

Cognitive capital and Post-traumatic Growth among Medical Staff in China

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Objectives: We investigated the perceived post-traumatic growth of medical staff during the treatment period of COVID-19 in China, explored the impact of cognitive capital on post-traumatic growth, verified the moderating effect of optimistic personality, and put forward suggestions that could effectively promote individual post-traumatic growth after the epidemic. **Methods:** Through statistical survey, we collected data from 760 medical staff on duty during the treatment of COVID-19 from 19 provinces. The hypotheses are tested using correlation analysis, hierarchical regression, bootstrap analysis and so on. **Results:** The investigated medical staff had obvious post-traumatic growth after COVID-19 treatment. It had been confirmed that cognitive capital could effectively advance post-traumatic growth by boosting the individual's perceived organizational identity. High optimistic personality had moderating effect on the mediating relations between cognitive capital and post-traumatic growth through perceived organizational identity. **Conclusion:** Optimistic individuals were better at using cognitive capital for personal growth. Organizations should attach importance to the positive effects of individual cognitive capital, and promoted the formation of post-traumatic growth by forming the shared vision and advocating the shared language within the organization.

Key words: cognitive capital; medical staff; post-traumatic growth; optimism; organizational identity

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2020 is a special year for human being. The covid-19 has swept the whole world, with more than 100 million people diagnosed. The epidemic has varying impact on everyone's life, especially for the medical staff who are working on the front line during the epidemic¹. In the process of treating patients, they have always been in high-intensity and high-pressure work, but they have not been crushed². Not only have they bravely met the challenge, but they are also developing in different ways. Many of them have developed new skills,

acquired new development opportunities and rethought the life value³. In the main focus of contemporary positive psychology, adversity is inevitable in our life. Everyone encounters difficulties, but many people will re-examine themselves and re-determine the meaning of life when faced with trauma.⁴ Adversity can not only bring trauma to people but also bring growth, namely post-traumatic growth. Medical staff are respected and recognized by the entire society and their cognitive capital has always been at a relatively high level. In the face of covid-19, they have demonstrated extraordinary

unity, no one has cared about personal gains and losses, and their perceived belonging and identity in the organization has been unprecedentedly high. Through the statistical survey, this study tries to verify whether cognitive capital can promote post-traumatic growth through perceived organizational identity especially when individuals have high optimism.

At present, the more recognized definition of cognitive capital comes from the research of Nahapiet and Ghoshal,⁵ which is considered to be a dimension of social capital. Cognitive capital refers to the system that provide shared symbols, methods, and deductions. The key to the cognitive capital includes shared culture, vision, goals, shared language and coding. In Uphoff study,⁶ cognitive capital refers to collective action that guides people toward shared benefits based on shared norms, values, attitudes and beliefs and reflects people's thoughts and feelings which is more subjective. Studies by Bharati et al and other scholars all support the existence of cognitive capital.^{7,8} Existing research has proved the influence of cognitive capital on performance, innovation, knowledge transfer and sharing, fairness perception, and employee behaviors. the research of Inkpen and Tsang verifies the impact of cognitive capital on organizational performance.⁹ Cognitive capital is conducive to value creation within the organization and thus to organizational innovation.¹⁰ The research of García-Villaverde et al proves that cognitive capital can effectively promote employees' knowledge absorption capacity and enhance entrepreneurial orientation.¹¹ The empirical research of Van Dijk et al verifies that cognitive capital has a significant positive influence on the process of knowledge sharing and the quality of knowledge sharing.¹² At present, the research on cognitive capital mainly focuses on the field of knowledge management.

When employees' self-perception is consistent with the organization, they will have perceptual and emotional attachment to the organization, and strive to be consistent with other members of the organization,¹³ that is, a sense of organizational identity will be generated. Mael and Ashforth believe that organizational identity is the

perception that employees are consistent with the organization or belong to the organization.¹⁴ Miller et al define organizational identity as individuals who regard themselves as members of the organization,¹⁵ identify with the organization's mission, organizational values, and organizational goals, and combine personal interests with organizational interests. A lot of studies have proved that organizational factors and personal factors can affect an individual's perceived organizational identity. Dukerich points out that the organizational reputation and attractiveness will promote employees perceived organizational identity.¹⁶ When the organization gives professional, personal, financial, and social support and care to their members, it will contribute to the organizational identity.¹⁷ The study of Mayers and Kassing verifies that managers' communication skills can improve employees' sense of identity with the organization.¹⁸ Extroverted personality is more likely to facilitate organizational identity, while people with neurotic personality are also generally lower in their organizational identity.¹⁹ The research of Kreiner and Ashforth proves that the intensity of organization members' demand for belongs is related to organizational identity.²⁰ When there is a shared vision and shared goals within the organization, the individual's sense of belonging will increase. A shared language of communication also helps to strengthen a strong organizational culture. Schrodt proves that organizational culture can significantly affect the formation of organizational identity.²¹ Therefore, we propose research hypothesis 1.

hypothesis 1: Cognitive capital has a significant positive impact on organizational identity.

It is difficult to avoid trauma during personal growth. There are different individual reactions after experiencing a traumatic event. It is not only limited to negative reactions, but also manifested in a series of positive changes in self-awareness, values and other cognitive response. Negative effects and positive effects can exist at the same time. Tedeschi and Calhoun defines the existence of post-traumatic growth, which is the positive aspect of the individual facing the traumatic event, and positive psychological changes experienced by the individual during the process of fighting the traumatic event.²² This positive change can be reflected in the enhancement of personal strength, the emergence of new opportunities, the improvement of interpersonal relationships, the change of life philosophy, and spiritual sublimation. At present, a large number of

studies have confirmed the existence and influencing factors of post-traumatic growth. There are gender differences in the occurrence of post-traumatic growth. Women are more likely to develop post-traumatic growth than men, and post-traumatic growth is more pronounced as they grow older.²³ Traumas caused by natural causes are more likely to stimulate an individual's post-traumatic growth.²⁴ The study by Milam et al points out that when individuals have religious beliefs, they are more likely to gain post-traumatic growth.²⁵ Maercker and Zoellner demonstrate that emotional coping styles will promote more individual growth and positive attitudes.²⁶ Evaluation and positive religious coping styles are also positively correlated with individuals' post-traumatic growth. Personality traits such as optimistic personality, humor, and high extroversion play a critical role in forecasting the occurrence of post-traumatic growth.²⁷ When individuals can perceive the shared vision and language within the organization, they will recognize themselves as the organization members, and their organizational identity will increase as a result, which will help them cope with emergencies and high-pressure work, and is more likely to stimulate their self-growth.²⁸ Therefore, we propose research hypothesis 2.

H2: Cognitive capital affects post-traumatic growth through perceived organizational identity.

Dember et al defines optimism as a positive attitude and behavior towards life. Optimistic people see the world from the good, positive or constructive aspects of the past, present, and future, and this attitude can be reflected in practical actions.²⁹ Optimism is regarded as the core concept of modern positive psychology. Optimistic individuals will attribute negative events, negative experiences, and individual setbacks or failures to external, temporary, and specific factors, rather than internal, permanent, and universal. Optimistic people are more likely to be happier.⁴ Individuals with an optimistic attitude are less anxious when facing emergencies and stress in life, and are more likely to deal with it calmly.³⁰ The individual's sense of social support will strengthen optimism, thereby weaken the individual's anxiety. When an organization has a shared vision and a shared

language, the role of organization individual member is strengthened, and they are more confident in the available support. The reduction in anxiety will enable them to effectively deal with complex situations, and they will be more likely to grow and develop³¹. Therefore, we propose research hypothesis 3 and hypothesis 4.

H3: Optimism has a moderating effect between cognitive capital and organizational identity. Organizational identity will strengthen the influence of cognitive capital on organizational identity.

H4: Optimism has a mediated moderating effect on the relations between cognitive capital, organizational identity and post-traumatic growth.

METHODS

Participants

In order to explain the impact of cognitive capital on post-traumatic growth, from June to July 2020, a convenient sampling method was used to collect data from public hospitals in 19 provinces including Shanghai, Jiangsu, Beijing and so on. The questionnaire involved medical staff's cognitive capital, organizational identity, post-traumatic growth, optimism and related demographic characteristics. We sent 900 questionnaires, and finally collected 835 questionnaires, the recovery rate is 92.8%. There were 760 valid questionnaires with an effective recovery rate of 84.4%.

In this survey, there are 124 males and 636 females, There is a higher proportion of female samples because the nursing staff are mainly females. In terms of the age, there are 471 respondents in the 20-30 age group, accounting for 62% of the sample; there are 199 respondents in the 30-40 age group, accounting for 26.2% of the sample, and there are 80 respondents in the 40-50 age group, accounting for 10.5% of the sample, there are 9 respondents in the 50-60 age group, accounting for 1.2% of the sample, and there is only 1 respondent above 60, accounting for 0.1% of the total sample. Most of the medical staff under investigation are young people and have received higher education. 563 respondents have a bachelor degree, accounting for 74.1% of the sample; 95 respondents have a master's degree, accounting for 12.5% of the sample, and 19 respondents have a doctoral degree, accounting for 2.5% of the sample. There are 182 doctors in the survey, accounting for 23.9% of the total sample, and 578

nurses, accounting for 76.1% of the total sample. The tenure of most medical staff in this survey is less than 10 years. There are 516 medical staff from designated hospitals for the treatment of COVID-19. 315 medical staff participated in the diagnosis or treatment of patients with COVID-19. 419 medical staff worked more than 10 hours a day.

Measures

Cognitive capital was measured by cognitive capital scale.³² The scale contained 6 items showed on five-point Likert-type scale ranging from 1 (total disagree) to 5 (total agree) with two dimensions: shared vision and shared language. The Cronbach's alpha coefficient was 0.890 and 0.913 respectively. Organizational identity was measured by organizational identity scale.³³ The scale contained 6 items. The Cronbach's alpha coefficient was 0.834. Post-traumatic growth was measured by post-traumatic growth scale.³⁴ The

scale contained 20 items. The Cronbach's alpha coefficient was 0.943. Optimism was measured by optimism scale.³⁵ The scale contained 5 items. The Cronbach's alpha coefficient was 0.930. The scales used in this study all have good reliability.

we first conduct a confirmatory factor analysis, and compare the five-factor model composed of shared vision, shared language, organizational identity, post-traumatic growth and optimism with other factor models, and choose χ^2/df , TLI, GFI, CFI, RMSEA as model fit index. Based on the confirmatory factor analysis result, as shown in table 1: by Compared, the five-factor model has better model fit ($\chi^2/df=1.754$, TLI=0.991, GFI=0.976, CFI=0.994, RMSEA=0.015), and it can be accepted. The model fit index of the single-factor model ($\chi^2/df=35.507$, TLI=0.610, GFI=0.651, CFI=0.736, RMSEA=0.283) is not within the acceptable range. The common method variance in this study is not serious.

Table 1
Confirmatory Factor Analysis

Model	χ^2	DF	χ^2/DF	TLI	GFI	CFI	RMSEA
Five-factor Model	156.078	89	1.754	0.991	0.976	0.994	0.015
Four-factor Model	317.067	87	3.644	0.970	0.952	0.981	0.051
Three-factor Model	1441.102	89	16.192	0.828	0.840	0.888	0.168
Two-factor Model	18881.918	89	21.145	0.772	0.793	0.851	0.161
One-factor Model	3266.645	92	35.507	0.610	0.651	0.736	0.283

DATA ANALYSIS

Descriptive Statistics

Table 2 shows the result of descriptive statistics. The shared vision(3.9531) and shared language (3.9693) of medical staff under investigation are at a relatively high level, which means that the surveyed hospital is more concerned about the construction of organizational culture, so organizational identity of employees is also in a high level (3.8728). During the struggle against the epidemic, medical staff have shown post-traumatic growth to a certain extent (3.9796). Many respondents said that their perception and behavior patterns had changed. Due to the particularity and

professionalism of the profession, though they often work in a high-stress environment, the respondents' overall optimism level is still relatively high (4.0023), which also can help medical staff to cope with high-intensity and complicated work.

This study focuses on the discussing the relationship between the main variables in the model through correlation analysis. After controlling the effect of gender, age, education, position and seniority, shared vision, shared language, organizational identity, post-traumatic growth and optimism all have significant correlations with each other. Respondent shared vision has both significant positive correlation

with organizational identity (0.613**) and post-traumatic growth (0.564**). When employees in an organization share common values, it indicates that the higher their recognition of the organization mission and culture is, the easier it is to promote the formation of post-traumatic growth. Respondent shared language also both has significant positive correlation with organizational identity (0.625**) and post-traumatic growth (0.699**). When employees in an organization use a shared language, it indicates that they will form a strong collective concept, and

the sense of organizational identity will also increase as a result, which will trigger post-traumatic growth. In this study, organizational identity and post-traumatic growth also has positive correlation relation (0.708**). When employees recognize the organization they belong to, the relationship between employees and the organization becomes closer, which also helps employees to grow quickly when encountering high-pressure environments or tasks. Therefore, hypothesis 1 has been initially verified.

Table 2
Means, Standard Deviations, and Bivariate Correlations

	M	SD	G	A	E	P	T	SV	SL	OI	PTG
G	1.84	.370									
A	1.51	.740	-.262**								
E	2.07	.575	-.297**	.360**							
P	1.76	.427	.512**	-.465**	-.585**						
T	1.95	1.009	-.183**	.831**	.290**	-.324**					
SV	3.9531	.83194	.034	-.184**	-.110**	.196**	-.164**				
SL	3.9693	.83717	-.015	-.050	-.055	.076*	-.049	.546**			
OI	3.8728	.78797	-.053	-.073*	-.051	.087*	-.054	.613**	.625**		
PTG	3.9796	.72343	-.023	-.127**	-.085*	.147**	-.103**	.564**	.699**	.708**	
OP	4.0023	.75743	-.055	-.077*	-.043	.062	-.070	.564**	.634**	.644**	.722**

*p < .05; **p < .01

Note.

M = mean value; SD = standard deviation value; G = gender; A = age; E = education; P = position; T = tenure; SV = Shared Vision; SL = Shared Language; OI = Organizational Identity; PTG = Post-Traumatic Growth; OP = Optimism.

The Mediating Effect

We use hierarchical regression to verify the mediating effect of organizational identity between cognitive capital and post-traumatic growth. Cognitive capital will be discussed in two dimensions: shared vision and shared language as shown in table 3. Model 1 to Model 3 examine the mediating effect of organizational identity between the relation of shared vision and post-traumatic growth. In model 1, when we control gender, age,

education, position and tenure, the β value is 0.478 ($p < .001$), and ΔR^2 is 0.325, indicating that shared vision and post-traumatic growth shows a significant positive correlation. In model 2, when we control gender, age, education, position and tenure, the β value is 0.585 ($p < .001$), and ΔR^2 is 0.382, indicating that a highly significant correlation exists between shared vision and organizational identity. In model 3, when we control gender, age, education, position and tenure, the β value of shared vision is 0.166 ($p < .001$), the

organizational identity β value is 0.534($p<.001$), and ΔR^2 is 0.566. The β value of shared vision has declined, and it still shows a significant positive correlation with post-traumatic growth. Above all, shared vision has significant positive relation with organizational identity and post-traumatic growth. The organizational identity plays a mediating role between shared vision and post-traumatic growth. Model 4 to Model 6 examine the mediating effect of organizational identity between the relation of shared language and post-traumatic growth. In model 4, when we control gender, age, education, position and tenure, the β value is 0.687 ($p<.001$), and ΔR^2 is 0.507, indicating that shared language and post-traumatic growth shows a significant positive correlation. In

and ΔR^2 is 0.394, indicating that a highly significant correlation exists between shared language and organizational identity. In model 6, when we control gender, age, education, position and tenure, the β value of shared language is 0.420($p<.001$), the organizational identity β value is 0.433($p<.001$), and ΔR^2 is 0.616. The β value of shared language has declined, and it still shows a significant positive correlation with post-traumatic growth. Above all, shared language has significant positive relation with organizational identity and post-traumatic growth. The organizational identity plays a mediating role between shared language and post-traumatic growth. Therefore, hypothesis 2 have been verified. In summary, the organizational identity has a mediating effect between cognitive capital and post-traumatic growth.

Table 3
Mediating multiple regression results (N=760)

	Model 1 PTG	Model2 OI	Model3 PTG		Model4 PTG	Model5 OI	Model6 PTG
Gender	-.163*	-.162*	-.077	Gender	-.085*	-.089*	-.046*
Education	-.002	-.014	.006	Education	.021	.013	.015
Position	.125	.016	.116	Position	.118*	.074	.086*
Tenure	.015	.038	-.006	Tenure	.010	.032	-.003
SV	.478***	.585***	.166***	SL	.687***	.617***	.420***
OI			.534***	OI			.433***
ΔR^2	0.325**	0.382***	0.566***	ΔR^2	0.507***	0.394***	0.616***
F	60.325	77.633	122.968	F	128.859	83.143	174.873

* $p < .05$ ** $p < .01$ *** $p < .001$
 Note.
 SV = shared vision; SL= shared language; OI = organizational identity; PTG = post-traumatic growth; OP = optimism.

model 5, when we control gender, age, education, position and tenure, the β value is 0.617 ($p<.001$),

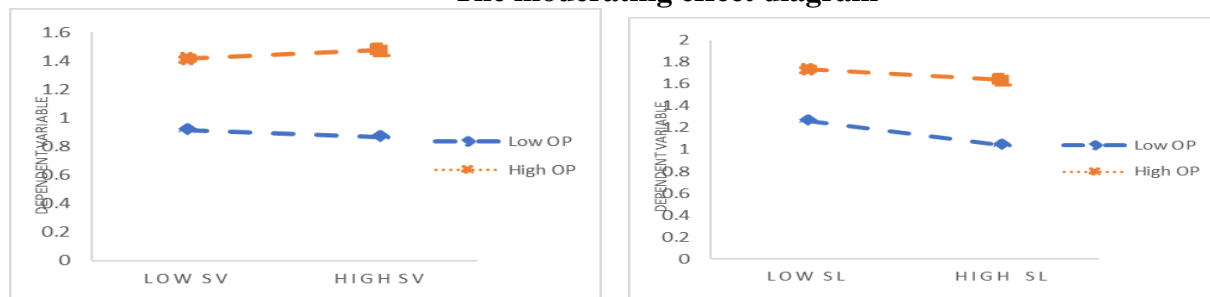
The Moderating Effect

We use the process program to further verify the mediating effect of organizational identity between cognitive capital and post-traumatic growth when the optimism effect is taken into account, the moderating effect of optimism between cognitive capital and organizational identity, and at last we try to test the moderated meditating effect of

optimism on cognitive capital, organizational identity, and post-traumatic growth.

As shown in table 4, In the direct effect of organizational identity between shared vision and post-traumatic growth ($b=0.1809$, $SE=0.0274$), the 95% confidence interval(CI) is [0.1271, 0.2348], At low level of optimism, in the indirect effect ($b=0.0715$,

Figure 1
The moderating effect diagram



Note.

SV = shared vision; SL= shared language; OP = optimism.

SE=0.0230), the 95% CI is [0.0275, 0.1181], At high level of optimism, in the indirect effect ($b=0.1272$, SE=0.0212), the 95% CI is [0.0892, 0.1724]. The results mean organizational identity has a mediating role between shared vision and post-traumatic growth. In the direct effect of organizational identity between shared language and post-traumatic growth ($b=0.3642$, SE=0.0251), the 95% CI is [0.3149, 0.4135], At low level of optimism, in the indirect effect ($b=0.0311$, SE=0.0178), the 95% CI is [-0.0037, 0.0671], and the mediating effect does not exit at low level. At high level of optimism, in the indirect effect ($b=0.0819$, SE=0.0184), the 95% CI is [0.0489, 0.1205]. The results mean organizational identity only plays a mediating role between shared languages and post-traumatic growth at high level of optimism.

When optimism at a low level, the 95% CI of the moderating effect between shared vision and organizational identity ($b=0.1341$, SE=0.0323) is [0.0707, 0.1974], which means optimism at a low level has a moderating effect between shared vision and organizational identity. while at a high level of optimism, the 95% CI of the moderating effect between shared vision and organizational identity ($b=0.2385$, SE=0.0298) is [0.1800, 0.2970], which means optimism has a moderating effect at a high level between shared vision and organizational identity. When optimism at a low level, the 95% CI of the moderating effect between shared language and organizational identity ($b=0.0762$, SE=0.0342) is [0.0091, 0.1434], which means optimism has a moderating effect at a low level between shared language and organizational identity.

while at a high level of optimism, the 95% CI of the moderating effect between shared language and organizational identity ($b=0.2004$, SE=0.0327) is [0.1362, 0.2646], which means optimism has a moderating effect at a high level between shared language and organizational identity. Therefore, hypothesis 3 has been initially verified. Organization members with high optimism are more likely to form organizational identity with high cognitive capital. The moderating effect diagram is shown in figure 1. We test the mediated moderating effect ($b=0.0278$, SE=0.0146) of optimism on shared vision, organizational identity, and post-traumatic growth, 95% CI is [0.0007, 0.0587], it shows that optimism plays a mediated moderating effect. At last, we test the mediated moderating effect ($b=0.0254$, SE=0.0125) on shared language, organizational identity, and post-traumatic growth, 95% CI is [0.0027, 0.0508]. it shows that optimism plays a mediated moderating role. Therefore, hypothesis 4 has been initially verified. Optimism has a mediated moderating effect on relations between cognitive capital, organizational identity, and post-traumatic growth.

RESULT

In the light of investigation and analysis, all the hypotheses of this study have been verified. Cognitive capital plays a mediating role in organizational identity and post-traumatic growth. The organization shared vision and shared language can effectively promote the post-traumatic growth of individuals by forming a sense of organizational identity. Optimism plays a moderating role in cognitive capital and organizational identity. Individuals with high optimism are more likely to form organizational identity due to cognitive capital. Optimism plays a mediated moderating role in the

relationship between cognitive capital, organizational identity, and post-traumatic growth. When an individual's optimism is at a higher level, the organization's shared vision and shared language are more likely to promote individual post-traumatic growth through stimulating organizational identity.

DISCUSSIONS

When encountering trauma, people are more concerned about the negative impact on individuals, especially post-traumatic stress disorder (PTSD). It is undeniable that tremendous psychological pressure does cause individuals to have some negative emotions and behaviors. However, in a large number of previous studies, scholars have found that growth is also a very common result, especially when individuals recognize themselves, growth is more likely to happen. In this study, we have also found this phenomenon. Although medical staff have experienced absolutely challenging tasks and faced tremendous psychological pressure, they have experienced some positive changes after this epidemic: their attitude towards life has become positive, interpersonal relationships have also been improved, they have more confidence in their own personal strength, they have discovered many new opportunities, and lots of people believe that they have also been sublimated on the spiritual level. These are all positive effects after trauma and represent personal growth. Individuals will become stronger because of this growth and will better face new challenges in the future. These positive changes are not only valuable for medical staff, in fact they are meaningful for all jobs and individuals. Therefore, it should receive extensive attention to promote post-traumatic growth. Organizations should strongly advocate these behaviors instead of total suppression. Organizations can promote employees' post-traumatic growth by enhancing employees' cognitive capital. Organizations should emphasize value management and organizational culture, so that individuals can understand and recognize organizational vision and core values. Through ritual activities, it helps the organization members to form a shared cognition and language. In the face of

crises and trauma, a high degree of identification with the organization will enhance employees' sense of security and belongings, and will give them new meaning and value in their high-intensity work, which will definitely promote their post-traumatic growth.

Study Limitations

The study has some limitations. First, we used convenience sampling method, which may have resulted in selection bias. Additionally, Due to the limitation of time and energy, the study adopts to cross-sectional data without longitudinal analysis, which may affect the research conclusion; thus, future research will adopt longitudinal data to analyze the relationship between variables. Moreover, The statistical analysis method is single. In the future, a variety of statistical analysis methods can be adopted to improve the persuasiveness of research conclusions.

Implications for Practice and Suggestions for Future Research

In reality, there are indeed some people who are completely depressed after trauma, and even have various psychological problems, such as depression, anxiety, and loss of control. Therefore, in addition to environmental factors, are there individual differences in the emergence of post-traumatic growth? Which personal characteristics are more conducive to the occurrence of post-traumatic growth?

This research only discusses the role of optimism. What is the effect of other positive traits such as benevolence, gratitude, optimism, courage, hard work, tough and other factors which are often mentioned in positive psychology? All these are worthy of discussion in future research.

Approval Statement

This study was approved by the Higher Education Fund of the Government of Macau Special Administrative Region (DSES-21-006c-MSB). Respondents were informed about the aim of the study and anonymity during the entire process of data collection and analysis. They knew there was no pressure to complete the questionnaire.

Conflicts of Interest Disclosure Statement

The authors declare no conflict of interest in the authorship or publication of this work. The authors declare no sponsored financial sources for the undertaken study.

Author Declaration

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References

1. Alvi M M, Sivasankaran S, Singh M. Pharmacological and non-pharmacological efforts at prevention, mitigation, and treatment for COVID-19. *J. Drug Target.* 2020; 28(7-8): 742-754.
doi:10.1080/1061186X.2020.1793990
2. Rommer D. The Psychological Ill-Health of Frontline Medical Staff Working with COVID-19 Patients: Burnout, Anxiety, and Post-Traumatic Stress Disorder. *Psycho sociological Issues in Human Resource Management.* 2020; 8(1): 13–18.
doi:10.22381/PIHRM8120202.
3. Lieblich A. The contribution of narrative approach to post-traumatic growth. *Journal of Applied Arts & Health.* 2018; 9(2): 253-62.
doi:10.1386/jaah.9.2.253_1
4. Seligman M. Authentic happiness: Using the new positive psychology to realize your potential for lasting fulfillment. New York: Free Press; 2002.
5. Nahapiet J, Ghoshal S. Social capital, intellectual capital, and the organizational advantage. *Academy of Management Review.* 1998; 23(2): 242-266.
doi:10.2307/259373.
6. Uphoff N. Agroecological Implications of the system of rice intensification (SRI) in Madagascar. *Environment, Development and Sustainability.* 1999; 1(3): 297-313.
doi:10.1023/A:1010043325776.
7. Bharati P, Zhang W, Chaudhury A. Better knowledge with social media? Exploring the roles of social capital and organizational knowledge management. *Journal of Knowledge Management.* 2015; 19(3): 456-475.
doi:10.1108/JKM-11-2014-0467.
8. Suseno Y, Pinnington A H. Building social capital and human capital for internationalization: The role of network ties and knowledge resources. *Asia Pacific journal of management.* 2018; 35(4): 1081-1106.
doi:10.1007/s10490-017-9541-0
9. Inkpen A C, Tsang E W K. Social capital, networks, and knowledge transfer. *Academy of Management Review.* 2005; 30(1): 129-145.
doi:10.5465/AMR.2005.15281445
10. Tsai W P, Ghoshal S. Social capital and value creation: the role of intrafirm networks. *Academy of Management Journal.* 2017; 41(4): 464-476.
doi:10.2307/257085
11. Rodrigo-Alarcón J, García-Villaverde P M, Ruiz-Ortega M J, et al. From social capital to entrepreneurial orientation: The mediating role of dynamic capabilities. *European Management Journal.* 2018; 36(2): 195-209.
doi:10.1016/j.emj.2017.02.006
12. Van Dijk A, Hendriks P, Romo-Leroux I. Knowledge sharing and social capital in globally distributed execution. *Journal of Knowledge Management.* 2016; 20(2): 327-343.
doi:10.1108/JKM-07-2015-0268
13. Riketta M. Organizational identification: a meta-analysis. *Journal of Vocational Behavior.* 2005; 66(2): 358-384.
doi: 10.1016/j.jvb.2004.05.005
14. Mael F A, Ashforth B E. Personal psychology. *SA Journal of Industrial Psychology.* 1999; 1: 309.
15. Miller V D, Allen M, Casey M K, et al. Reconsidering the organizational identification questionnaire. *Management Communication Quarterly.* 2000; 13(4): 626-658.
doi:10.1177/0893318900134003
16. Dukerich J M, Golden B R, Shortell S M. Beauty is in the eye of the beholder: the impact of organizational identification, identity, and image on the cooperative behaviors of physicians. *Administrative science quarterly.* 2002; 47(3): 507-533.
doi:10.2307/3094849
17. Morgan C. Structure, speed and salience: performance measurement in the supply chain. *Business Process Management Journal.* 2004; 10(5): 522-536.
doi:10.1108/14637150410559207
18. Myers S A, Kassing J W. The relationship between perceived supervisory communication behaviors and subordinate organizational identification. *Communication Research Reports.* 1998; 15(1): 71-81.
doi:10.1080/08824099809362099
19. Johnson J A. Ascertaining the validity of individual protocols from Web-based personality inventories. *Journal of Research in Personality.* 2005; 39(1): 103-129.
doi:10.1016/j.jrp.2004.09.009
20. Kreiner G E, Ashforth B E. Evidence toward an expanded model of organizational identification. *Journal of Organizational Behavior.* 2004; 25(1): 1-27.
doi:10.1002/job.234
21. Schrodtt P. The relationship between organizational identification and organizational culture: Employee perceptions of culture and identification in a retail sales organization. *Communication studies.* 2002; 53(2): 189-202.
doi:10.1080/10510970209388584
22. Tedeschi R G, Calhoun L G. The posttraumatic growth inventory: measuring the positive legacy of trauma. *Journal of Traumatic Stress.* 1996; 9(3): 455–471.
doi:10.1002/jts.2490090305
23. Vishnevsky T, Cann A, Calhoun, L G. Gender differences in self-reported posttraumatic growth: A Meta-Analysis. *Psychology of women quarterly.* 2010; 34(1): 110-120.
doi:10.1111/j.1471-6402.2009.01546.x
24. Shakespeare-Finch J, Armstrong D. Trauma type and posttrauma outcomes: differences between survivors of motor vehicle accidents, sexual assault, and bereavement. *Journal of loss & trauma.* 2010; 15(2): 69-82.
doi:10.1080/15325020903373151
25. Milam S N, Savage C, Brewster M A et al. The 12C/13C Isotope Gradient Derived from Millimeter Transitions of CN: The Case for Galactic Chemical Evolution. *The Astrophysical Journal.* 2005; 634(2): 1126-1132.
doi:10.1086/497123
26. Maercker A, Zoellner T. The Janus face of self-perceived growth: toward a two-component model of post-traumatic growth. *Psychological Inquiry.* 2004; 15(1): 41-48.
27. Bellizzi K M, Blank T O. Predicting posttraumatic growth in breast cancer survivors. *Health Psychology.* 2006; 1: 47-56.
doi:10.1037/0278-6133.25.1.47

28. Laupacis A. Working Together to Contain and Manage COVID-19. *Canadian Medical Association Journal*. 2020; 192(13): 340-341.
doi:[10.1503/cmaj.200428](https://doi.org/10.1503/cmaj.200428).
29. Dember W N, Martin S H, Hummer M K, et al. The measurement of optimism and pessimism. *Current Psychology*. 1989; 8(2): 102-119.
doi:[10.1007/BF02686675](https://doi.org/10.1007/BF02686675)
30. Thompson S C, Ting S A. Avoidance denial versus optimistic denial in reaction to the threat of future cardiovascular disease. *Health Education & Behavior*. 2012; 39(5): 620-629.
doi:[10.1177/1090198111428154](https://doi.org/10.1177/1090198111428154)
31. Smith G D, Ng F, Ho Cheung L W. COVID-19: Emerging Compassion, Courage and Resilience in the Face of Misinformation and Adversity. *Journal of Clinical Nursing*. 2020; 29(9-10): 1425-1428.
doi:[10.1111/jocn.15231](https://doi.org/10.1111/jocn.15231)
32. Chiu C M, Hsu M H, Wang E T G. Understanding knowledge sharing in virtual communities: An integration of social capital and social cognitive theories. *Decision Support Systems*. 2006; 42(3): 1872-1888.
doi:[10.1016/j.dss.2006.04.001](https://doi.org/10.1016/j.dss.2006.04.001)
33. Mael F, Ashforth B E. Alumni and their alma mater: A partial test of the reformulated model of organizational identification. *Journal of organizational behavior*. 1992; 13(2): 103-123.
doi:[10.1002/job.4030130202](https://doi.org/10.1002/job.4030130202)
34. Calhoun L G, Tedeschi R G. Handbook of posttraumatic growth : research and practice/ edited by Lawrence G. Calhoun and Richard G. London: Psychology Press; 2014.
35. Connor K M , Davidson J R T. Development of a new resilience scale: The Connor-Davidson Resilience Scale (CD-RISC). *Depression and anxiety*. 2003; 4(2): 76-82.
doi:[10.1002/da.10113](https://doi.org/10.1002/da.10113)