination	5.66	.99	.12**	.04	-.12**	.03	.12**	.06	.64**	.59**	.74**	-					
11.	Transforming imagination	5.80	.92	.09	-.02	-.10*	.01	.14**	.04	.65**	.63**	.83**	.75**	-				
12.	Hope	5.79	.95	.07	.01	-.06	-.00	.08	.03	.42**	.45**	.40**	.46**	.43**	-			
13.	Optimism	5.23	.89	.20**	.03	-.19**	.09*	.04	.14**	.32**	.38**	.32**	.43**	.33**	.72**	-		
14.	Resilience	5.03	.89	.21**	-.00	-.18**	.06	.03	.16**	.29**	.35**	.37**	.35**	.28**	.57**	.68**	-	
15.	Self-efficacy	5.85	.92	.07	.01	-.06	.01	.06	.03	.44**	.43**	.43**	.43**	.44**	.80**	.69**	.60**	-

Note. n = 519; * p < .05; ** p < .01.

Table 4. Results of hierarchical regression analyses

Variables		Psychological capital		
Model		Model 1	Model 2	Model 3
Age		.22*	.18†	.16†
Gender		-.02	-.01	-.02
Student (reference group)				
Full-time employee		-.04	-.07	-.07
Government employee		-.01	-.08	-.07
Housekeeper and others		-.08	-.09	-.09
Stretching curiosity			.03*	.01*
Embracing curiosity			.24***	.30***
Initiating imagination			-.03	-.00
Conceiving imagination			.28***	.30***
Transforming imagination			.07	.03
Stretching curiosity* Initiating imagination				-.13
Stretching curiosity* Conceiving imagination				.24†
Stretching curiosity* Transforming imagination				-.23*
Embracing curiosity* Initiating imagination				.24*
Embracing curiosity* Conceiving imagination				.30*
Embracing curiosity* Transforming imagination				-.40***
ΔR^2		.01	.28	.30
R^2		.02	.29	.32
F		2.52*	21.04***	14.53***

Note. n = 519; † represents $p < .1$; * $p < .05$; ** $p < .01$; *** $p < .001$.

Student group be a reference group.