



THE HONG KONG  
POLYTECHNIC UNIVERSITY

香港理工大學

Pao Yue-kong Library

包玉剛圖書館

---

## Copyright Undertaking

This thesis is protected by copyright, with all rights reserved.

**By reading and using the thesis, the reader understands and agrees to the following terms:**

1. The reader will abide by the rules and legal ordinances governing copyright regarding the use of the thesis.
2. The reader will use the thesis for the purpose of research or private study only and not for distribution or further reproduction or any other purpose.
3. The reader agrees to indemnify and hold the University harmless from and against any loss, damage, cost, liability or expenses arising from copyright infringement or unauthorized usage.

### IMPORTANT

If you have reasons to believe that any materials in this thesis are deemed not suitable to be distributed in this form, or a copyright owner having difficulty with the material being included in our database, please contact [lbsys@polyu.edu.hk](mailto:lbsys@polyu.edu.hk) providing details. The Library will look into your claim and consider taking remedial action upon receipt of the written requests.

Pao Yue-kong Library, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong

<http://www.lib.polyu.edu.hk>

**WORK-RELATED STRESS AMONG HONG KONG POLICE  
OFFICERS IN THE COVID-19 PANDEMIC: A MIXED-METHOD  
STUDY**

**CHEUNG YUEN KIU**

**PhD**

**The Hong Kong Polytechnic University**

**2023**

The Hong Kong Polytechnic University  
Department of Applied Social Sciences

Work-related Stress among Hong Kong Police Officers in the COVID-19  
Pandemic: A Mixed-method Study

CHEUNG Yuen Kiu

A thesis submitted in partial fulfilment of the requirements for the degree of  
Doctor of Philosophy

June 2023

**CERTIFICATE OF ORIGINALITY**

I hereby declare that this thesis is my own work and that, to the best of my knowledge and belief, it reproduces no material previously published or written, nor material that has been accepted for the award of any other degree or diploma, except where due acknowledgement has been made in the text.

\_\_\_\_\_ (Signed)

\_\_\_Yuen Kiu CHEUNG\_\_\_ (Name of student)

## ABSTRACT

**Significance, knowledge gaps, and goal of this research:** Police work-related stress that was found associated with several adverse consequences, such as burnout, poor work performance, and increased turnover intention deserves more research effort. Since the past decade, Hong Kong police officers have encountered work-related stress driven by increasing demands and reducing supporting resources. For the demands side, stressors (from organizational, operational, public, and pandemic), and work-family conflict confronting police officers have been widely investigated in the previous studies. For the resources side, supervisory, organizational, personal, and social support have also been examined empirically. However, it remains unclear if internal procedural justice can be a resource that helps reduce police work-related stress. Besides, it was found conclusion drawn from the previous studies were mainly based on quantitative research design, so a contextual and subjective understanding of this topic is lacking. To fill these gaps, the goal of this research is to yield a comprehensive and in-depth understanding of the factors influencing work-related stress and the formation process among Hong Kong police officers with the explanation of the job demands-resources (JD-R) model.

**Methods:** A mixed-method research design was adopted in this research. Three interlocking and sequential studies were conducted in a complementary way. Study One using a scoping review approach categorized the factors influencing police work-related stress directly or indirectly from a multi-level perspective based on 30 selected studies. Study Two used secondary survey data from 335 participants and examined predictors and mediators of work-related stress among Hong Kong police officers. Structural equation modeling (SEM) was used for quantitative data analysis. Study Three conducted 16 semi-structured interviews with a timeline approach and identified the context, process, scenario, and subjective experiences

of work-related stress among Hong Kong police officers. Template analysis was used for qualitative data analysis.

**Key findings, innovations, and originality:** Similar to the previous studies, this research demonstrated the applicability of the JD-R model in explaining work-related stress in Hong Kong policing context. Both quantitative and qualitative data showed connection between job demands (e.g. organizational, operational, public, and pandemic stressors) and job resources (e.g. supervisory support) and work-related stress among Hong Kong police officers. As a theoretical innovation, this research extended the JD-R model by including internal procedural justice as a job resource to reduce police work-related stress. As a methodological innovation, this research adopted a timeline approach in the semi-structured interviews with Hong Kong police officers to understand their work-related stress in different waves of the COVID-19 pandemic. To the researcher knowledge, it is the first attempt to use a timeline approach in understanding police work-related stress during the pandemic.

**Implications and conclusion:** In sum, in addition to the aforementioned theoretical and methodological implications, results from this research may contribute to generate some practical solutions to alleviate the workplace sustainability issues, such as high turnover intention, shortage of manpower, and impaired job performance, following the COVID-19 pandemic. Promoting internal procedural justice can be a suggestion. It is crucial for police officers to feel being treated with justice by their supervisor and organization. For example, police supervisors are suggested to promote greater fairness and transparency in duty allocation and disciplinary decisions respectively. Whereas, police organizations should distribute rewards and punishments equitably.

**PUBLICATION ARISING FROM THE THESIS**

Cheung, Y.-K., & Li, J. C.-M. (2023). Predictors, mediators and moderators of police work-related stress: A scoping review. *International Journal of Environmental Research and Public Health*, 20(2253), 1-18. <https://doi.org/10.3390/ijerph20032253>

## ACKNOWLEDGEMENTS

I am enormously indebted to my chief supervisor, Dr Jessica LI. Thank you for her professional supervision and constructive guidance during each meeting. I have learned so much from her. Thank you for being supportive throughout my Ph.D. journey. The completion of this thesis would not have been successful without her input.

I would like to convey my sincere appreciation to my co-supervisor, Dr Jasmine ZHU, for her encouragement and support. Thank you for providing valuable comments and feedbacks so that I can improve this thesis.

My sincere thanks goes to my interviewees, who took time out from their busy schedule to participate my interviews. I also greatly appreciate my peers from the Department of Applied Social Sciences. They have made my PhD journey much more pleasant. I am truly grateful to Ms Fanny Cheng and Ms Shirley Hui, who provide support to facilitate my research work.

Most importantly, I express my deepest gratitude to my parents, my elder brother, and my fiancé for their unconditional love and support. I love you all!



## TABLE OF CONTENTS

<b>CERTIFICATE OF ORIGINALITY</b> .....	i
<b>ABSTRACT</b> .....	ii
<b>PUBLICATION ARISING FROM THE THESIS</b> .....	iv
<b>ACKNOWLEDGEMENTS</b> .....	v
<b>LIST OF TABLES</b> .....	xi
<b>LIST OF FIGURES</b> .....	xii
<b>CHAPTER 1: INTRODUCTION</b> .....	1
1.1 The importance of policing in society .....	1
1.2 Definitions.....	2
1.2.1 <i>Stressor</i> .....	2
1.2.2 <i>Work-related stress</i> .....	3
1.2.3 <i>Burnout</i> .....	<b>Error! Bookmark not defined.</b>
1.3 Social movements/riots in Hong Kong and work related stress among Hong Kong police officers.....	4
1.4 The COVID-19 pandemic and work related stress among Hong Kong police officers..	6
1.5 The organizational context and work-related stress among Hong Kong police officers.	7
1.5.1 <i>High turnover rate, decreased staff strength, and the inadequacy of manpower in the Hong Kong Police Force</i> .....	7
1.5.2 <i>Support from supervisors and the Hong Kong Police Force</i> .....	9
1.5.3 <i>Internal procedural justice and police work-related stress</i> .....	10
1.6 Significance of this research .....	11
<b>CHAPTER 2: LITERATURE REVIEW (THEORETICAL EXPLANATIONS)</b> .....	13
2.1 Biological perspective and the GAS.....	16
2.2 Psychological perspective .....	16
2.2.1 <i>The JD-R model</i> .....	17
2.2.2 <i>The transactional model of stress and coping</i> .....	25
2.2.3 <i>The STP model of occupational stress</i> .....	26
2.3 Sociological perspective .....	27
2.3.1 <i>GST</i> .....	27
2.3.2 <i>The gendered organization theory</i> .....	28
2.4 Organizational perspective.....	29
2.4.1 <i>The JDC model</i> .....	29
2.4.2 <i>The JDCS model</i> .....	32
2.4.3 <i>The ERI model</i> .....	35
2.5 Resource-based perspective .....	37
2.5.1 <i>The model of COR</i> .....	37
2.6 Application of work-related stress theories and models across countries .....	41

2.7 The variance of explanation of work-related stress theories and models across countries .....	41
<b>CHAPTER 3: METHODOLOGY</b> .....	<b>53</b>
3.1 Mixed-method research design .....	53
3.2 The current research .....	54
3.3 Study One (Factors influencing police work-related stress: A scoping review).....	58
3.4 Study Two (Predictors and mediators of work-related stress among Hong Kong police officers: A quantitative secondary survey data analysis) .....	59
3.4.1 Source of secondary survey data .....	60
3.4.2 Measures .....	61
3.4.3 Quantitative secondary survey data analysis - SEM .....	64
3.5 Study Three (A contextual understanding of work-related stress among Hong Kong police officers: Qualitative interviews with a timeline approach) .....	68
3.5.1 Participants .....	68
3.5.2 Qualitative data collection procedure and questioning techniques .....	70
3.5.3 Qualitative data analysis.....	75
3.5.4 Qualitative data quality.....	77
3.6 Ethical considerations.....	79
3.7 Anticipated challenges.....	80
<b>CHAPTER 4: STUDY ONE (FACTORS INFLUENCING POLICE WORK-RELATED STRESS: A SCOPING REVIEW)</b> .....	<b>82</b>
4.1 Previous reviews and identified research gaps .....	82
4.2 The current review.....	83
4.3 Methods .....	84
4.3.1 Literature search .....	84
4.3.2 Selection of studies and data extraction.....	85
4.3.3 Assessment of methodological quality .....	88
4.4 Results.....	100
4.4.1 Characteristics of the selected studies .....	100
4.4.2 Demographic predictors .....	101
4.4.3 Personal predictors.....	104
4.4.4 Organizational predictors .....	105
4.4.5 Operational predictors.....	112
4.4.6 Family-related predictors .....	114
4.4.7 Community predictors.....	114
4.4.8 Mediators .....	115
4.4.9 Moderators .....	115
4.4.10 Identified knowledge gaps .....	116

4.5 Discussion and conclusion .....	138
4.5.1 <i>Understanding the sources of police work-related stress from different levels</i> .....	138
4.5.2 <i>Practical implications</i> .....	141
4.5.3 <i>Limitations and future research</i> .....	142
4.5.4 <i>Conclusion</i> .....	143
<b>CHAPTER 5: STUDY TWO (PREDICTORS AND MEDIATORS OF WORK-RELATED STRESS AMONG HONG KONG POLICE OFFICERS: A QUANTITATIVE SECONDARY SURVEY DATA ANALYSIS)</b> .....	145
5.1 Descriptive results of demographic characteristics .....	145
5.2 Descriptive results and reliability test results of the variables used in Study Two .....	146
5.2.1 <i>Work-related stress</i> .....	147
5.2.2 <i>Organizational stressors</i> .....	147
5.2.3 <i>Operational stressors</i> .....	148
5.2.4 <i>Public stressors</i> .....	149
5.2.5 <i>Pandemic stressors</i> .....	149
5.2.6 <i>Supervisory support</i> .....	150
5.2.7 <i>Internal procedural justice</i> .....	150
5.2.8 <i>Work engagement</i> .....	151
5.3 Bivariate results .....	156
5.4 SEM results .....	159
5.5 Hypotheses testing .....	162
5.6 Discussion and conclusion .....	166
5.6.1 <i>Demographic predictors</i> .....	167
5.6.2 <i>Job demands</i> .....	171
5.6.3 <i>Job resources</i> .....	174
5.6.4 <i>Theoretical implications</i> .....	177
5.6.5 <i>Methodological implications</i> .....	178
5.6.6 <i>Practical implications</i> .....	179
5.6.7 <i>Conclusion</i> .....	180
<b>CHAPTER 6: STUDY THREE (A CONTEXTUAL UNDERSTANDING OF WORK-RELATED STRESS AMONG HONG KONG POLICE OFFICERS: QUALITATIVE INTERVIEWS WITH A TIMELINE APPROACH)</b> .....	181
6.1 Qualitative data collection .....	181
6.1.1 <i>A timeline approach</i> .....	181
6.1.2 <i>Process of qualitative data collection</i> .....	184
6.1.3 <i>Questioning techniques</i> .....	185
6.2 Qualitative data analysis .....	185
6.3 Qualitative data quality .....	192

6.4	Participants.....	193
6.5	Demands among Hong Kong police officers .....	196
	6.5.1 <i>Organizational stressors</i> .....	196
	6.5.2 <i>Operational stressors</i> .....	199
	6.5.3 <i>Public stressors</i> .....	200
	6.5.4 <i>Pandemic stressors</i> .....	203
	6.5.5 <i>Work-family conflict stressors</i> .....	205
	6.5.6 <i>Other stressor</i> .....	206
6.6	Resources among Hong Kong police officers.....	207
	6.6.1 <i>Supervisory support</i> .....	208
	6.6.2 <i>Internal procedural justice</i> .....	209
	6.6.3 <i>Organizational support</i> .....	211
	6.6.4 <i>Personal resources</i> .....	213
	6.6.5 <i>Social support</i> .....	215
6.7	Changes of demands/resources across the three time phases .....	220
	6.7.1 <i>Change in organizational stressor (workload) across the three time phases</i> ..	220
	6.7.2 <i>Change in operational stressor (job nature) across the three time phases</i> .....	221
	6.7.3 <i>Change in public stressor (hostility from the public) across the three time phases</i> .....	223
	6.7.4 <i>Change in internal procedural justice (clarity of instructions/policies from supervisors) across the three time phases</i> .....	224
6.8	Demographic comparisons.....	226
	6.8.1 <i>Gender</i> .....	226
	6.8.2 <i>Marital status</i> .....	227
	6.8.3 <i>Tenure</i> .....	228
6.9	Discussion and conclusion.....	229
	6.9.1 <i>Demands among Hong Kong police officers</i> .....	230
	6.9.2 <i>Resources among Hong Kong police officers</i> .....	234
	6.9.3 <i>Theoretical implications</i> .....	238
	6.9.4 <i>Methodological implications</i> .....	239
	6.9.5 <i>Practical implications</i> .....	240
	6.9.6 <i>Reflexivity</i> .....	242
	6.9.7 <i>Conclusion</i> .....	243
<b>CHAPTER 7: DISCUSSION AND CONCLUSION</b> .....		244
7.1	Summary of the studies .....	244
	7.1.1 <i>Study One (Factors influencing police work-related stress: A scoping review)</i> .....	244

7.1.2 Study Two ( <i>Predictors and mediators of work-related stress among Hong Kong police officers: A quantitative secondary survey data analysis</i> ).....	245
7.1.3 Study Three ( <i>A contextual understanding of work-related stress among Hong Kong police officers: Qualitative interviews with a timeline approach</i> ).....	246
7.2 Theoretical implications .....	247
7.2.1 <i>Consistency with previous studies using the JD-R model</i> .....	248
7.2.2 <i>Inconsistency with previous studies using the JD-R model</i> .....	250
7.2.3 <i>Expansion of the JD-R model</i> .....	251
7.3 Practical implications .....	252
7.3.1 <i>Practical implications at the organizational level</i> .....	252
7.3.2 <i>Practical implications at the public level</i> .....	256
7.3.3 <i>Practical implications at the pandemic level</i> .....	257
7.4 Limitations and suggestions for future research .....	258
7.5 Conclusion .....	260
<b>REFERENCES</b> .....	261

## LIST OF TABLES

Table 2. 1 Summary of main findings of studies applying work-related stress theories and models .....	43
Table 3. 1 Three interlocking and sequential studies.....	56
Table 3. 2 Sample matrix for purposive sampling of participants.....	70
Table 4. 1 Inclusion and exclusion criteria.....	85
Table 4. 2 Assessment of methodological quality of quantitative studies .....	89
Table 4. 3 Assessment of methodological quality of qualitative study.....	94
Table 4. 4 Assessment of methodological quality of mixed-method study .....	95
Table 4. 5 Summary of study characteristics and main findings .....	118
Table 4. 6 Demographic predictors of police work-related stress .....	136
Table 5. 1 Percentage distributions, descriptive statistics, and reliability test results .....	152
Table 5. 2 Correlation matrix of all variables.....	158
Table 5. 3 Path analysis results .....	166
Table 6. 1 Number of participants split by gender, marital status, and tenure .....	194
Table 6. 2 Demographic characteristics of interviewees.....	195
Table 6. 3 Template checklist.....	218
Table 7. 1 Summary of key findings on demands and resources of the three studies .....	247

## LIST OF FIGURES

Figure 1. 1 Citizens’ satisfaction with the Hong Kong Police Force from 2012 to 2022 .....	5
Figure 1. 2 Line graph illustrating the number of police officers from 2001 to 2022 (split by gender).....	8
Figure 1. 3 Line graph illustrating the ratio of regular police to population (per 100 000 population) from 2001 to 2022 .....	8
Figure 2. 1 Taxonomy and theoretical perspectives of theories and models of work-related stress.....	15
Figure 3. 1 Flowchart of Study Two and Study Three.....	58
Figure 3. 2 The conceptual framework .....	66
Figure 3. 3 Details of each component.....	67
Figure 3. 4 Semi-structured interview guide .....	73
Figure 3. 5 Phases of the semi-structured interviews.....	75
Figure 4. 1 Flow diagram of the search process .....	87
Figure 5. 1 CFA results .....	161
Figure 5. 2 Path analysis results.....	165
Figure 6. 1 A timeline sheet for collecting qualitative data .....	183
Figure 6. 2 Process of qualitative data analysis .....	188
Figure 6. 3 Initial template .....	189
Figure 6. 4 Revised template .....	190
Figure 6. 5 Final template.....	191
Figure 6. 6 Summary of themes, higher order codes, and codes on demands among Hong Kong police officers.....	207
Figure 6. 7 Summary of themes, higher order codes, and codes on resources among Hong Kong police officers.....	217

Figure 6. 8 Changes of demands/resources across the three time phases ..... 225

Figure 6. 9 Demographic comparison on work-related stress ..... 229



## CHAPTER 1: INTRODUCTION

While investigating work-related stress among Hong Kong police officers, it is essential to understand the political, social, and organizational context relevant to their work-related stress. Before linking the contextual conditions of Hong Kong with the police officers' work-related stress, this chapter highlights the importance of policing in society and offers the conceptual definitions of stressor, work-related stress, and burnout. Then, this chapter focuses on that Hong Kong is being confronted with large-scale social movements/riots and the COVID-19 pandemic in the past decade, and thus driving enormous work-related stress among Hong Kong police officers. It also divides some of its attentions on the organizational context and work-related stress among Hong Kong police officers, and finally ends with emphasizing the significance of this research. This research includes four research questions; (1) How can the factors influencing police work-related stress be categorized at different levels?; (2) What are the direct and indirect factors influencing police work-related stress?; (3) What are the direct and indirect factors of work-related stress among Hong Kong police officers?; and (4) What is the contextual and subjective understanding of the formation process of work-related stress among Hong Kong police officers? Study One seeks to answer the first and second research questions (see Chapter 4 for details). Study Two and Study Three seeks to answer the third and fourth research question respectively (see Chapter 5 and 6 for details). The goal of this research is to gain a comprehensive and in-depth understanding of work-related stress among Hong Kong police officers.

### 1.1 The importance of policing in society

The nature of police work can be dangerous and stressful (He et al., 2002; Kale & Gedik, 2018; Liberman et al., 2002; Magnavita & Garbarino, 2013; Marmar et al., 2006) due to the exposure of critical incidents and traumatic duties/events, for example, dealing with

abused children and dead bodies, pursuing suspects, threat of injury or death, and violence (Korre et al., 2014; Liberman et al., 2002; Violanti et al., 2017). Work-related stress is recognized as a significant problem encountered by the police. The well-being of police officers can have an impact on the governance, safety, and security of citizens and society. Police officers are responsible for arresting criminals, maintaining social order and public safety, and preventing crime (Lim & Kim, 2016; Remington, 1965). It was found the organizational stress was negatively related to perceived work performance among police officers (Li et al., 2021a). Police officers without desirable performance could hardly secure the community safety. Truly, Hong Kong is a suitable site for researching work-related stress among police officers. In the past decade, Hong Kong police officers have been facing an unprecedented challenging working environment arising from social movements/riots, the COVID-19 pandemic, and the organizational context. The uniqueness of work-related stress among Hong Kong police officers is highlighted. Police officers in Hong Kong experienced public stressors because of the social movements in 2019, and immediately followed by pandemic stressors due to the outbreak of COVID-19 in Hong Kong in early 2020. Possibly, the Hong Kong police officers experienced both stressors simultaneously.

## 1.2 Definitions

Stressor, work-related stress, and burnout are defined in the following.

### *1.2.1 Stressor*

The definition of a stressor is any change, condition, event, or force that causes stress. (APA Dictionary of Psychology, 2020; Colman, 2015). Stressors from organizational, operational, public, and pandemic are taken into consideration in this research. Stressors can be associated with work-related stress.

### *1.2.2 Work-related stress*

Work-related stress is the key concept in this research. “Work-related stress is the response people may have when presented with work demands and pressures that are not matched to their knowledge and abilities and which challenge their ability to cope.” (World Health Organization, 2021b, para.1). Work-related stress can be also referred as job stress, occupational stress, organizational stress, or workplace stress. “Job stress refers to a situation wherein job-related factors interact with a worker to change (i.e. disrupt or enhance) his or her psychological and/or physiological condition such that the person (i.e. mind-body) is forced to deviate from normal functioning.” (Beehr & Newman, 1978, p.670). “Occupational stress situations are those in which characteristics of, or events related to, the workplace lead to individuals' ill health or welfare.” (Beehr et al., 1995, p.3). “Organizational stress can be defined as an emotional, cognitive, behavioral and physiological response to the aggressive and harmful aspects of work, work environment and organizational climate.” (Mirela & Mădălina-Adriana, 2011, p.1622). Workplace stress can be defined as “stress arises when undue pressure is applied as a consequence of tasks or conditions occurring within the work environment during the course of employment.” (Sisley et al., 2010, p.4). Work-related stress is used throughout this research for consistency.

### *1.2.3 Burnout*

Prolonged work-related stress is associated with burnout (World Health Organization, 2021a). The definition of burnout is “an acute stress disorder or reaction characterized by exhaustion resulting from overwork, with anxiety, fatigue, insomnia, depression, and impairment in work performance.” (Colman, 2015, p.106). In this research, burnout and its subtypes including emotional exhaustion, depersonalization, reduced personal accomplishment, frenetic, underchallenged, worn-out, cynicism, and lower professional

efficacy (Maslach & Jackson, 1981; Montero-Marín & García-Campayo, 2010; Maslach et al., 2023) are considered.

### 1.3 Social movements/riots in Hong Kong and work related stress among Hong Kong police officers

There has been a rise of demonstrations and protests in different countries in the past decade. Focusing on Hong Kong, in 2014, the Standing Committee of the National People's Congress of the People's Republic of China made a decision on reforming the Hong Kong electoral system, influencing on future elections of Chief Executive of Hong Kong. The public had concerns regarding the universal suffrage, thus were very dissatisfied with this decision, triggering the Umbrella Movement, also known as the Occupy Movement.

Following the Umbrella Movement in 2014, hatred feelings towards the police officers were ignited. In 2016 Chinese New Year, the Mong Kok riot, also refers to the Fishball Revolution, caused by the government crackdown on unlicensed hawkers. Events developed rapidly and violently, leading conflicts between the police officers and the protesters.

Following the Mong Kok riot in 2016, the relationship between the police officers and the public has escalated, resulting in a tense relationship. In 2019, the anti-extradition law amendment bill movement indicated the beginning of social unrest in Hong Kong. This is the trigger point in which the police-public relationship has ruptured. In the latest movement, a total of 483 police officers were injured (info.gov.hk, 2019).

As indicated in Figure 1. 1, citizens' satisfaction with the Hong Kong Police Force was declined after each movement/riot (PORI, 2022). Following the Umbrella Movement in 2014, the satisfaction rating was 61.0, dropped by approximately four per cent compared to the previous year. Following the anti-extradition law amendment bill movement in 2019, the

satisfaction rating was 35.3, dropped sharply by approximately 44 per cent compared to the previous year. In addition, a large number of physical and verbal attacks against police officers were reported, in particular after the anti-extradition law amendment bill movement in 2019. Physically, a police officer was stabbed with a knife and suffered injury to his left shoulder (SCMP, 2021). Verbally, people posted hate speech and death threats online against police officers (Ng & Mok, 2019). Being a police officer has subjected to humiliation, intimidation, scolding, and snub (Tsang, 2019). Over the past few years, the Hong Kong police officers have undoubtedly been under enormous work-related stress because of citizens' dissatisfaction with the Hong Kong Police Force and a large number of physical and verbal attacks arising from social movements/riots, which can have a negative impact on their daily duty performance.



Figure 1. 1 Citizens' satisfaction with the Hong Kong Police Force from 2012 to 2022

#### 1.4 The COVID-19 pandemic and work related stress among Hong Kong police officers

Due to the COVID-19 pandemic, the police officers encountered extra job demands (i.e. strictly enforcing the anti-COVID-19 pandemic measures) (Frenkel et al., 2021; Stogner et al., 2020; Wong, 2020). In response to the COVID-19 pandemic in Hong Kong, Cap. 599 Prevention and Control of Disease Ordinance was released (Hong Kong e-Legislation, 2022b). The government implemented social distancing measures such as maintaining 1.5m social distancing, prohibition of group gathering of more than a particular number of persons in public places, mandatory mask-wearing in public places etc. The police officers were responsible for issuing a penalty to those who disobey the social distancing measures. During the fifth wave of COVID-19 in Hong Kong (i.e. the most severe period), the police officers were involved in block lockdown (news.gov.hk, 2022) and they were responsible for ensuring the residents to undergo compulsory testing in order. Besides, the police officers encountered more work-family conflict during the COVID-19 pandemic (Li et al., 2021b). They were involved in the aforementioned duties, so they were likely to miss family activities, or even confront interferences with performing family-related responsibilities. Moreover, due to the job nature, police officers may not be able to work from home (Frenkel et al., 2021; Stogner et al., 2020). Therefore, they were concerned about the risk of transmission of virus to their family members after performing duties (Stogner et al., 2020). No doubt, the Hong Kong police officers have experienced enormous work-related stress because of extra job demands, more work-family conflict, and the job nature associated concern arising from the COVID-19 pandemic since early 2020, negatively influencing their job performance.

## 1.5 The organizational context and work-related stress among Hong Kong police officers

### *1.5.1 High turnover rate, decreased staff strength, and the inadequacy of manpower in the Hong Kong Police Force*

The vacancy rate of the Hong Kong Police Force was 18 per cent last year (The Government of the Hong Kong Special Administrative Region Press Releases, 2023), implying a high turnover rate. Reasons of leaving the Hong Kong Police Force include retirement, resignation, completion of agreement, and death etc. (The Government of the Hong Kong Special Administrative Region Press Releases, 2023). As shown in Figure 1. 2, the total staff strength dropped by approximately six per cent from the year of 2019/2020 to the year of 2021/2022 (Hong Kong Census and Statistics Department, 2022). This is a notable period when Hong Kong is confronting the social movements and the COVID-19 pandemic. Interestingly, over the past two decades, the number of female police officers gradually and slightly increased (Hong Kong Census and Statistics Department, 2005, 2011, 2012, 2015, 2022) although policing is a male-dominant occupation. Gender is a vulnerability factor of police stress (Gutschmidt & Vera, 2020), which is also a factor of interest in this research. As shown in Figure 1. 3, there was a drop in the ratio of regular police to population (per 100 000 population) from the year of 2019/2020 to the year of 2021/2022. In the year of 2021/2022, the ratio of regular police to population (per 100 000 population) is 373, which was the lowest over the past two decades. From the aforementioned statistics, truly the Hong Kong Police Force has encountered a severe shortage of manpower. Although the Hong Kong Police Force have adopted different strategies to not only reduce the turnover rate of current police officers but also attract more candidates to become a police officer, there is still an inadequacy of manpower.

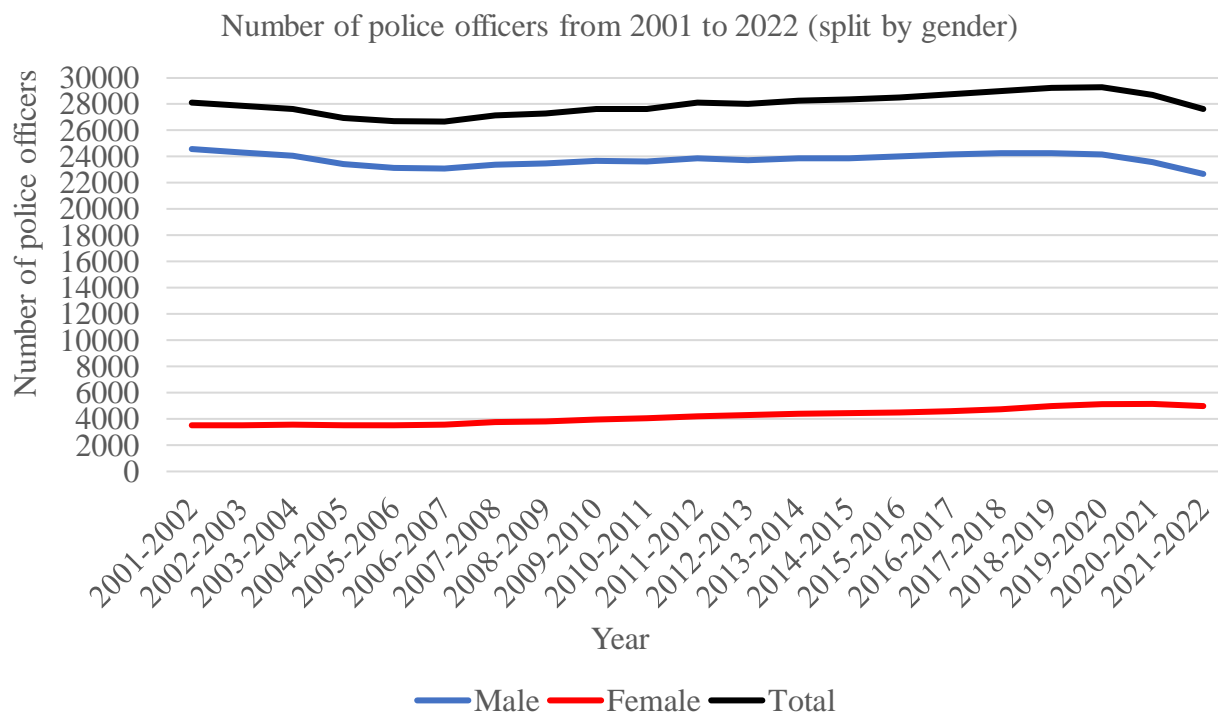


Figure 1. 2 Line graph illustrating the number of police officers from 2001 to 2022 (split by gender)

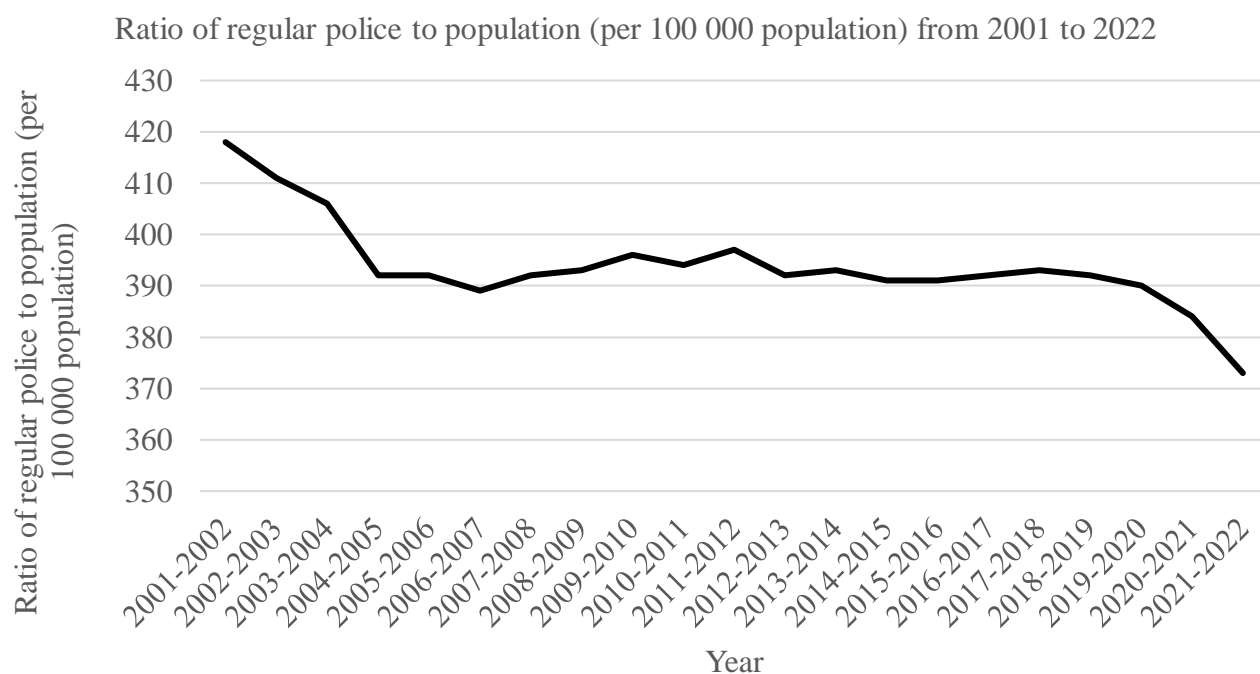


Figure 1. 3 Line graph illustrating the ratio of regular police to population (per 100 000 population) from 2001 to 2022



### *1.5.2 Support from supervisors and the Hong Kong Police Force*

Although Hong Kong police officers have encountered work-related stress derived from high turnover rate and the inadequacy of manpower in the organizational context, support is provided by their supervisors and the Hong Kong Police Force. Police supervisors play an important role in confronting the challenging working environment and alleviating work-related stress among police officers. According to Li et al. (2021b), Hong Kong police officers reported to have a moderate level of supervisor support.

The Hong Kong Police Force provides a diverse of welfare including (1) education assistance, (2) free medical and dental care, (3) housing benefit, (4) paid leave, and (5) recreation and sport (Hong Kong Police Force, 2021c). Besides, the salary range is approximately from \$20,000 to \$90,000, depending on the rank (Hong Kong Police Force, 2021b). Moreover, two education trusts (i.e. the Police Children's Education Trust and the Police Education & Welfare Trust) are provided. These trusts are aimed to provide financial assistance to children of police officers to pursue their education (Hong Kong Police Force, 2021a). Finally, professional counselling services are available to police officers. For example, the Welfare Services Group provided care and support for the injured police officers by organizing a counselling group (Hong Kong Police Review, 2019). Some 'pet doctors' were also invited to interact with frontline police officers to reduce their stress (Hong Kong Police Review, 2019). The Psychological Services Group plays a dual role in prevention and treatment. As for prevention, the Psychological Services Group launched a mobile application, aiming to offer mental health issues information and encourage police officers to seek professional help (Hong Kong Police Review, 2019). In terms of treatment, the Psychological Services Group organized a campaign, aiming to promote psychological

wellness and help police officers to build resilience during adversities (Hong Kong Police Review, 2019).

### *1.5.3 Internal procedural justice and police work-related stress*

Organizational justice is important in maintaining and promoting employees' well-being (Huong et al., 2016; Sahai & Singh, 2016). Organizational justice can be defined as employees' perceived fairness in an organization (Greenberg, 1990). It has four dimensions; distributive, informational, interpersonal, and procedural (Colquitt, 2001). Procedural justice can be defined as employees' perceived fairness in the decision-making processes/procedures used to achieve the employee/organizational outcomes (Folger, 1987; Lambert et al., 2013; Qureshi et al., 2016). Procedural justice has four key elements; neutrality, respectful treatment, trustworthiness, and voice (Tyler, 2008, as cited in Barkworth & Murphy, 2015). First, neutrality requires consistency and transparency from the authorities when dealing with issues or making decisions (Tyler, 2008, as cited in Barkworth & Murphy, 2015; Her Majesty's Inspectorate of Probation, 2021). Second, respectful treatment represents engagements with individuals should include courtesy, dignity, professionalism, respect, and seriousness (Tyler, 2008, as cited in Barkworth & Murphy, 2015; Her Majesty's Inspectorate of Probation, 2021). Third, trustworthiness requires trustworthy motivations from the authorities in which they should be trustful, caring, and serving the best interests of everyone (Tyler, 2008, as cited in Barkworth & Murphy, 2015; Her Majesty's Inspectorate of Probation, 2021). Finally, voice represents individuals are given opportunities to tell their experiences and express their views and their contributions when making decisions (Potter, 2005, as cited in Barkworth & Murphy, 2015). Procedural justice has two dimensions (i.e. external and internal) (Wu et al., 2017). The former refers to the procedural justice that police

officers provide to the citizens while the latter refers to the procedural justice that police officers receive from their supervisors (Wu et al., 2017).

Previous studies have conducted on the relationships between the explanatory variables (i.e. organizational justice and procedural justice) and the outcome variables (i.e. job stress, job burnout, and strain-based work-family conflict) among police officers (Kaya, 2013; Kaygusuz & Beduk, 2015; Qureshi et al., 2016). These studies suggested that to protect police officers against work-related stress, internal procedural justice plays an important role and should be promoted in policing context. However, to the student researcher's knowledge, the relationship between internal procedural justice and work-related stress is relatively understudied among Hong Kong police officers.

#### 1.6 Significance of this research

This research is important in three-folds. Firstly, this research not only examines the impact of pandemic on police work-related stress using the JD-R model, but also an attempt to examine the role of internal procedural justice as a job resource in the JD-R model. Secondly, this research contributes to the literatures on the knowledges of police work-related stress by using a mixed-method research design. Quantitatively, taking latent variables, observed variables, and the associated measurement errors into consideration simultaneously, this research adds to the existing literatures by using SEM to analyze predictors and mediators of work-related stress among Hong Kong police officers. Qualitatively, this research adds to the literatures by conducting semi-structured interviews with a timeline approach to identify the context, process, scenario, and subjective experiences of work-related stress among Hong Kong police officers. Thirdly, this research is intended to generate ideas to eliminate police work-related stress through supervisory support and internal

procedural justice. Last but not least, given that work-related stress is a great concern among Hong Kong police officers, stress management should be implemented in police training so that police officers are trained with emotional regulation skills, identifying and recognizing the stress-related symptoms.

It is clear from the above literatures discussed in this chapter that Hong Kong police officers have been working under a challenging environment and experiencing enormous work-related stress, particularly driven by the public and the pandemic, over the past few years. Therefore, an understanding of Hong Kong police officers' work-related stress is important. The goal of this research is to gain a comprehensive and in-depth understanding of work-related stress among Hong Kong police officers.

## **CHAPTER 2: LITERATURE REVIEW (THEORETICAL EXPLANATIONS)**

A theoretical understanding of work-related stress in policing context is essential. This chapter reviews the explanations of different perspectives/theories that are relevant to police work-related stress.

The taxonomy of theories of work-related stress is based on two distinctions (i.e. early and contemporary) (Cooper et al., 2001; Cox, 1978; Cox & Griffiths, 2010). Early theories, in particular response based, were dominant in the 1960s (Cox & Griffiths, 2010). Contemporary theories have developed since the 1970s (Cox & Griffiths, 2010). Besides, Rosen et al. (2010) developed an eight-category taxonomy of work stressors, including work role stressors (role ambiguity, role conflict, and role overload), workload, situational constraints (organizational factors), job control, social characteristics of the workplace, career-related concerns, job conditions, and acute stressors. Recently, Gutschmidt and Vera (2020) studied police stress from three levels; biological, psychological, and social.

In the following, five theoretical perspectives; biological, psychological, sociological, organizational, and resource-based, of work-related stress are presented. The corresponding theories and models include the General Adaptation Syndrome (GAS), the JD-R model, the transactional model of stress and coping, the Spielberger State-Trait (STP) model of occupational stress, general strain theory (GST), the gendered organization theory, the job demand-control (JDC) model, the job demand-control-support (JDCS) model, the effort-reward imbalance (ERI) model, and the model of conservation of resources (COR) (see Figure 2. 1 Taxonomy and theoretical perspectives of theories and models of work-related stress). The concepts, assumptions, strengths, limitations, and relevant studies of these theories and models are also presented. Perspective refers to how researchers see a particular

issue while theory refers to how researchers explain this issue. Main findings of studies applying work-related stress theories and models are summarized in Table 2. 1.

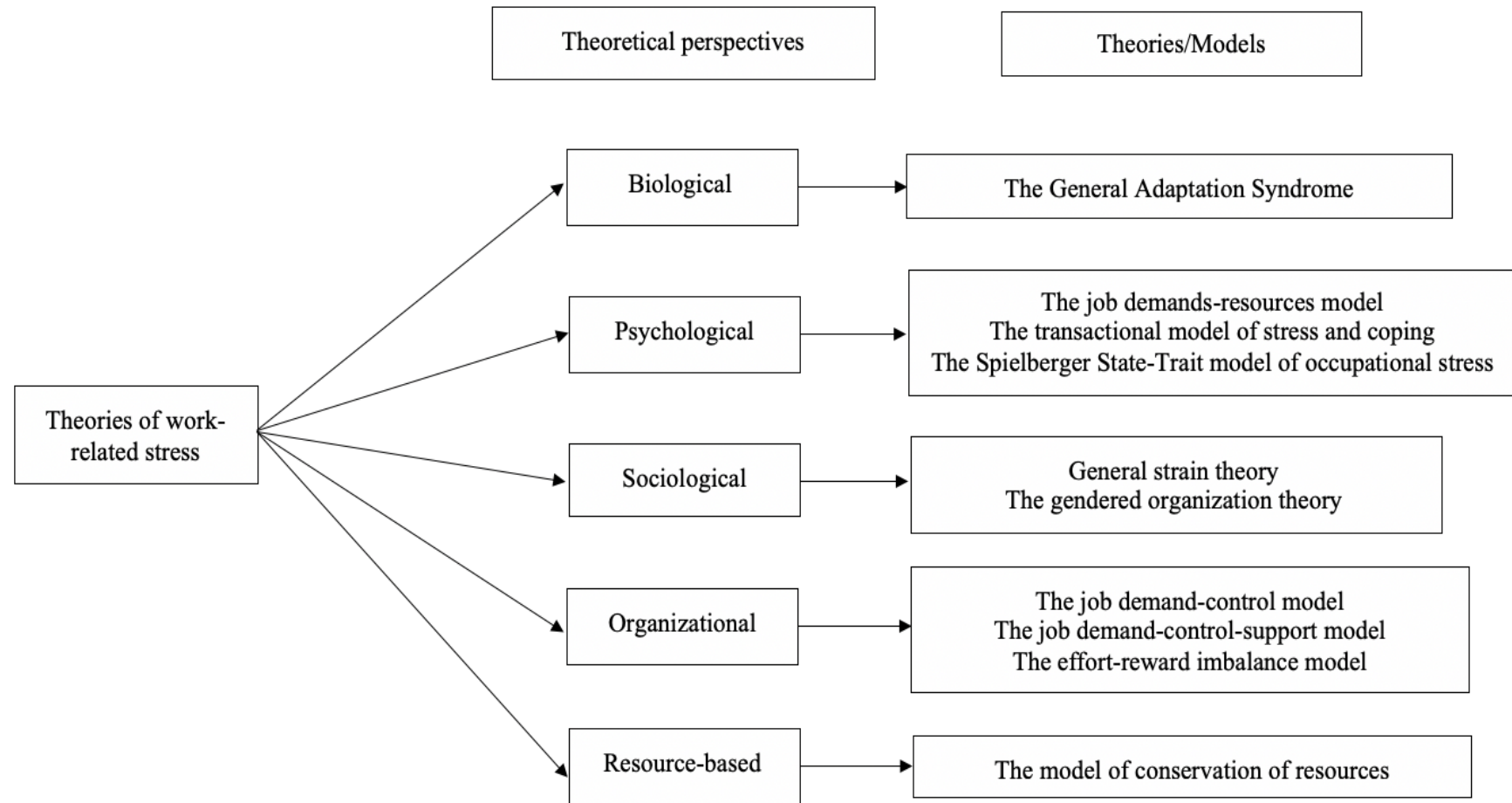


Figure 2. 1 Taxonomy and theoretical perspectives of theories and models of work-related stress

## 2.1 Biological perspective and the GAS

From a biological perspective, researchers focus on physiological responses associated with the activation stress. The fight-or-flight response was described by Walter Bradford Cannon, an American physiologist. In response to a threat, activation of the hypothalamus and release of hormones from the sympathetic nervous system prepares an individual to combat (fight) or escape (flight) (Cannon, 1929).

Extending from Cannon's work, Hans Selye, a Hungarian endocrinologist, defined stress as "a state manifested by a specific syndrome which consists of all the non-specific changes within the biologic system" (Selye, 1950, 1956, as cited in Leka & Houdmont, 2010, p.35). The GAS, developed by Selye (1978), described stress-related physiological responses in three stages; alarm, resistance, and exhaustion. The alarm stage is the immediate physiological responses (e.g. increased heart rate to the stressor), also known as the fight-or-flight response. The resistance stage is the recovering of physiological responses happened in the alarm stage. If stress is overcome, the physiological changes will be normalized. However, if stress continues, the body remains in a state of high alert, eventually leading to adaptation. If stress is persistent, the exhaustion stage occurs, resulting in burnout or even death (in extreme situations).

## 2.2 Psychological perspective

The psychological perspective is concerned with the psychological processes, concepts of cognitive appraisal, coping, and perception. Examples include the JD-R model (Demerouti et al., 2001), the transactional model of stress and coping (Lazarus & Folkman, 1984), and the STP model of occupational stress (Spielberger et al., 2003). The original version of the JD-R model has two assumptions (Demerouti et al., 2001). The later version of



the JD-R model consists of two psychological processes (Schaufeli & Bakker, 2004; Schaufeli & Taris, 2014). The recent version of the JD-R model recognizes two interaction effects (Bakker et al., 2014). In the transactional model of stress and coping and the STP model of occupational stress, stress hinges on how an individual appraises or perceives it (Lazarus & Folkman, 1984; Spielberger et al., 2003).

### *2.2.1 The JD-R model*

The JD-R model consists of two categories of working conditions (i.e. job demands and job resources) (Demerouti et al., 2001). Job demands are defined as “those physical, social, or organizational aspects of the job that require sustained physical or mental effort and are therefore associated with certain physiological and psychological costs (e.g., exhaustion).” (Demerouti et al., 2001, p.501). Examples of job demands include; physical workload, time pressure, recipient contact, physical environment, and shift work. Job resources are defined as “those physical, psychological, social, or organizational aspects of the job that may do any of the following: (a) be functional in achieving work goals, (b) reduce job demands at the associated physiological and psychological costs; (c) stimulate personal growth and development.” (Demerouti et al., 2001, p.501). Examples of job resources include; feedback, rewards, job control, participation, job security, and supervisor support. The JD-R model also includes two burnout subtypes (i.e. exhaustion and disengagement) (Demerouti et al., 2001). “Exhaustion is defined as a consequence of intensive physical, affective, and cognitive strain, for example as a long-term consequence of prolonged exposure to certain demands.” (Demerouti et al., 2001, p.500). Disengagement is defined as “distancing oneself from one’s work, and experiencing negative attitudes toward the work object, work content, or one’s work in general.” (Demerouti et al., 2001, p.501).

Originally, this model has two assumptions (Demerouti et al., 2001). The first one is high job demands predict more exhaustion. The second one is a lack of job resources predict more disengagement. In Demerouti et al.'s study (2001), they focused on the unique explanation of job demands and job resources on exhaustion and disengagement respectively.

This model is revised and includes two psychological processes; (1) the energetic/health impairment process; and (2) the motivational process (Schaufeli & Bakker, 2004; Schaufeli & Taris, 2014). The energetic/health impairment process is one psychological process and concerned with the relationship between job demands, burnout, and health problems. This process and relationship can be illustrated by the state regulation model of compensatory control, a cognitive-energetical framework (Hockey, 1997). It offers an understanding of the effects of stress on human performance under high workload condition. When confronting high workload, employees may adopt either strain coping mode or passive coping mode. In strain coping mode, performance is maintained with an increased compensatory costs (e.g. fatigue and irritability). In passive coping mode, performance is reduced (e.g. losing its accuracy and speed) without increased compensatory costs. In the high workload condition with too many compensatory costs given, energy depletion (i.e. exhaustion) is occurred and may lead to health problems (Schaufeli & Taris, 2014). To put it simply, high job demands cause more burnout, leading to physical and mental health problems for example, cardiovascular disease and depression (Schaufeli & Taris, 2014).

The motivational process is another psychological process and concerned with the relationship between job resources, engagement, and organizational outcomes. Job resources play a dual motivational role; intrinsic and extrinsic. The intrinsic and extrinsic motivational role can be illuminated by the self-determination theory (Deci & Ryan, 1985) and the effort-

recovery model (Meijman & Mulder, 1998) respectively. Intrinsically, job resources not only promote employees' learning but also satisfy basic human needs. For example, providing feedback (job resource) promotes learning, which in turn increases job competence (basic human need) and thus intrinsic motivation. Extrinsically, abundant job resources from the working environment foster employees' greater willingness to spend more abilities and efforts on their job so that they can achieve their job goals. By providing feedback and support, it is likely that employees can be successful in achieving their job goals. Overall, by satisfying basic human needs or achieving job goals, positive work-related state of mind (i.e. engagement) is stimulated and may result in positive organizational outcomes (Schaufeli & Bakker, 2004; Schaufeli & Taris, 2014). To put it simply, more job resources play a motivational role, engagement is increased, resulting in organizational outcomes, for instance lower turnover intention and better job performance (Schaufeli & Bakker, 2004; Schaufeli & Taris, 2014). Apart from these two psychological processes, this model proposes an interaction between job demands and job resources (Bakker & Demerouti, 2007). High job demands but a lack of job resources predict high job strain.

The recent version of the JD-R model recognizes two interaction effects (Bakker et al., 2014). The first interaction is job resources (i.e. social resources/support, shared values, and positive leadership climate) ameliorate the impact of job demands (i.e. authoritative organizational culture, assaults by citizens while being on duty, and high workload) on burnout and organizational commitment (Choi et al., 2020; Santa Maria et al., 2018). The second interaction is job demands boost the impact of job resources on work engagement. When a worker is confronted with high job demands (i.e. heavy cognitive demands and work overload), job resources (i.e. more daily transformational leadership behavior) are important in promoting work engagement (Breevaart & Bakker, 2018).

The JD-R model has a wide scope because it assumes any job demands and any job resources and their effects on any positive or negative outcomes (Schaufeli & Taris, 2014). This model also integrates personal resources (Schaufeli & Taris, 2014) including mindfulness, optimism, proactive personality, and self-efficacy (Fisher et al., 2019; Marcos et al., 2019; Parker & Sprigg, 1999; Xanthopoulou et al., 2007). This model is also flexible since it has been applied to various job sectors (Schaufeli & Taris, 2014) including professional service (e.g. health care professionals, child-care providers, and young veterinary professionals) (Kaiser et al., 2020; Lee et al., 2019; Mastenbroek, 2017), disciplined service (e.g. firefighters, police, and correctional/prison officers) (Ângelo & Chambel, 2013; Biggs et al., 2014; Cho et al., 2020; Dollard et al., 2012; Kinman et al., 2017; Lambert et al., 2018; Wu, 2009), and academic context (e.g. research funding organization employees and university employees) (Baeriswyl et al., 2017; Charoensukmongkol & Phungsoonthorn, 2020).

This model has not only been applied to a variety of job sectors but also to different stress indicators. Studies have found significant predictions on various stress indicators which can be categorized into three types. First, physical health (e.g. physical health problems symptoms; headache, stomach ache, sleep problems, body aches, and hypertension) (Wu, 2009). Second, mental health (e.g. burnout, psychological strain, psychological distress, anxiety/insomnia, depression, social dysfunction, and somatic symptoms) (Ângelo & Chambel, 2013; Baeriswyl et al., 2017; Biggs et al., 2014; Charoensukmongkol & Phungsoonthorn, 2020; Cho et al., 2020; Houdmont et al., 2020; Kinman et al., 2017; Mastenbroek, 2017; Wu, 2009). Third, organizational outcomes (e.g. work engagement, workplace perceived uncertainties, workgroup distress, turnover intention, job satisfaction,

and service quality) (Ângelo & Chambel, 2013; Charoensukmongkol & Phungsoonthorn, 2020; Dollard et al., 2012; Kaiser et al., 2020; Lee et al., 2019; Mastenbroek, 2017).

A limitation of the JD-R model is that it cannot be applied to understand family-related stressors and resources (Barnett et al., 2012). Although the integration of personal resources is a strength, the model is criticized by the types of personal resources integrated (Schaufeli & Taris, 2014). Personal vulnerability resources such as neuroticism, workaholism, and pessimism are not integrated. Besides, in this model, job demands and job resources are the predictors while physical/mental health problems and organizational outcomes are the outcomes of interest. By assuming the unidirectional causal relationship, this model is being too simplistic (Schaufeli & Taris, 2014).

The following studies used the psychological perspective and applied the JD-R model to view police work-related stress and burnout (Frank et al., 2017; Lambert et al., 2018; Lambert et al., 2022; Marcos et al., 2019; Santa Maria et al., 2018; Sørengaard & Langvik, 2022; Taris et al., 2017; Wolter et al., 2019; Yulianti & Rohmawati, 2020). Considering some European countries, among the Spanish National Police members, optimism, an example of resource, was the only significant predictor of job stress (Marcos et al., 2019). Being optimistic predicted less job stress. A German police burnout study found that job resources had a buffering effect on the negative impacts of job demands on emotional exhaustion (Santa Maria et al., 2018). The more the job resources, the fewer the negative impacts of job demands on emotional exhaustion. Another German police burnout study found that high job demands (from workload, administrative stressors, and verbal assaults by citizens) were significant predictors of a greater feeling of emotional exhaustion (Wolter et al., 2019). In the same study, inadequate job resources (from team support and shared values) predicted a greater feeling of emotional exhaustion. For Dutch police officers, among job demands, work

load, mental demands, emotional demands, role uncertainty, and job uncertainty were significant predictors of a greater feeling of exhaustion (Taris et al., 2017). Work load, administrative demands, emotional demands, and role uncertainty were significant predictors of a greater feeling of cynicism. Fewer job resources, except salary, predicted elevated feelings of exhaustion and cynicism. Unexpectedly, a higher level of autonomy predicted an elevated feeling of cynicism. Additionally, a Norwegian police burnout study conducted by Sørengaard and Langvik (2022) found that an unsupportive leadership was a significant predictor of more burnout but quantitative job demands was a non-significant predictor.

Regarding some Asian countries, in an Indian police stress study conducted by Lambert et al. (2022), job demands including role overload and dangerousness of the job were significant predictors of more job stress but not role underload. In the same study, inadequacy of job resources such as supervisor trust, coworker trust, training views, and job autonomy were significant predictors of more job stress but not management trust. Besides, an Indian police burnout study considered job stress as an example of job demand (Lambert et al., 2018). Higher job stress was a significant predictor of a greater feeling of emotional exhaustion but lower job stress predicted a reduced sense of personal accomplishment. Job stress was a non-significant predictor of depersonalization. Among the job resources variables, lower job involvement and job satisfaction were significant predictors of greater feelings of emotional exhaustion and depersonalization but higher job involvement and job satisfaction predicted a reduced sense of personal accomplishment (Lambert et al., 2018). Higher continuance commitment was a significant predictor of greater feelings of emotional exhaustion and depersonalization but its prediction on personal accomplishment was non-significant. Higher affective commitment predicted a reduced sense of personal accomplishment but its predictions on emotional exhaustion and depersonalization were non-

significant. Another Indian police stress study found that among the job demands variables, role conflict, role ambiguity, and role overload were significant positive predictors of work stress but not role underload and dangerousness of job (Frank et al., 2017). The more the job demands, the more the work stress. Among the job resources variables, input into decision making, formalization, and organizational support were significant negative predictors of work stress but not instrumental communication (Frank et al., 2017). The fewer the job resources, the more the work stress. In addition, in a study conducted on Indonesian police officers, heavy job demands from workload and emotional demands predicted more burnout but teamwork effectiveness did not predict burnout (Yulianti & Rohmawati, 2020). In the same study, teamwork effectiveness did not moderate the relationship between job demands and burnout.

Focusing on the role of work engagement, the following four studies used the psychological perspective and applied the JD-R model to view work engagement. One study assessed organizational commitment as a predictor (Lambert et al., 2018), as mentioned above, while three studies assessed work engagement as an outcome (Marcos et al., 2019; Taris et al., 2017; Yulianti & Rohmawati, 2020). Work engagement and organizational commitment are two similar concepts. “Engagement is defined as a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption.” (Schaufeli et al., 2002, p.74). In other words, the relationship between an employee and his or her job performance (Kim et al., 2017). Likewise, organizational commitment refers to the degree of an employee’s identification with and involvement in an organization (Mowday et al., 1982) and focuses on the relationship between an employee and the organization (Kim et al., 2017).

The following three studies assessed work engagement as an outcome. Firstly, Marcos et al. (2019) found that a lack of organizational socialization (policies) and collective efficacy were significant predictors of higher commitment to police work among the Spanish National Police members. Nevertheless, organizational socialization (history and language), organizational values, social support, self-efficacy, and optimism were non-significant predictors. Secondly, Taris et al. (2017) found that, for Dutch police officers, role uncertainty, an example of job demand, was the only significant predictor of more engagement (dedication and vigor). Abundant job resources (task variation, social support from supervisor, and growth opportunities), except autonomy and salary, predicted more engagement (dedication and vigor). Thirdly, in a study conducted on Indonesian police officers, fewer job demands (from workload and emotional demand) but higher teamwork effectiveness predicted more engagement (Yulianti & Rohmawati, 2020). It is notable that the role of work engagement in the JD-R model can be further investigated.

Shifting the focus to internal procedural justice, which refers to the procedurally fair treatments, for example decision-making processes/procedures, that police officers receive from their supervisors (Folger, 1987; Wu et al., 2017; Wang et al., 2020b). Positioning internal procedural justice as a job resource in the JD-R model is justifiable. In the JD-R model, job resources (e.g. social support from supervisors, job autonomy, job satisfaction, organizational commitment) refer to positive job characteristics (Schaufeli & Taris, 2014) that are functional in protecting against job stress and burnout (Lambert et al., 2018; Lambert et al., 2022; Taris et al., 2017). Using the psychological perspective, the following study applied the JD-R model and perceived fairness was treated as a job resource in this model (Wolter et al., 2019). In Wolter et al.'s study (2019) conducted on German police officers, perceived fairness protected them against emotional exhaustion. This study suggested that



perceived fairness plays a protective role. Therefore, internal procedural justice can be positioned as a job resource in the JD-R model.

### *2.2.2 The transactional model of stress and coping*

In the transactional model of stress and coping, psychological stress is defined as “a relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being.” (Lazarus & Folkman, 1984, p.21). Appraisal and coping are two key concepts in this model (Lazarus & Folkman, 1984). There are two types of appraisal (i.e. primary and secondary). Primary appraisal involves an individual’s perception of whether the stressor is a threat, harm, or challenge. Secondary appraisal involves an individual’s perception of ability to cope with the perceived threat. Coping suggested by Lazarus and Folkman (1984) can be categorized into two types (i.e. problem-focused and emotion-focused). The main argument is that; an individual appraises a stressor threatening (primary appraisal) and does not have ability to cope with (secondary appraisal), therefore he or she feels stressful. By considering the underlying psychological processes, this model provides a more comprehensive picture of work-related stress. However, it can be difficult to measure the components (Cox & Griffiths, 2010).

The following study used the psychological perspective and applied the transactional model of stress and coping to view police burnout (Esteves & Gomes, 2013). Among Portuguese professionals of the security forces, first, more problems in relationships at work, more work overload, greater perception of threat, and lower perception of challenge were significant predictors of a greater feeling of emotional exhaustion but not secondary cognitive assessment (Esteves & Gomes, 2013). Second, more problems in relationships at work,

greater perception of threat, and lower perception of challenge predicted an elevated feeling of cynicism but not secondary cognitive assessment. Third, lower perception of threat, greater perception of challenge, greater coping potential, and greater perception of control over work were predictive of a lower professional efficacy but not the dimensions of stress.

### *2.2.3 The STP model of occupational stress*

The STP model of occupational stress is an attempt to integrate the transactional model of stress and coping (Lazarus & Folkman, 1984) and state-trait conception of anxiety and anger (Spielberger, 1972). In this model, there are three main parts; job-related stressors in the work environment, employees' perception and appraisal of the stressor severity, and employees' emotional arousal evoked to the stressor. The main argument is that; under job pressures and lack of support working environment, when the stressor is perceived and appraised severe and occurred frequently, this threat leads to the emotional arousals of anxiety, anger, and depression and the associated activation of the autonomic nervous system, causing psychological and physical strain and thus adverse behavioural consequences such as burnout.

This model emphasizes the following three points; (1) the perceived severity of job pressures and lack of support; (2) the frequency of occurrence of job pressures and lack of support; and (3) individual differences in personality traits on perceived stressor severity and emotional arousal. Nevertheless, failure to consider the frequency of occurrence of job pressures and lack of support may result in not only the overestimation of the effects of job-related stressors that seldom occur in a particular workplace but also the underestimation of the impacts of job-related stressors that are often occurred.

The following study used the psychological perspective and applied the STP model of occupational stress to view police work-related burnout (Kula, 2017). A Turkish police burnout study pointed out that more organizational stress, more operational stress, and lower job satisfaction were significant predictors of an increased risk of work-related burnout but not supervisor support (Kula, 2017).

### 2.3 Sociological perspective

GST focuses on negative relationships between an individual and his or her social environment (Agnew, 1992). It belongs to sociological perspective. Sociological perspective is also concerned with gender inequality or gender role stereotyping. An example is the gendered organization theory (Acker, 1990).

#### 2.3.1 GST

Agnew (1992) posited three main sources of strain; “strain as the actual or anticipated failure to achieve positively valued goals, strain as the actual or anticipated removal of positively valued stimuli, and strain as the actual or anticipated presentation of negative stimuli.” (Agnew, 1992, p. 59). Examples of strainful experiences include parental rejection, criminal victimization, and discrimination (Agnew, 2014). These strainful experiences trigger negative emotion responses such as anger, depression, disappointment, fear, and frustration (Agnew, 1992, 2001, 2014), creating pressure for corrective action and crime is one possible outcome (Agnew, 1992). For adaptations to strain, Agnew (1992) suggested cognitive, behavioural, and emotional coping strategies.

The greatest strength of GST is that it is not limited to income or class status (Brezina, 2010, 2017). With a broader definition of strain, GST included a wider array of stressors

(Brezina, 2010), also known as goal blockage (Brezina, 2017). For example, GST considered the failure to achieve expected outcomes and the failure to achieve outcomes that are perceived as fair and just as additional types of stressors/goal blockage (Brezina, 2010, 2017). They were associated with anger, hostility, disappointment, and dissatisfaction (Brezina, 2010) and were expected to have a stronger relationship with crime and delinquency (Agnew, 1992). Besides, GST recognized respect, masculine status, autonomy, and desire for thrills or excitement were important goals and outcomes for young males. These can be a source of strain if young males were not able to achieve these goals and outcomes (Brezina, 2017). GST not only broadened the concept of stressors/goal blockage but also highlighted that individuals pursued goals beyond economic success or class status (Brezina, 2010, 2017). However, the broadness of GST is also a limitation (Agnew, 2001). Researchers were given little guidance to examine the specific types of strain. Although hundreds of types of strain in GST were reflected in the stress-related inventories, these inventories did not measure many of them described by GST.

Apart from delinquency and crime, previous studies have found that GST is applicable to police stress. In the policing context, examples of strainful experiences included environment stress, organizational stress, operational stressors, child abuse, interparental violence, and critical incident strain (Bishopp et al., 2019; Johnson et al., 2020; Kurtz et al., 2015). These strainful experiences triggered anger, depression, burnout and current strain, leading to stress and violence (Bishopp et al., 2019; Kurtz et al., 2015).

### *2.3.2 The gendered organization theory*

Male workers are placed more privileged than female workers (Atena & Tiron-Tudor, 2019). Gendered assumptions and common concepts in organizational thinking assume that

male is the universal worker. This theory is a systematic attempt to study gender-related issues in work organizations (Atena & Tiron-Tudor, 2019; Britton, 2000) such as unremarkable contributions from female workers (Tancred & Campbell, 1992). Nevertheless, the concept of gendered organization is theoretically and empirically unclear (Britton, 2000). With an unclear concept, this theory is not very useful for studying the social and organizational change.

Applying the gendered organization theory in policing context, policing is a very gendered organization. Power and work were distributed differently to policemen and policewomen (Morash & Haarr, 1995). Departmental policies and practices were also gender-specific (Greene & Del Carmen, 2002). The gendered nature of policing organization caused female police officers to suffer from occupational stress, stress, and burnout (Greene & Del Carmen, 2002; Kurtz, 2008; Morash & Haarr, 1995).

## 2.4 Organizational perspective

Organizational perspective views the sources of stress in workplace. Examples include the JDC model, also known as the job strain model (Karasek, 1979), the JDCS model (Johnson & Hall, 1988; Karasek & Theorell, 1990), and the ERI model (Siegrist, 1996).

### 2.4.1 *The JDC model*

The JDC model is a stress-management model of job strain (Karasek, 1979). In this model, work environment has two categories (i.e. job demands and job decision latitude) (Karasek, 1979). Job demands, also known as work load demands, are indicated by “requires working fast”, “requires working hard”, “great deal of work to be done”, “not enough time”, “excessive work”, “no time to finish”, “conflicting demands”, “hectic job”, and

“psychological demanding job” (Karasek, 1979). Job decision latitude, also known as job control or discretion, is defined as an individual’s control over tasks and conduct in workplace. In Karasek’s study (1979), job decision latitude is indicated by discretion (“high skill level required”, “required to learn new things”, “nonrepetitious work”, “creativity required”, “skill level required”, and “repetitious or monotonous work”), decision authority (“freedom as to how to work”, “allows a lot of decisions”, “assist in one’s own decisions”, and “have say over what happens”), and “expert rating of skill level required”. Job strain is the derived composite from these two stressors while mental strain is the outcome. Mental strain is indicated by exhaustion and depression.

Karasek (1979) emphasized the importance of distinguishing job demands and job decision latitude. This model allows an interaction between job demands and job decision latitude. When job demands are high and job decision latitude is low, this combination refers to high strain job and thus results in mental strain.

One strength of the JDC model is generalizability. This model has been applied to different occupational groups such as professional service (e.g. health care) (De Jonge et al., 2000), service industry (e.g. transport and cleaning work) (De Jonge et al., 2000), industry (De Jonge et al., 2000), white-collar context (e.g. office work) (De Jonge et al., 2000), and disciplined service (e.g. prison/correctional staff and police) (Akbari et al., 2017; Lambert et al., 2013, 2017, 2019; Taris et al., 2010). Another strength is validity. This model has been successfully predicted different stress indicators. These stress indicators can be categorized into four types. First, physical health (e.g. coronary heart disease, physical health complaints, sick days absences, and cardiovascular disease) (Bosma et al., 1998; De Jonge et al., 2000; Karasek, 1979; Karasek et al., 1981). Second, mental health (e.g. burnout subtypes and

psychosomatic health complaints) (De Jonge et al., 2000; Lambert et al., 2019; Taris et al., 2010). Third, organizational outcomes (e.g. job dissatisfaction and job involvement) (De Jonge et al., 2000; Lambert et al., 2013). Finally, behavioural outcomes (e.g. pill consumption) (Karasek, 1979).

However, there are three criticisms of the JDC model. First, the JDC model is criticized for including two job stressors only (Sulsky & Smith, 2005). Several studies have highlighted the role of social support (Johnson & Hall, 1988; Karasek & Theorell, 1990; Padyab et al., 2016; Parkes et al., 1994). Not only job demands and job control predict stress and stress-associated outcomes but also social support. Second, job decision latitude is not conceptualized consistently (De Jonge & Kompier, 1997; Jones et al., 1998; Sulsky & Smith, 2005). In Karasek's initial study (1979), job decision latitude was reflected by different indicators for American and Swedish samples. For American sample, job decision latitude was indicated by skill discretion and decision authority. For Swedish sample, job decision latitude was indicated by intellectual discretion and expert rating of skill level required. Other studies identified different types of job control and different approaches to define job control (Carayon & Zijlstra, 1999; Parkes, 1989), underlying that the concept of job decision latitude is ambiguous. Third, although this model allows an interaction between job demands and job decision latitude, the interaction did not gain much empirical support (Sulsky & Smith, 2005). A study found differential interaction effects on different burnout subtypes (Marchand & Durand, 2011). One study even found a non-significant interaction (Taris et al., 2010).

The following studies used the organizational perspective and applied the JDC model to view police work-related stress and burnout (Lambert et al., 2017; Taris et al., 2010). Among Dutch police officers, heavy job demands were significant predictor of a greater

feeling of emotional exhaustion across time but not job control (Taris et al., 2010). High job control longitudinally predicted an elevated feeling of professional efficacy but not job demands. However, a demand and control interaction was not found. For Indian police officers, among the four dimensions in work-family conflict, more strain-based conflict, behaviour-based conflict, and family-based conflict were significant predictors of a higher level of job stress but not time-based conflict (Lambert et al., 2017).

#### *2.4.2 The JDACS model*

Given that studies have recognized the important role of social support, the JDACS model is expanded from the JDC model which includes an additional job stressor; work-related social support (Johnson & Hall, 1988; Karasek, 1979). “Social support at work refers to overall levels of helpful social interaction available on the job from both co-workers and supervisors.” (Karasek & Theorell, 1990, p.69). Social support has been dichotomized into isolated working situations (with scant social interaction opportunities) or collective working situations (integrated interactions with co-workers in workplace) (Johnson, 1989). Karasek and Theorell (1990) identified different types of work-related social support, including socioemotional support, instrumental social support, task interdependency, and hostility but not all of them were supportive.

There are two hypotheses in this model. First, the iso-strain hypothesis; adverse health outcomes occur when job demand is high, job control is low, and social support is low (Johnson et al., 1989). Second, the buffer hypothesis, it is slightly different among studies. In some studies, job control and social support moderated the negative impacts of high job demand on health outcomes (Van der Doef & Maes, 1998; van der Doef et al., 2000). In other studies, social support moderated the negative impacts of high strain (combination of high



job demand and low job control) on health outcomes (Häusser et al., 2010; Van der Doef, M & Maes, 1999).

The JDACS model has validity and has been successfully predicted different stress indicators. These stress indicators can be categorized into four types. First, physical health (e.g. mortality, myocardial infarction, and cardiovascular disease etc.) (see Van Der Doef & Maes (1998) for a review). Second, psychological well-being (e.g. depression, emotional exhaustion, and psychological distress etc.) (see Van Der Doef & Maes, 1999 and Häusser et al., 2010 for a review). Third, organizational outcomes (e.g. job satisfaction, organizational (affective) commitment, and workplace bullying) (Noblet et al., 2006, 2009; Tuckey et al., 2009; van der Doef et al., 2000). Finally, behavioural outcomes (e.g. absenteeism) (van der Doef et al., 2000). Moreover, this model can imply interventions, for example changes in decision latitude, autonomous work groups, and participatory work process (Karasek & Theorell, 1990), which are helpful for employees to reduce stress.

One limitation of the JDACS model is its lack of generalizability. A review highlighted that this model was less supportive for females and white-collar populations (Van Der Doef & Maes, 1999). Another limitation is simplicity (Dollard et al., 2003). Given the complexity of the working environment, job control and social support cannot be the only resources available for buffering the negative impacts of job demand on stress and stress-associated outcomes. No doubt, job demand has been recognized as an important job stressor. It is also worth to consider emotional demands (Dollard et al., 2003), personal factors, and personality traits. Their role have been recognized and gained empirical support (Duran et al., 2019; De la Fuente Solana et al., 2013; Van Vegchel et al., 2004).

The following study used the organizational perspective and applied the JDCS model to view police burnout (Padyab et al., 2016). Among Swedish patrolling police officers, heavy demand was a significant predictor of greater feelings of emotional exhaustion and depersonalization (Padyab et al., 2016). Less decision and social support predicted greater feelings of emotional exhaustion and depersonalization but did not predict depersonalization for males.

Interestingly, the following study used the organizational perspective and applied both the JDC model and the JDCS model to view police burnout (Marchand & Durand, 2011). One Canadian police burnout study considered both the JDC model and the JDCS model (Marchand & Durand, 2011). As for emotional exhaustion, psychological demands were significant positive predictor (Marchand & Durand, 2011). The more the psychological demands, the greater the feeling of emotional exhaustion. Support colleagues and support supervisor were significant negative predictors. Less support colleagues and support supervisor predicted an elevated feeling of emotional exhaustion. However, skill utilization and decision authority were non-significant predictors. In terms of cynicism, psychological demands were significant positive predictor (Marchand & Durand, 2011). The more the psychological demands, the greater the feeling of cynicism. Skill utilization, decision authority, and support supervisor were significant negative predictors. Less skill utilization, decision authority, and support supervisor predicted an elevated feeling of cynicism. Nevertheless, support colleagues was a non-significant predictor. Regarding professional efficacy, skill utilization, decision authority, and support colleagues were significant positive predictors but not psychological demands and support supervisor (Marchand & Durand, 2011). The more the skill utilization, decision authority, and support colleagues, the greater the feeling of professional efficacy. Additionally, this study found several moderating effects

(Marchand & Durand, 2011). First, the moderating effect of skill utilization on psychological demands and cynicism. High skill utilization strengthened the impacts of psychological demands on cynicism. Second, the moderating effect of decision authority on psychological demands and cynicism. High decision authority weakened the impacts of psychological demands on cynicism. Third, the moderating effect of psychological demands on skill utilization and professional efficacy. High psychological demands weakened the impacts of skill utilization on professional efficacy.

#### *2.4.3 The ERI model*

In the ERI model, effort has two sources (i.e. extrinsic and intrinsic) (Siegrist, 1996). The former is the job-related demands and obligations and the latter is the need for control, an individual pattern of coping with job demands. Reward has three sources; money, esteem, and status control (Siegrist, 1996).

This model is based on reciprocity of exchange. The essential argument is that; an imbalance between high effort spent and low reward gained work condition is stressful and leads to an occurrence of emotional distress, which in turn evokes autonomic arousal and associated strain reactions (Siegrist, 1996). An example of stressful work condition is a demanding but unstable job. Another example is high-level achievement but with a lack of promotion prospects. Siegrist (1996) argued that this imbalance work condition was more likely to be prevalent among low level of occupational status control groups and high status groups and considered cardiovascular disease as the adverse health effect outcome.

The ERI model has validity. It has been applied on several types of stress indicators. First, physical health (e.g. coronary heart disease, physical health symptoms, and

musculoskeletal pain/symptoms) (Bosma et al., 1998; De Jonge et al., 2000; Joksimovic et al., 2002; Koch et al., 2017). Second, mental health (e.g. psychological distress, psychosomatic health symptoms, burnout and its subtypes) (Allisey et al., 2012; De Jonge et al., 2000; Koch et al., 2017; Violanti et al., 2018; Willis et al., 2008). Third, organizational outcomes (e.g. affective commitment and job dissatisfaction) (Allisey et al., 2012; De Jonge et al., 2000). Fourth, emotion (e.g. anger) (Hoggan & Dollard, 2007). Finally, behavioural outcomes (e.g. absenteeism and alcohol consumption) (Allisey et al., 2016; Jachens et al., 2016). Furthermore, this model differentiated extrinsic effort (exposure to job stressors) and intrinsic effort (overcommitment) (Dollard et al., 2003), allowing independent predictions on stress from organizational and individual perspectives. Nevertheless, studies regarding the ERI model were predominantly conducted in human service occupations, limiting the generalizability (Van Vegchel et al., 2005). A majority of studies were conducted in Western countries (Dollard et al., 2003; Van Vegchel et al., 2005), limiting the generalizability and cross-cultural difference.

The following studies used the organizational perspective and applied the ERI model to view police burnout (Santa Maria et al., 2021; Violanti et al., 2018; Willis et al., 2008). Among the US sworn police officers, both ERI and overcommitment were significant predictors of greater feelings of cynicism and exhaustion (Violanti et al., 2018). Overcommitment was a significant predictor of a lower professional efficacy but not ERI. A combination of high ERI and high overcommitment predicted even greater feelings of cynicism and exhaustion and a lower professional efficacy. In a police burnout study conducted in the United Kingdom, as for emotional exhaustion, effort and rewards were significant predictors but not overcommitment and ERI ratio (Willis et al., 2008). The more the effort, the greater the feeling of emotional exhaustion. However, fewer rewards predicted

an elevated feeling of emotional exhaustion. In terms of depersonalization, effort, overcommitment, and rewards were significant predictors but not ERI ratio (Willis et al., 2008). The more the effort and overcommitment, the greater the feeling of depersonalization. However, fewer rewards predicted an elevated feeling of depersonalization. Regarding personal accomplishment, fewer effort predicted an elevated feeling of personal accomplishment (Willis et al., 2008). Rewards, overcommitment, and ERI ratio were non-significant predictors. Finally, ERI and overcommitment interaction did not predict any burnout subtypes. In a study conducted on German police officers, higher work effort but lower job rewards predicted more burnout (Santa Maria et al., 2021). Nevertheless, job rewards did not have a buffering effect on the impact of work effort on burnout (Santa Maria et al., 2021).

## 2.5 Resource-based perspective

Examples of resource-based theories include the selective optimization with compensation theory (Baltes, 1997) and the model of COR (Hobfoll, 2001). The model of COR is oriented from a resource-based theoretical perspective (Jiang & Probst, 2019). This model is resource-oriented and has an emphasis on resource-based (Hobfoll, 1988, 1989, 2001, 2002). Resource is the core concept in this model (Halbesleben et al., 2014) in which resources loss plays a main role in the stress process (Hobfoll, 2001).

### 2.5.1 *The model of COR*

In the model of COR, “psychological stress is defined as a reaction to the environment in which there is (a) the threat of a net loss of resources, (b) the net loss of resources, or (c) a lack of resource gain following the investment of resources. Both

perceived and actual loss or lack of gain are envisaged as sufficient for producing stress.” (Hobfoll, 1989, p.516).

Resources and environmental circumstances are two key concepts in this model. Resources are those valued by the individuals and methods for attaining these resources (Hobfoll, 1989). Resources can be categorised into four types; (1) objects; (2) conditions; (3) personal characteristics; and (4) energies. An example of objects resource is job security (Selenko et al., 2013). Examples of conditions resources are tenure and marriage (Grandey & Cropanzano, 1999; Hobfoll, 1989). An example of personal characteristics resource is self-esteem (Rosenberg, 1986). Examples of energies resources are time, money, and knowledge (Grandey & Cropanzano, 1999; Hobfoll, 1989). Environmental circumstances can threaten and lead to resource loss (e.g. loved ones, self-esteem etc.) (Hobfoll, 1988, 1989).

The primacy of resource loss and resource investment are two principles in this model. The principle of the primacy of resource loss is that; given equal amounts of loss and gain, resource loss has a greater impact and individuals are more psychologically harmful (Halbesleben et al., 2014; Hobfoll, 2001). In the context of resource loss, resource gain is increasingly important (Hobfoll, 2001). The principle of the resource investment is that; individuals invest resources for protecting against resource loss, recovering from resource loss, and gaining resources (Hobfoll, 2001).

This model is based on the assumption that “humans are motivated to protect their current resources and acquire new resources” (Halbesleben et al., 2014, p.1335). Loss of resources is threatening. Individuals are driven to experience psychological stress in one of

three instances; a threat of loss of resources, an actual loss of resources, or a lack of resource gain after resource investment (Hobfoll, 1989, 2001).

One strength of the model of COR is generalizability. This model has been applied to various job sectors including health professional (e.g. nurses) (Janssen et al., 1999), disciplined service (e.g. firefighters, police, and correctional officers) (Allen et al., 2016; Li et al., 2018; Neveu, 2007; Qureshi et al., 2016; Van Gelderen et al., 2017), academic context (e.g. college students, teachers, and university professors) (Alarcon et al., 2011; Bakker et al., 2007; Grandey & Cropanzano, 1999), and aviation industry (e.g. airline industry ground staffs) (Karatepe, & Choubtarash, 2014). Another strength is validity. Studies have found significant predictions on stress (Van Gelderen et al., 2017) and various stress indicators. These stress indicators can be categorized into several types. First, physical health (Grandey & Cropanzano, 1999). Second, mental health (e.g. burnout and its subtypes) (Alarcon et al., 2011; Janssen et al., 1999; Karatepe, & Choubtarash, 2014; Neveu, 2007). Third, organizational outcomes (e.g. work engagement, job distress, turnover intentions, service recovery performance, and work stress) (Bakker et al., 2007; Grandey & Cropanzano, 1999; Karatepe, & Choubtarash, 2014; Li et al., 2018). Fourth, personal (e.g. engagement and life distress) (Alarcon et al., 2011; Grandey & Cropanzano, 1999). Fifth, family (e.g. family distress) (Grandey & Cropanzano, 1999). Sixth, behavioural (e.g. absenteeism) (Karatepe, & Choubtarash, 2014). Finally, work-family conflict and work on family strain (Allen et al., 2016; Qureshi et al., 2016).

However, the model of COR is subject to four criticisms. First, the model of COR is resource-oriented but some researchers argued that the resource loss part is appraisal-based (i.e. perceived loss by an individual) (Lazarus & Lazarus, 1991), leading to a

misunderstanding (Hobfoll, 2001). Second, the confounding effects of personality traits (Hobfoll, 2001). One study highlighted a tangled relationship among neuroticism, extraversion, life events, and subjective well-being (Suh et al., 1996). If the effects of personality traits are not confounded, the true variance explained by resource loss cannot be reflected. Third, an instrument of 74 resources was created (Hobfoll et al., 1992) but it was not commonly used due to its length, repetitions, and overlapping among resources (Halbesleben et al., 2014). Finally, this model is criticised by being a broad-based motivational theory (Hobfoll, 2001). It only instructs how resource loss drives individuals' responses and eventually may or may not result in stress.

The following studies used the resource-based perspective and applied the model of COR to view police work stress (Brunetto et al., 2023; Eikenhout et al., 2021; Li et al., 2018; Li et al., 2021b; Sadiq, 2022). Considering some European countries, lower perceived organizational support was a significant predictor of more organizational stress among British and Italian police officers (Brunetto et al., 2023). In a study conducted on Dutch police officers, work scheduling (i.e. irregular working hours, shift work, and unfair task divisions), but not workload and interruptions, predicted more burnout (Eikenhout et al., 2021). Also, coping self-efficacy played a moderating role on the relationship between work scheduling and burnout. High coping self-efficacy weakened the impacts of work scheduling on burnout. However, coping self-efficacy did not play a moderating role on the relationships between chronic stressors (i.e. workload and interruptions) and burnout (Eikenhout et al., 2021).

Regarding some Asian countries, more workload and work-family conflict were significant predictors of a higher level of job stress among Pakistani police employees (Sadiq, 2022). In the same study, workload had an indirect effect on job stress via work-family



conflict. So the heavier the workload, the more the work-family conflict, which further increase job stress. Particular to policing in Hong Kong, work-to-family conflict and family-to-work conflict were significant predictors of an increased risk of work stress but not supervisor support, family support, nor constructive coping (Li et al., 2021b). Likewise, Li et al. (2018), among the demands variables, work-to-family stressors, family-to-work stressors, organizational stressors, and operational stressors were significant predictors of work stress but not public stressors for Hong Kong police officers. The severer the stressors, the more the work stress. Among the resources variables, constructive coping was a significant predictor of work stress but not family support nor supervisor support (Li et al., 2018). Those who did not adopt constructive coping strategies suffered from an increased risk of work stress.

## 2.6 Application of work-related stress theories and models across countries

Psychological perspective and the JD-R model was the most used and applied respectively. This may be because the JD-R model is relatively easy to use. Biological perspective and the GAS was the least used and applied respectively. In the North America, organizational perspective was the most used. The JDC model, the JDCS model, and the ERI model were commonly applied. In both the European and Asian countries, psychological perspective was the most used while the JD-R model was the most applied.

## 2.7 The variance of explanation of work-related stress theories and models across countries

In the North America, the JDC model and the JDCS model accounted for the highest and lowest variance of explanation for emotional exhaustion and professional efficacy respectively in Canada (Marchand & Durand, 2011). The models explained 40% and 25% of variance of explanation for emotional exhaustion and professional efficacy respectively. Considering some European countries, the transactional model of stress and coping

accounted for the highest variance of explanation for burnout in Portugal (Esteves & Gomes, 2013). Emotional exhaustion was the best predicted outcome, with 50% of variance of explanation. The ERI model accounted for the lowest variance of explanation for burnout in the United Kingdom (Willis et al., 2008). The model explained 0% to 14% of variance of explanation for personal accomplishment. Regarding the Asian countries, the JD-R model accounted for the highest variance (48.07%) of explanation for burnout in Indonesia (Yulianti & Rohmawati, 2020). The JD-R model accounted for lowest variance (17%) of explanation for burnout (depersonalization) in India (Lambert et al., 2018). However, eight studies reviewed did not report neither R squared nor adjusted R squared (Brunetto et al., 2023; Eikenhout et al., 2021; Sadiq, 2022; Santa Maria et al., 2018; Santa Maria et al., 2021; Taris et al., 2010; Violanti et al, 2018; Wolter et al., 2019).

This chapter reviewed the theoretical explanations of police work-related stress, including five theoretical perspectives and the corresponding theories and models. Among the explanatory theories and models of work outcomes, the current research adopted the JD-R model to provide a theoretical base for understanding work-related stress in Hong Kong policing context. Since the past decade, sources of work-related stress among Hong Kong police officers have possibly come from heavy job demands (organizational, operational, public, and pandemic stressors) and inadequate job resources (supervisory support, internal procedural justice, and organizational support). Therefore, the application of the JD-R model in this research is justifiable. However, a weakness of this model is that it cannot be applied to understand family-related stressors and resources. Finally, from the aforementioned studies reviewed, a majority were conducted in Western countries and used quantitative methodology. This research is designed to focus on the Hong Kong policing context and use a mixed-method research design.

Table 2. 1 Summary of main findings of studies applying work-related stress theories and models

Study	Theoretical perspective	Theory/Model	Key findings	Variance of explanation (R squared)	Location
Marcos et al. (2019)	Psychological	Job demands and resources theory	<p>Optimism predicted less job stress</p> <p>A lack of organizational socialization (policies) and collective efficacy predicted more commitment to police work</p> <p>Organizational socialization (history and language), organizational values, social support, self-efficacy, and optimism did not predict commitment to police work</p>	48%	Spain
Santa Maria et al. (2018)	Psychological	Job demands–resources model	Job resources had a buffering effect on the negative impacts of job demands on emotional exhaustion	No information	Germany
Wolter et al. (2019)	Psychological	Job Demands-Resources framework	<p>More workload, administrative stressors, and verbal assaults by citizens predicted more emotional exhaustion</p> <p>A lack of team support and shared values predicted more emotional exhaustion</p> <p>A lack of perceived fairness predicted more emotional exhaustion</p>	No information	Germany

Taris et al. (2017)	Psychological	Job demands– resources model	More work load, mental demands, emotional demands, role uncertainty, and job uncertainty predicted more exhaustion	Exhaustion (28%)	The Netherlands
			More work load, administrative demands, emotional demands, and role uncertainty predicted more cynicism	Cynicism (35%)	
			A lack of job resources, except salary, predicted more exhaustion and cynicism		
			More autonomy predicted more cynicism Role uncertainty predicted more engagement (dedication and vigor)		
			More task variation, social support from supervisor, and growth opportunities predicted more engagement (dedication and vigor)		
Sørengaard & Langvik (2022)	Psychological	Job demands- resources model	An unsupportive leadership predicted more burnout	42%	Norway
			Quantitative job demands did not predict burnout		
Lambert et al. (2022)	Psychological	Job demands- resources model	More job demands (role overload and dangerousness of the job) predicted more job stress	26%	India
			Role underload did not predict job stress		

			A lack of job resources (supervisor trust, coworker trust, training views, and job autonomy) predicted more job stress		
			Management trust did not predict job stress		
Lambert et al. (2018)	Psychological	Job demand-resource model	More job stress predicted more emotional exhaustion	Emotional exhaustion (20%)	India
			A lack of job stress predicted less personal accomplishment	Depersonalization (17%)	
			Job stress did not predict depersonalization		
			A lack of job involvement and job satisfaction but more continuance commitment predicted more emotional exhaustion and depersonalization	Reduced sense of personal accomplishment (40%)	
			More job involvement, job satisfaction, and affective commitment predicted less personal accomplishment		
			Continuance commitment did not predict personal accomplishment		
			Affective commitment did not predict emotional exhaustion and depersonalization		
Frank et al. (2017)	Psychological	Job demands-resources model	More job demands (role conflict, role ambiguity, and role overload) predicted more work stress	30%	India

			A lack of job resources (input into decision making, formalization, and organizational support) predicted more work stress		
			Role underload, dangerousness of job, and instrumental communication did not predict work stress		
Yulianti & Rohmawati (2020)	Psychological	Job demands–resources model	More job demands (workload and emotional demands) predicted more burnout	48.07%	Indonesia
			Teamwork effectiveness did not predict burnout		
			Teamwork effectiveness did not moderate the relationship between job demands and burnout		
			Fewer job demands (workload and emotional demands) predicted more engagement		
			More teamwork effectiveness predicted more engagement		
Esteves & Gomes (2013)	Psychological	Transactional model of stress and coping	More problems in relationships at work, more work overload, greater perception of threat, and lower perception of challenge predicted more emotional exhaustion	Emotional exhaustion (43%-50%) (adjusted)	Portugal
			More problems in relationships at work, greater perception of threat, and lower	Depersonalization (21%-31%) (adjusted)	

			<p>perception of challenge predicted more cynicism</p> <p>Secondary cognitive assessment did not predict emotional exhaustion and cynicism</p> <p>Lower perception of threat, greater perception of challenge, greater coping potential, and greater perception of control over work predicted a lower professional efficacy</p> <p>The dimensions of stress did not predict professional efficacy</p>	Professional efficacy (0%-16%) (adjusted)	
Kula (2017)	Psychological	The Spielberger State-Trait model of occupational stress	<p>More organizational stress, more operational stress, and lower job satisfaction predicted more work-related burnout</p> <p>Supervisor support did not predict work-related burnout</p>	34%	Turkey
Taris et al. (2010)	Organizational	Job demand–control model	<p>More job demands predicted more emotional exhaustion</p> <p>Job control did not predict emotional exhaustion</p> <p>More job control predicted more professional efficacy</p> <p>Job demands did not predict professional efficacy</p>	No information	The Netherlands

			A non-significant interaction between demand and control		
Lambert et al. (2017)	Organizational	Job strain model	More strain-based conflict, behaviour-based conflict, and family-based predicted more job stress	25%	India
			Time-based conflict did not predict job stress		
Padyab et al. (2016)	Organizational	Job demand-control-social support model	More demand predicted more emotional exhaustion and depersonalization	Emotional exhaustion for males (22%) (adjusted)	Sweden
			A lack of decision and social support predicted more emotional exhaustion and depersonalization	Emotional exhaustion for females (16%) (adjusted)	
			A lack of decision and social support did not predict depersonalization for males	Depersonalization for males (5%) (adjusted)	
				Depersonalization for females (8%) (adjusted)	
Marchand & Durand (2011)	Organizational	Job demand-control model	More psychological demands predicted more emotional exhaustion and cynicism	Emotional exhaustion (40%)	Canada



		Job demand-control-support model	<p>A lack of support colleagues and support supervisor predicted more emotional exhaustion</p> <p>Skill utilization and decision authority did not predict emotional exhaustion</p> <p>A lack of skill utilization, decision authority, and support supervisor predicted more cynicism</p> <p>Support colleagues did not predict cynicism</p> <p>More skill utilization, decision authority, and support colleagues predicted more professional efficacy</p> <p>Psychological demands and support supervisor did not predict professional efficacy</p> <p>High skill utilization strengthened the impacts of psychological demands on cynicism</p> <p>High decision authority weakened the impacts of psychological demands on cynicism</p> <p>High psychological demands weakened the impacts of skill utilization on professional efficacy</p>	<p>Cynicism (35%)</p> <p>Professional efficacy (25%)</p>	
Violanti et al. (2018)	Organizational	Effort-reward imbalance model	Effort reward imbalance and overcommitment predicted more cynicism and exhaustion	No information	United States of America

			Overcommitment predicted less professional efficacy		
			Effort reward imbalance did not predict professional efficacy		
			A combination of high effort reward imbalance and high overcommitment predicted even more cynicism and exhaustion and less professional efficacy		
Willis et al. (2008)	Organizational	Effort-reward imbalance model	More effort predicted more emotional exhaustion	Emotional exhaustion (0%-40%) (adjusted)	United Kingdom
			A lack of rewards predicted more emotional exhaustion and depersonalization	Depersonalization (1%-24%) (adjusted)	
			Overcommitment and effort reward imbalance ratio did not predict emotional exhaustion	Personal accomplishment (0%-14%) (adjusted)	
			More effort and overcommitment predicted more depersonalization		
			Effort reward imbalance ratio did not predict depersonalization		
			A lack of effort predicted more personal accomplishment		

			Rewards, overcommitment, and effort reward imbalance ratio did not predict personal accomplishment		
			A non-significant interaction between effort reward imbalance and overcommitment		
Santa Maria et al. (2021)	Organizational	Effort-reward imbalance model	More work effort predicted more burnout A lack of job rewards predicted more burnout Job rewards did not buffer the impact of work effort on burnout	No information	Germany
Brunetto et al. (2023)	Resource-based	Conservation of resources theory	A lack of perceived organizational support predicted more organizational stress	No information	United Kingdom and Italy
Eikenhout et al. (2021)	Resource-based	Conservation of resources theory	Work scheduling predicted more burnout Workload and interruptions did not predict burnout High coping self efficacy weakened the impacts of work scheduling on burnout. Coping self efficacy did not moderate the relationships between chronic stressors (i.e. workload and interruptions) and burnout	No information	The Netherlands
Sadiq (2022)	Resource-based	Conservation of resources theory	More workload and work-family conflict predicted more job stress	No information	Pakistan

			Work-family conflict mediated the relationship between workload and job stress		
Li et al. (2021b)	Resource-based	Conservation of resources theory	More work-to-family conflict and family-to-work conflict predicted more work stress	44.3%	Hong Kong
			Supervisor support, family support, and constructive coping did not predict work stress		
Li et al. (2018)	Resource-based	Conservation of resources theory	More demands (work-to-family stressors, family-to-work stressors, organizational stressors, and operational stressors) predicted more work stress	48%	Hong Kong
			A lack of resource (constructive coping) predicted more work stress		
			Public stressors, family support, and supervisor support did not predict work stress		

---

## **CHAPTER 3: METHODOLOGY**

### 3.1 Mixed-method research design

This research employed a mixed-method research design, composing quantitative secondary survey data analysis and semi-structured interviews with a timeline approach. Along with qualitative and quantitative research, a mixed-method research is recognized as the third research paradigm (Johnson et al., 2007). A mixed-method research combines qualitative and quantitative research approaches, for example, perspectives, data collection, data analysis, and inference techniques to broaden and deepen the understanding towards a phenomenon (Johnson et al., 2007). Combining methods can not only gain the strengths from each method but also compensate limitations of the other method (Creswell, 2018a; Henn et al., 2005). However, using a mixed-method research requires quantitative, qualitative, and mixed-methods research skills, adequate time and resources (Creswell, 2018a).

Greene et al. (1989) identified five purposes and rationales of mixed-method research designs; (1) triangulation (seeking convergence of results from different methods to increase the validity of results and also inquire bias); (2) complementarity (elaborating and enriching of results from one another method); (3) development (using the results from one method to help develop the other method); (4) initiation (discovering paradoxes or new perspectives to broaden and deepen the results); and (5) expansion (using different methods for different inquiry components to broaden and deepen the results and thus expand the scope).

One approach to combine methods is the triangulation of methods (Spicer, 2018). The definition of triangulation is “the combination of methodologies in the study of the same phenomena” (Denzin, 1978, p.291). Denzin (1978) listed four types of triangulation; (1) data triangulation; (2) investigator triangulation; (3) theory triangulation; and (4) methodological

triangulation. Strengths of triangulation are summarised in the following; (1) increasing the validity of results so that the researchers can be more confident; (2) stimulating creative data collection methods; (3) uncovering paradoxes; (4) new development and integration of theories; (5) a richer explanation of the research problem; (6) serving as the critical test for competing theories; (7) a complete picture of the study phenomenon; and (8) overcoming bias by avoiding own unique interpretations (Bryman, 1992; Henn et al, 2005; Jick, 1979; Spicer, 2018).

### 3.2 The current research

This research employed a mixed-method research design. Quantitative secondary survey data were used while semi-structured interviews with a timeline approach were conducted. This research included three interlocking and sequential studies; (1) Study One (Factors influencing police work-related stress: A scoping review); (2) Study Two (Predictors and mediators of work-related stress among Hong Kong police officers: A quantitative secondary survey data analysis); and (3) Study Three (A contextual understanding of work-related stress among Hong Kong police officers: Qualitative interviews with a timeline approach) (see Table 3. 1 Three interlocking and sequential studies).

By conducting these three studies, three purposes of adopting the mixed-method research design were achieved. To gain the first purpose (i.e. triangulation), Study Two and Study Three produced similar results regarding operational stressors. The result of operational stressors as job demands of more work-related stress for Hong Kong police officers was validated. The second purpose (i.e. complementarity) was gained. Study Two found that operational stressors had a direct effect on work-related stress among Hong Kong police officers. Further elaborations came from Study Three, which found Hong Kong police

officers experienced work-related stress from operational domain, including job nature, danger, and negative exposures of policing work. To achieve the third purpose (i.e. initiation), a paradox regarding the prediction of gender on police work-related stress was discovered. Study Two found that gender was a non-significant demographic predictor among Hong Kong police officers. However, gender emerged as a vulnerability factor in Study Three, with male police officers encountered more work-related stress than female police officers. Reasons behind the impact of gender on police work-related stress were also offered in Study Three for in-depth insights.

Each study has its own strengths and limitations. They can complement and supplement to one another. Study One is intended to categorize the factors influencing police work-related stress directly or indirectly from a multi-level perspective. Study One can provide a categorization. However, an empirical understanding of police work-related stress is still lacking. This gap was filled in Study Two which is intended to examine predictors and mediators of work-related stress among Hong Kong police officers, with the application of SEM. Of note, Study Two can only help identify the factors behind police work-related stress, but not causality and the context and process of forming police work-related stress. To gain a contextual and in-depth understanding of police work-related stress, Study Three using the semi-structured interviews with a timeline approach is intended to explore the subjective experiences among Hong Kong police officers in relation to their stressful work scenarios. The goal of this research is to gain a comprehensive and in-depth understanding of work-related stress among Hong Kong police officers. Specifically, three interlocking and sequential studies were conducted with the following specific objectives:

1. Categorize the factors influencing police work-related stress directly or indirectly from a multi-level perspective

2. Examine predictors and mediators of work-related stress among Hong Kong police officers
3. Identify the context, process, scenario, and subjective experiences of work-related stress among Hong Kong police officers

Table 3. 1 Three interlocking and sequential studies

	Study One (Factors influencing police work-related stress: A scoping review)	Study Two (Predictors and mediators of work-related stress among Hong Kong police officers: A quantitative secondary survey data analysis)	Study Three (A contextual understanding of work-related stress among Hong Kong police officers: Qualitative interviews with a timeline approach)
Objective	Categorize the factors influencing police work-related stress directly or indirectly from a multi-level perspective	Examine predictors and mediators of work-related stress among Hong Kong police officers	Identify the context, process, scenario, and subjective experiences of work-related stress among Hong Kong police officers
Strength	Provide a categorization	Provide an empirical understanding  Identify the factors behind police work-related stress	Provide a contextual and in-depth understanding
Limitation	Lack of an empirical understanding of police work-related stress	Causality cannot be identified  The context and process of forming police work-related stress cannot be identified	The strength and direction of each factor for police work-related stress cannot be delineated and tested
Sampling	Found 1,949 articles from seven databases	Random sampling	Purposive sampling
Sample size	Included 30 articles	335 participants	16 participants



One core mixed method design is the convergent design (Creswell, 2018a) and this research employed this type of design. The notation of this type of design is written as QUAN + QUAL = complete understanding (Creswell, 2018a). Both quantitative and qualitative study have equal importance (Creswell, 2018a) for achieving the goal of this research. In this research, Study Two (Predictors and mediators of work-related stress among Hong Kong police officers: A quantitative secondary survey data analysis) was conducted first, followed by Study Three (A contextual understanding of work-related stress among Hong Kong police officers: Qualitative interviews with a timeline approach). In Study Two, as for quantitative secondary data collection, permissions were gained from the principal investigator (Li) of a study of Work Stress and Work Engagement of Hong Kong Police Officers (WSWE study) before using the secondary survey data while numeric data were captured. In terms of quantitative secondary survey data analysis, new results regarding predictors and mediators of work-related stress among Hong Kong police officers were found using a more advanced statistical analytical method (i.e. SEM). Descriptive statistics, bivariate results, confirmatory factor analysis (CFA) results, model fit statistics, and path analysis results were presented. In Study Three, as for qualitative data collection, semi-structured interviews with a timeline approach were conducted with 16 Hong Kong police officers. All interviews were transcribed. In terms of qualitative data analysis, codes, higher order codes, and themes regarding demands and resources among Hong Kong police officers were emerged using template analysis. Moving on to merging the results, key findings of the three studies were summarized and presented using a table. Finally, researcher interpreted how the results converge or diverge from each other and thus gain a comprehensive and in-depth understanding of work-related stress among Hong Kong police officers in the discussion part. The flowchart of Study Two and Study Three is as follows:

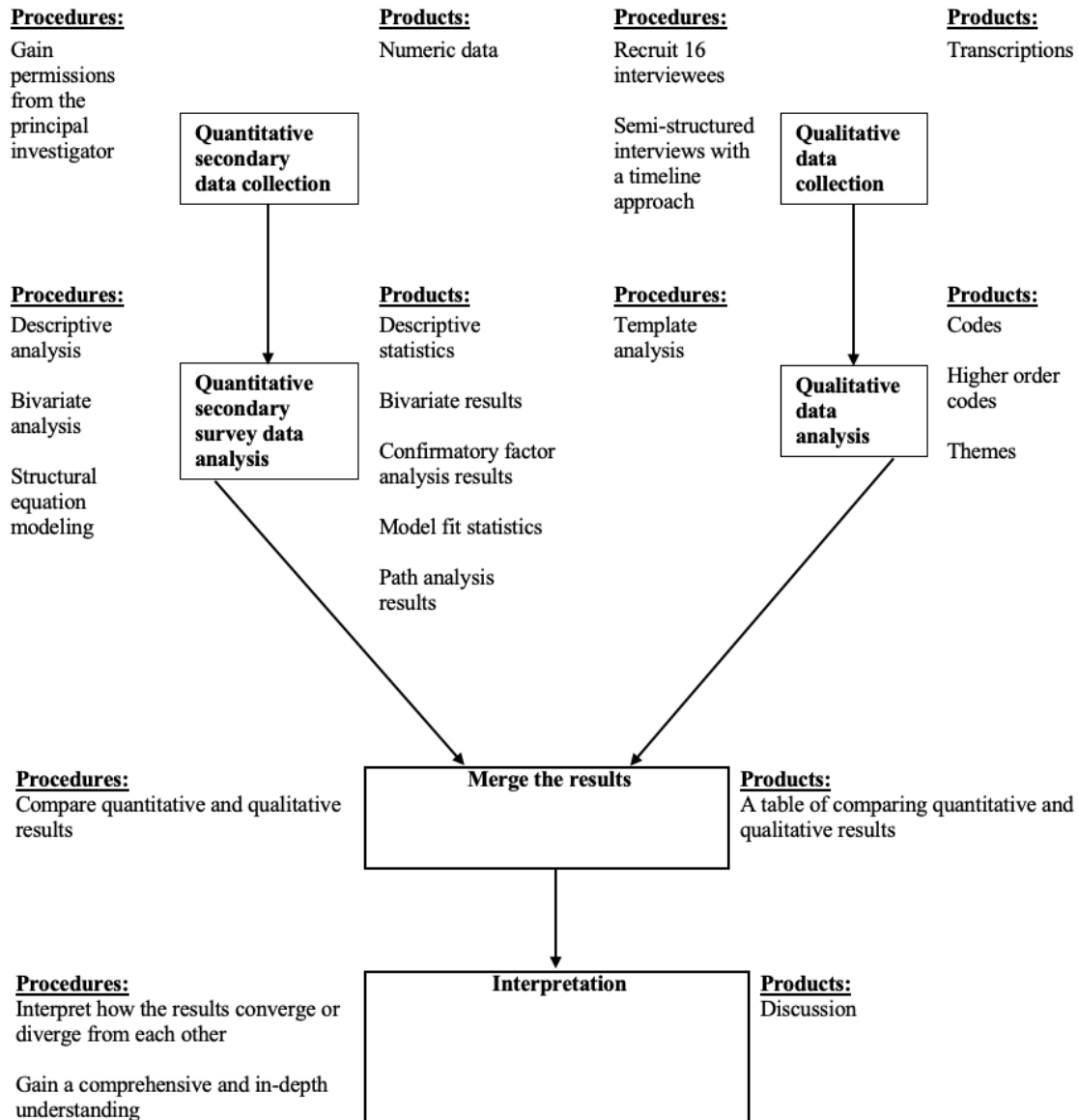


Figure 3. 1 Flowchart of Study Two and Study Three

### 3.3 Study One (Factors influencing police work-related stress: A scoping review)

Study One is intended to categorize the factors influencing police work-related stress directly or indirectly from a multi-level perspective. From seven databases, a total of 1,949 articles were found and finally 30 articles were included. The results categorized six types of predictors; (1) demographic; (2) personal; (3) organizational; (4) operational; (5) family-related; and (6) community. The results also found four mediators; (1) work-family conflict;

(2) resiliency; (3) gender; and (4) supervisor support, and three moderators; (1) social support; (2) work support; and (3) locus of control personality (internality). Five knowledge gaps were identified (see Chapter 4 for details). Therefore, Study Two and Study Three were conducted to address these gaps in the existing literatures.

### 3.4 Study Two (Predictors and mediators of work-related stress among Hong Kong police officers: A quantitative secondary survey data analysis)

Study Two is intended to examine predictors and mediators of work-related stress among Hong Kong police officers. In this study, there were six hypotheses:

Hypothesis 1a: Work-related stress is negatively related to age, education, rank, and tenure

Hypothesis 1b: More work-related stress is reported by female, non-married, and parenting police officers

Hypothesis 2: Job demands (organizational stressors, operational stressors, public stressors, and pandemic stressors) have direct and positive effect on work-related stress

Hypothesis 3: Job resources (supervisory support and internal procedural justice) have direct and negative effect on work-related stress

Hypothesis 4a: Work engagement can mediate the relationship between job demands (organizational stressors, operational stressors, public stressors, and pandemic stressors) and work-related stress

Hypothesis 4b: Work engagement can mediate the relationship between job resources (supervisory support and internal procedural justice) and work-related stress

### 3.4.1 Source of secondary survey data

Secondary data is a type of data collected by others (Bryman, 2008; Sindin, 2017). Using secondary data is low cost, time-saving, and easy to access (Hox & Boeije, 2005; Sindin, 2017). More importantly, the secondary analyst may use an alternative data analysis method to find different results and thus offer new interpretations (Bryman, 2008). The secondary survey data is from the WSWE study, a three-phase study conducted from 2018 to 2020. The WSWE study was conducted by a team of researchers (Li, Cheung & Sun) who examined the Hong Kong police officers' work-related stress, work engagement, work compliance, work performance, turnover intention, internal procedural justice, external procedural justice, stressors, supervisory support, family support, and coping strategies. This study was approved by the Hong Kong Polytechnic University's Institutional Ethical Review Board (reference number: HSEARS20180326012) and the consent was obtained from the Junior Police Officers' Association (JPOA). Eight hundred Hong Kong police officers, who registered in the JPOA, were randomly selected. An invitation letter was sent to these police officers. A reply form was provided along with the invitation letter, in which police officers gave their informed consent. With the help from the JPOA, data were collected using self-administrated surveys. Surveys with inadequate responses were excluded. In phase three (i.e. year 2020), 335 valid responses were returned, with a 73% of response rate. There were very few missing data. No variable had more than three per cent of missing value. Data were missing at random. This research focused on the COVID-19 as a pandemic stressor of police work-related stress, so the third phase of data (i.e. year 2020) of the WSWE study was used. The sample size calculation was based on the Yamane's formula:

$$n = N/1+N(e)^2$$

Where

n = sample size

$N$  = population

$e$  = margin of error

Using the value of  $N = 27,000$  junior police officers,  $e = 5\%$ , and to have a confidence level of 95%, the calculated sample size is 379.

### 3.4.2 Measures

#### *Endogenous variable*

The endogenous variable in this study was work-related stress. Work-related stress was measured by six items, including “I feel tired at work even with adequate sleep”, “I am moody, irritable, or impatient over small problems”, “I futile about work”, “I think I am not as efficient at work as I should be”, “My resistance to illness is lowered because of my work”, and “I have difficulty concentrating on my job”. Response categories include “never” (=1), “rarely” (=2), “seldom” (=3), “sometimes” (=4), “frequently” (=5), and “always” (=6). The six items had a Cronbach’s alpha value of .88.

#### *Exogenous variables*

There were six exogenous variables in this study; organizational stressors, operational stressors, public stressors, pandemic stressors, supervisory support, and internal procedural justice.

Organizational stressors were measured by six items, namely “Feeling like you always have to prove yourself to the organization”, “Excessive administrative duties”, “Staff shortages”, “Bureaucratic red tape”, “Volunteer free time to work”, and “Unequal sharing of work responsibilities”. Respondents were asked to rate on a scale of 1 to 6 (1 = “absolutely

not stressful” and 6 = “absolutely stressful”). The six items had a Cronbach’s alpha value of .92.

Operational stressors were measured by six items, namely “Work related activities on days off (e.g., court, community events)”, “Not enough time available to spend with friends and family”, “It is hard to eat healthy at work”, “It is hard to finding time to stay in good physical condition”, “Lack of understanding from family and friends about your work”, and “Feeling like you always on the job”. Respondents were asked to rate on a scale of 1 to 6 (1 = “absolutely not stressful” and 6 = “absolutely stressful”). The six items had a Cronbach’s alpha value of .93.

Public stressors were measured by six items, namely “Verbal attack by citizens”, “Unreasonable demand by citizens”, “Handling social movements/riots”, “Complaint by citizens”, “Video shooting by citizens at the time of duty”, and “Verbal attack, negative labelled on internet platform”. Respondents were asked to rate on a scale of 1 to 6 (1 = “absolutely not stressful” and 6 = “absolutely stressful”). The six items had a Cronbach’s alpha value of .95.

Pandemic stressors were measured by three items, namely “Infection of COVID-19 virus in your contacts with the public”, “A threat to health when having duty at COVID-19 pandemic”, and “Extra work bought by COVID-19 pandemic”. Respondents were asked to rate on a scale of 1 to 6 (1 = “absolutely not stressful” and 6 = “absolutely stressful”). The three items had a Cronbach’s alpha value of .95.

The supervisory support scale had three items, including “To what extent can you count on your leader to back you up when you have difficulties combining work and family”, “To what extent can you count on your leader to listen to you when face difficulties in combining work and family”, and “To what extent can you count on your leader to help you face difficulties combining work and family”. Respondents were asked to indicate on a six-point Likert scale, ranging from one “absolutely no support” (=1) to six “enormous support” (=6). This scale had a Cronbach’s alpha value of .96.

Internal procedural justice was measured by five items, including “When they are giving instructions, my supervisors explain why they give these instructions”, “When making policy choices, my supervisors sufficiently explain why these choices are being made”, “My supervisors are impartial when making decision”, “When implementing changes, my supervisors sufficiently explain why these changes are necessary”, and “My supervisors give explanations for decisions they make that affect me”. Response categories include “strongly disagree” (=1), “disagree” (=2), “rather disagree” (=3), “rather agree” (=4), “agree” (=5), and “strongly agree” (=6). The five items had a Cronbach’s alpha value of .94.

### *Mediating variable*

The mediating variable in this study was work engagement. Work engagement has three subscales; vigor, dedication, and absorption. Each subscale has three items. Vigor is measured by “At my work, I feel bursting with energy”, “At my job, I feel strong and vigorous”, and “When I get up in the morning, I feel like going to work”. Dedication is measured by “I am enthusiastic about my job”, “My job inspires me”, and “I am proud of the work that I do”. Absorption is measured by “I feel happy when I am working intensively”, “I am immersed in my work”, and “I get carried away when I am working”. Response

categories include “never” (=1), “rarely” (=2), “seldom” (=3), “sometimes” (=4), “frequently” (=5), and “always” (=6). This scale had a Cronbach’s alpha value of .93.

#### *Demographic characteristics*

Age, gender, education, marital status, family status (having children), rank, and tenure influenced work-related stress among police officers. These demographic characteristics were controlled. Age, education, and tenure were measured in years. Gender (0 = male; 1 = female), marital status (0 = non-married; 1 = married), and family status (having children) (0 = without children; 1 = with children) were dichotomised variables. Rank was coded as (1 = junior police constable; 2 = senior police constable; 3 = sergeant; 4 = station sergeant).

#### *3.4.3 Quantitative secondary survey data analysis - SEM*

Previous studies have adopted regression for data analysis (Li et al., 2021a; Li et al., 2021b; Li et al., 2018). Alternatively, SEM was used to analyze the data. SEM is a flexible and powerful statistical analytical method (Nachtigall et al., 2003). It can deal with latent variables, observed variables, and the associated measurement errors simultaneously when analyzing data, resulting in greater reliability and validity of observed scores from measurement instruments (Schumacker & Lomax, 2004). Through considering the measurement errors, SEM can test the hypothesized model more accurate than regression (Indranarain, 2017; Jaccard, 1996). SEM can also analyze multiple observed variables and more sophisticated theoretical models, advancing the understanding of the complex causal relationships among variables (Schumacker & Lomax, 2004). These are the reasons why SEM was used.



Secondary survey data analysis included three parts; (1) descriptive analysis; (2) bivariate analysis; and (3) SEM analysis. For descriptive results, descriptive statistics of demographic characteristics, and descriptive statistics and reliability test results of variables were presented. For bivariate results, correlations between variables were presented. For SEM results, CFA results, model fit statistics, and path analysis results were presented. Before estimating SEM, CFA was conducted and model fit statistics were reported. CFA is conducted to determine if the theoretically driven indicators are loaded onto their respective factors. For CFA, a cutoff point of .40 is acceptable for factors loadings (Stevens, 2002). Factors loadings of each indicator with the respective variables were reported. The maximum likelihood was used to estimate model parameters. Model fit statistics including (1) the value of chi-square ( $\chi^2$ ), degree of freedom (*df*), and associated p-value; (2) the comparative fit index (CFI); (3) the Tucker–Lewis index (TLI); (4) the root mean square error of approximation (RMSEA); and (5) the standardized root mean square residual (SRMR) were reported (Kline, 2015). As for the value of  $\chi^2$ , the smaller the better (Hooper et al., 2008; Schermelleh-Engel et al., 2003). Recommendation for *df* ranges from 2-5 (Hooper et al., 2008). Value larger than .05 for  $\chi^2$  associated p-value indicates a good model fit (Barrett, 2007; Hooper et al., 2008; Schermelleh-Engel et al., 2003). Value greater than .95 for CFI and TLI, value smaller than .05 for RMSEA, and value smaller than .08 for SRMR indicate a good model fit (Hooper et al., 2008; Kline, 2015; Rosenthal, 2017; Schermelleh-Engel et al., 2003). For path analysis results, the direct, indirect, and total effects of the exogenous variables on the endogenous variable were presented. The statistical software of Mplus (version 8.10) was used.

To support mediation, the following conditions should be fulfilled; (1) Job demands (organizational stressors, operational stressors, public stressors, and pandemic stressors) are

negatively related to work engagement; (2) Job resources (supervisory support and internal procedural justice) are positively related to work engagement; (3) Work engagement is negatively related to work-related stress; (4) the relationship between job demands (organizational stressors, operational stressors, public stressors, and pandemic stressors) and work-related stress becomes weaker (partial mediation) or non-significant (full mediation) after adding work engagement; and (5) the relationship between job resources (supervisory support and internal procedural justice) and work-related stress becomes weaker (partial mediation) or non-significant (full mediation) after adding work engagement (see Figure 3. 2 The conceptual framework and Figure 3. 3 Details of each component). Solid lines represent the direct relationships while dotted lines represent mediating relationships. Demographic characteristics including age, gender, education, marital status, family status (having children), rank, and tenure were controlled.

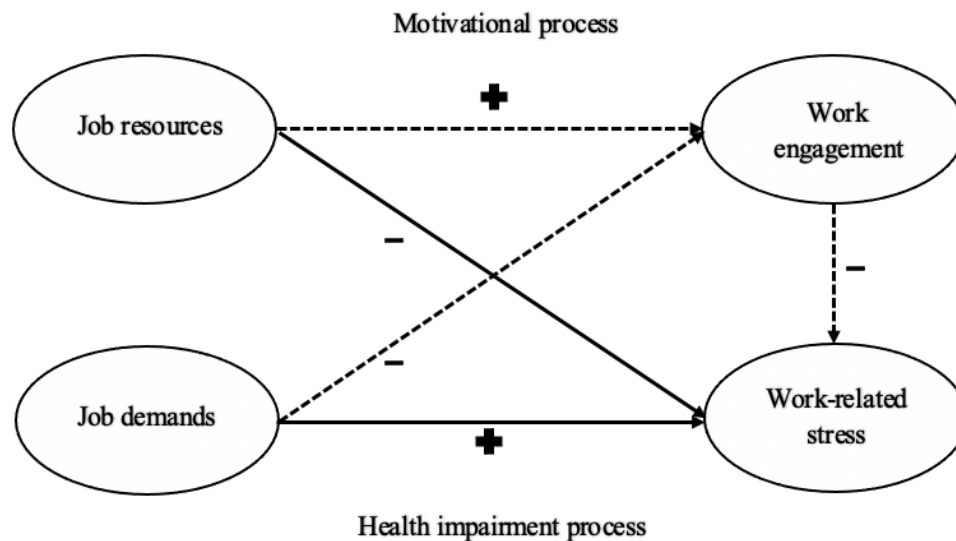


Figure 3. 2 The conceptual framework

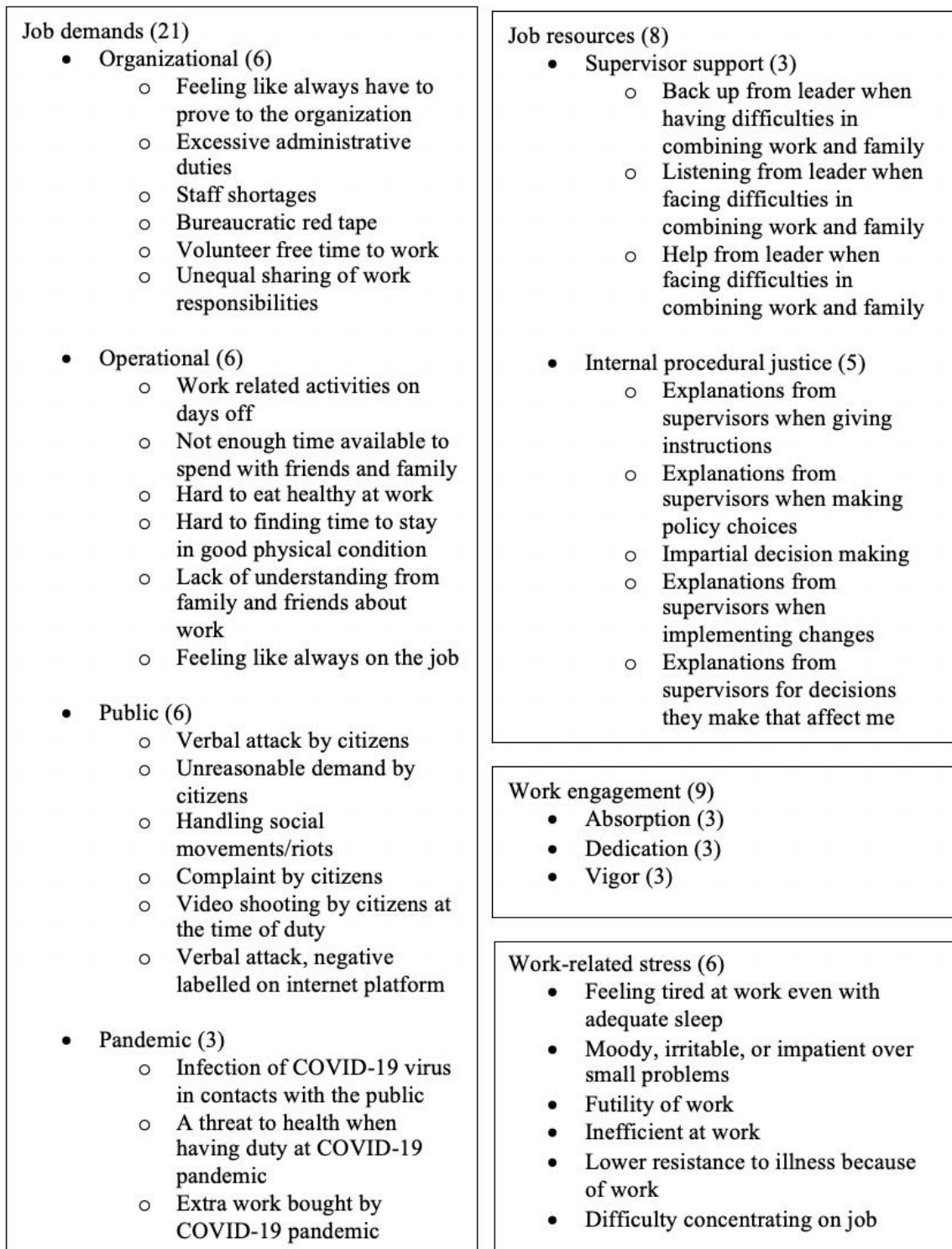


Figure 3. 3 Details of each component

### 3.5 Study Three (A contextual understanding of work-related stress among Hong Kong police officers: Qualitative interviews with a timeline approach)

Study Three is intended to identify the context, process, scenario, and subjective experiences of work-related stress among Hong Kong police officers. A semi-structured interview is based on some pre-prepared questions which remains a natural conversation between the interviewees and the interviewers (Hesse-Biber & Leavy, 2010). Conducting semi-structured interviews are beneficial to both interviewees and interviewers. Interviewees are given freedom to share their experiences or stories (Hesse-Biber & Leavy, 2010). Interviewers can gain richer data (Smith, 1995) and thus achieve richness of a particular topic. A timeline reflects a participant's life events which are placed in chronological order (Berends, 2011; Kolar et al., 2015). Using timelines offer the following four advantages; (1) provide a concise and comprehensive form of presentation; (2) have a better understanding regarding participants' important life experiences; (3) recall sequential personal events; and (4) enhance participants' engagement (Berends, 2011; Gramling & Carr, 2004; Kendellen & Camiré, 2019; & Kolar et al., 2015). In this study, the timeline approach can not only help the student researcher to understand lived experiences of Hong Kong police officers at different time phases throughout the COVID-19 pandemic but also enhance their engagement during the semi-structured interviews. Berends (2011) pointed out three advantages of combining qualitative interviews with timelines; (1) facilitating data management; (2) increasing data quality; and (3) enabling insightful analysis.

#### *3.5.1 Participants*

To get access to the potential interviewees, a couple of meetings were conducted with the JPOA beforehand. An information sheet including the objectives of the study, research procedure, permission for audio recording, potential benefits and risks with participation in

the study, voluntary nature of participation, anonymity and confidentiality issues, the right to withdraw, and the use of data collected, was introduced to the JPOA. With the help from the JPOA and the process of screening, eligible interviewees were invited to participate in this study. Inclusion criteria are police officers having served in the Hong Kong Police Force for over three years at the time of interview and started their duty before 2019.

In Study Three, semi-structured interviews using a timeline approach were conducted with 16 Hong Kong police officers. Police officers, who have relevant experiences and can provide rich information regarding their work-related stress, were recruited using purposive sampling method. Purposive sampling method refers to that researchers purposively choose participants who have particular characteristics that are related to the research objectives and questions (Rai & Thapa, 2015; Tracy, 2013). It is a widely used sampling method in qualitative research (Palinkas et al., 2015) which is cost-effective and time-effective (Rai & Thapa, 2015).

As shown in Table 3. 2, to achieve symbolic representation and diversity for the sample, quotas are set to include participants with different genders, marital status, and tenure. Demographic characteristics including gender (male, female), marital status (married, unmarried) and tenure (less than 12 years, more than 12 years) are combined in the following sample matrix table. According to the WSWE study conducted by Li and colleagues, the average tenure among the Hong Kong police officers is 12 years. Therefore, those who have more than 12 years of tenure are considered as more experienced while those who have less than 12 years of tenure are considered as less experienced.

Table 3. 2 Sample matrix for purposive sampling of participants

Gender	Marital status	Tenure		Total
		Less than 12 years	More than 12 years	
Male	Married	2	2	4
	Unmarried	2	2	4
Female	Married	2	2	4
	Unmarried	2	2	4
Total		8	8	16

### 3.5.2 Qualitative data collection procedure and questioning techniques

Pilot testing of the semi-structured interview guide was conducted with two participants in December 2021. Through pilot testing, researchers are given opportunities to refine the interview questions and the data collection procedures (Creswell, 2018b).

In particular, semi-structured interviews were conducted with a timeline approach. To frame data collection, a semi-structured interview guide was developed (see Figure 3. 4 Semi-structured interview guide) and a timeline sheet was also prepared. The timeline tool is an A4 sheet with visual information and a horizontal line in which emotions or feelings for each time phase were plotted above the line. The timeline is set from late January 2020 to the time of interview. For easier orientation, the timeline includes three time phases to indicate five waves of COVID-19 in Hong Kong. The first time phase is from late January 2020 to June 2020, indicating the first and second wave of COVID-19. The second time phase is from July 2020 to December 2021, indicating the third and fourth wave of COVID-19. The third time phase is from January 2022 to the time of interview, indicating the fifth wave of COVID-19.

During the interviews, interviewer showed the timeline sheet (with visual information) to the interviewees. Interviewer then described the significant events occurred in

that particular time phase that aimed at recalling and facilitating interviewees' memory and expression of thoughts respectively. The timelines were implemented in parallel with the semi-structured interviews. Interviewees were encouraged to write down any emotions or feelings in that particular time phase on the timeline sheet, following by answering the questions according to the semi-structured interview guide. Through constructing the timeline, the work-related stress experiences can not only be made centred of the interview (Kolar et al., 2015) but also organized tidily. With verbal description, interviewer can get rich contextual details.

To facilitate data collection, the following questioning techniques were adopted. Two types of questions, content mapping questions and content mining questions were asked. Content mapping questions are asked to introduce the research scope (Legard et al., 2003). Content mining questions are asked to explore the details of a topic of interest, achieving the breadth and depth (Legard et al., 2003).

Two types of content mapping questions (i.e. ground mapping questions and dimension mapping questions) were asked. Ground mapping questions are the first questions asked (Legard et al., 2003) to introduce the topic of interest. As shown in Figure 3. 4, during the interviews, "can you write down your feeling(s) or emotion(s)?" was asked in each time phase. Here, interviewees can thus get a brief idea of the coverage of this interview. Dimension mapping questions are then asked to narrow the topic of interest (Legard et al., 2003), moving from a brief idea to a focus of specific dimensions in this interview. As shown in Figure 3. 4, "Can you tell me about the changes in your organization e.g. staff shortages, supervisory support/communication/trust, internal procedural justice in this time phase?" and "Can you tell me about the changes in your work nature/content e.g. working hour, shift

work, contact with the public, any extra work brought by the COVID-19 pandemic in this time phase?” were asked. With these dimension mapping questions, the interviews can not only be structured into three time phases but also divided into several dimensions, ensuring the interviews can flow smoothly.

Two types of probes of content mining questions (i.e. amplificatory probes and explanatory probes) were used. Amplificatory probes are used to encourage interviewees to further elaborate (Legard et al., 2003). As shown in Figure 3. 4, “Are these changes related to your work-related stress?” is an example of using amplificatory probes. Interviewees verbally described their work-related stress in detail regarding each dimension in each time phase. Explanatory probes are used to probe the explanations of events etc. (Legard et al., 2003). As shown in Figure 3. 4, following “Are these changes related to your work-related stress?”, “Why?” was asked and it is an example of using exploratory probes. Interviewees were given opportunities to explain the underlying reasons of their work-related stress regarding each dimension in each time phase. To further elaborate, “Any other determinant(s) that cause you feel stressful at work?” was asked and it is also an example of using amplificatory probes.



Phases	Questions to be asked	Approximate time
Before the interviews	Do you have any questions about the interview?	10 minutes
At the beginning of the interviews	When did you join the Hong Kong Police Force?	5 minutes
During the interviews	<p>First time phase: Late January 2020 – June 2020 (the first and second wave of COVID-19)</p> <p>During late January 2020 to June 2020 (the first and second wave of COVID-19), can you write down your feeling(s) or emotion(s)?</p> <p>Can you tell me about the changes in your organization e.g. staff shortages, supervisory support/communication/trust, internal procedural justice in this time phase? Are these changes related to your work-related stress? Why?</p> <p>Can you tell me about the changes in your work nature/content e.g. working hour, shift work, contact with the public, any extra work bought by the COVID-19 pandemic in this time phase? Are these changes related to your work-related stress? Why?</p> <p>Any other determinant(s) that cause you feel stressful at work?</p> <p>Second time phase: phase: July 2020 – December 2021 (the third and fourth wave of COVID-19)</p> <p>During July 2020 – December 2021 (the third and fourth wave of COVID-19), can you write down your feeling(s) or emotion(s)?</p> <p>Can you tell me about the changes in your organization e.g. staff shortages, supervisory support/communication/trust, internal procedural justice in this time phase? Are these changes related to your work-related stress? Why?</p> <p>Can you tell me about the changes in your work nature/content e.g. working hour, shift work, contact with the public, any extra work bought by the COVID-19 pandemic in this time phase? Are these changes related to your work-related stress? Why?</p> <p>Any other determinant(s) that cause you feel stressful at work?</p> <p>Third time phase: January 2022– current (the fifth wave of COVID-19)</p> <p>During January 2022 to current (the fifth wave of COVID-19), can you write down your feeling(s) or emotion(s)?</p> <p>Can you tell me about the changes in your organization e.g. staff shortages, supervisory support/communication/trust, internal procedural justice in this time phase? Are these changes related to your work-related stress? Why?</p> <p>Can you tell me about the changes in your work nature/content e.g. working hour, shift work, contact with the public, any extra work bought by the COVID-19 pandemic in this time phase? Are these changes related to your work-related stress? Why?</p> <p>Any other determinant(s) that cause you feel stressful at work?</p>	45 minutes
Towards the end of the interviews	<p>Being a male/female police officer, is this related to work-related stress? Why?</p> <p>Being married/single, is this related to work-related stress? Why?</p> <p>With/Without children, is this related to work-related stress? Why?</p> <p>Being a junior police constable/senior police constable/sergeant/station sergeant, is this related to work-related stress? Why?</p> <p>Being inexperienced/experienced? Is this related to work-related stress? Why?</p> <p>Any other information you want to share?</p>	15 minutes

Figure 3. 4 Semi-structured interview guide

As shown in Figure 3. 5, there are four phases in the semi-structured interviews. Before the interviews, the interviewer introduced herself, the information sheet, and informed consent. The information sheet includes the objectives of the study, research procedure, permission for audio recording, potential benefits and risks with participation in the study, voluntary nature of participation, anonymity and confidentiality issues, the right to withdraw, and the use of data collected. Interviewees were provided time to read the information sheet, give informed consent, complete a demographic information survey, and ask questions if they had any. At the beginning of the interviews, building rapport is important in making the interviewees feel comfortable (Tracy, 2013). To build rapport, a very easy and inviting question was asked. Also, to build a closer relationship, the interviewer showed empathy by recognizing the tough working condition of the police officers. During the interviews, to identify the context, process, scenario, and subjective experiences of work-related stress among Hong Kong police officers, questions were asked according to the semi-structured interview guide. Towards the end of the interviews, questions regarding demographics and work-related stress were asked. The demographic questions are placed at the end to avoid interference with rapport building (Tracy, 2013). The interviewer also asked the interviewees for any other information to be shared. To close the interviews nicely, the interviewer expressed gratitude, reassure the confidentiality of information provided, and assure potential future interviews.

Phases	Things to achieve	Things to do
Before the interviews	Obtain informed consent Obtain demographic information	Interviewer introduces herself, the information sheet, and informed consent Interviewees read the information sheet Interviewees give informed consent Interviewees complete a demographic information survey Interviewees can ask questions
At the beginning of the interviews	Build rapport Build a closer relationship	Interviewees answer a very easy and inviting question Interviewer shows empathy
During the interviews	Identify the context, process scenario, and subjective experiences of work-related stress among Hong Kong police officers	Interviewees answer questions according to the semi-structure interview guide
Towards the end of the interviews	Get information regarding demographics and work-related stress Get any additional information Close the interviews nicely	Interviewees answer demographics and work-related stress questions Interviewer asks if the interviewees have any other information to be shared Interviewer expresses gratitude Interviewer reassures the confidentiality of information provided Interviewer assures potential future interviews

Figure 3. 5 Phases of the semi-structured interviews

### 3.5.3 Qualitative data analysis

All interviews were audio recorded and then transcribed. Alongside with the deductive approach, template analysis was applied to analyze the qualitative data. Details of the process of qualitative data analysis are presented.

#### *A deductive approach*

A deductive approach was used for data analysis. A deductive approach “is a top down approach that works with existing framed and theoretically rooted constructs and theories that guide data analysis.” (Pandey, 2018, p.147). In other words, theory-driven codes (Boyatzis, 1998). With the deductive approach, researchers develop the initial template on the basis of theories or existing literatures (Azungah, 2018; Fereday & Muir-Cochrane, 2006). In Study Three, the initial template was developed based on the theory, the literature reviews, and the concepts investigated in Study Two (i.e. organizational stressors, operational stressors, public stressors, pandemic stressors, supervisory support, and internal procedural justice).

### *Template analysis*

Along with the deductive approach, template analysis was applied for data analysis. Template analysis is a technique of thematic analysis (King, 2012) in which textual data are thematically analyzed and organized (King, 2004). Template analysis involves producing codes (i.e. templates), representing themes identified in the textual data (King, 2004). Commonly, the relationship between templates and themes is organized hierarchically. Researchers can group similar codes together to form higher-order codes. This is hierarchical coding, one of the key features of template analysis (King, 2004, 2012). Building on existing theory, an initial template was developed (Brooks et al., 2015). Using an initial template is another distinctive feature of template analysis (Brook et al., 2015). It is helpful in conducting the semi-structured interviews and guiding data analysis. The initial template can be modified, through insertion, deletion, merging, changing the scope, and changing the higher-order classification, to form the final template (King, 2012). The process of forming the final template is iterative (Brooks et al., 2015). For example, researcher can develop the initial template on the basis of theory or preliminary scanning of the first few interview

transcriptions (Brooks et al., 2015; Fereday & Muir-Cochrane, 2006) and apply it to the remaining transcriptions, and thus the researcher can get a revised and then the final template (Brooks et al., 2015). The final template can be applied to the full dataset (Brooks et al., 2015). One greatest advantage of template analysis is its flexibility (Brooks et al., 2015; King, 2004, 2012). With template analysis, researchers can deal with the data systemically (King, 2012). Nevertheless, novice researchers may feel uncertain when making analytic decisions (King, 2004). This may lead to over-simplicity of templates and thus researchers cannot get in-depth interpretations on one hand. On the other hand, this may lead to over-complexity in which researchers cannot manage.

#### *Process of qualitative data analysis*

There are seven steps in the process of qualitative data analysis. Firstly, the initial template was developed based on the theory, the literature reviews, and the concepts investigated in Study Two. Secondly, all interviews were transcribed. Thirdly, the interviewer tried to be familiar with the transcriptions by reading them repeatedly. Fourthly, the initial template was modified to form the revised template. Next, the revised template can be modified during data coding (if necessary). Lastly, the final template was formed, and it was applied to the full dataset.

#### *3.5.4 Qualitative data quality*

To ensure trustworthiness in qualitative research, Guba and Lincoln (1989) pointed out four criteria; (1) credibility; (2) transferability; (3) dependability; and (4) confirmability. Firstly, credibility is concerned with the confidence in the truth of the results of the participants in the context. Guba and Lincoln (1989) suggested six techniques, including prolonged engagement, persistent observation, peer debriefing, negative case analysis,

progressive subjectivity, and member checks, to establish credibility. Credibility in Study Three was achieved through conducting negative case analysis and developing reflexivity towards the results. Furthermore, the student researcher and the supervisor had discussions about the data analysis method and process during the bi-weekly supervision meetings. The supervisor also monitored the research process. Secondly, transferability refers to the degree of the results to be transferred to other samples in other contexts. A key technique to establish transferability is thick description (Guba & Lincoln, 1989) so that other researchers can evaluate whether it is transferable to their situations (Guba & Lincoln, 1989; Maher et al., 2018). In this study, transferability was achieved with a detailed and rich description regarding time, place, setting, participants, processes, and template. Thirdly, dependability refers to “the stability of the data over time” (Guba & Lincoln, 1989, p.242). Dependability can be established through dependability audit, involving an inquiry auditor (i.e. an outside person who has no connection with the current study) to examine the process (Guba & Lincoln, 1989; Lincoln & Guba, 1985). Fourthly, confirmability is concerned with the results that are confirmed by the participants and contexts but not the bias, interests, perspectives, and values of the researchers. Confirmability can be established through confirmability audit which is aimed to examine the products (data, results, and interpretations) by an inquiry auditor (Guba & Lincoln, 1989; Lincoln & Guba, 1985). Both dependability and confirmability in this study were achieved through the discussions about the process, results, and interpretations of data between the student researcher and the supervisor during the bi-weekly supervision meetings.

Both dependability audit and confirmability audit in this study were achieved concurrently using the audit trail (Lincoln & Guba, 1985) that composes of six file types (Schwandt & Halopern, 1988). The first file type (i.e. raw data files) includes timelines, audio

recordings, and transcriptions. The second file type (i.e. data reduction files) includes category of codes, higher order codes, themes, and the initial template. The third file type (i.e. data reconstruction files) includes hierarchy of codes, higher order codes, themes, the final template, results, discussion, and thesis. The fourth file type (i.e. process notes) includes methodological notes and trustworthiness notes. The former consists of description of study design, sampling method, sampling matrix, semi-structured interview guide, and proposed qualitative data analysis plan while the latter consists of involvement of a debriefer and a thick description. The fifth file type (i.e. notes about intentions and motivations) includes research proposal and personal notes. The former consists of research goals, research objectives, research questions, theoretical background, literature review, and planned methodology whereas the latter consists of self-reflection. The sixth file type (i.e. instruments, tools, and resources) consists of pilot semi-structured interview guide, Mplus, and MAXQDA.

### 3.6 Ethical considerations

For Study Two, permissions were gained from the principal investigator before using the survey data. In the original study, the participants read the invitation letter and gave informed consent before participation. By reading the invitation letter and giving informed consent, they understood the objectives of the study, research procedure, potential benefits and risks with participation in the study, voluntary nature of participation, anonymity and confidentiality issues, and the right to withdraw. The original data has no identifying information.

Ethical issues should be taken into consideration during different phases of the qualitative research process (Creswell, 2018b). Before conducting Study Three, ethical

approval was sought from the Hong Kong Polytechnic University Institutional Review Board (reference number: HSEAR20220610002). Permissions to collect data from participants were also gained from the JPOA (gatekeeper). Before the interviews, participants were well informed of the objectives of the study, research procedure, permission for audio recording, potential benefits and risks with participation in the study, voluntary nature of participation, anonymity and confidentiality issues, the right to withdraw, and the data collected was used for writing this research. They were invited to offer their consent to have audio recording of the interview, let the researcher use the data for her PhD study, and future publications. As face-to-face interviews were conducted, written informed consent was obtained. Participants gave consent by signing the consent form. During the interviews, participants were given opportunities to share their stressful experiences, in case of any emotional feelings may arise, they can decide if they want to continue, take a break, or even withdraw from the interviews at any time without giving any reasons. Upon request, the researcher is ready to provide help. More importantly, to ensure anonymity, confidentiality, and privacy, researcher used composite stories. No identifying information was collected. Only the researcher has access to the data. Data were used for the objective of the study only. All data were securely stored in a password-protected computer and destroyed after completion of the research and publications.

### 3.7 Anticipated challenges

Two challenges are anticipated. First, one challenge of conducting qualitative interviews is rapport building (Gubrium, 2012). Police officers' suspicious attitude towards outsiders (Chan, 2011) can be a barrier of rapport building. Following the social movements since 2019, the trust between police officers and the public is lost, making it even more difficult to build rapport. Therefore, to build rapport, some easy and inviting questions were



asked at the beginning of the interviews. Besides, the demographic questions are placed at the end of the interviews to avoid interference with rapport building (Tracy, 2013). Second, given the small number of female police officers, it can be difficult to recruit them, leading to an unrepresentativeness. With the help from the gatekeeper, an even distribution between male and female police officers was successfully recruited.

This chapter has presented the methodology, with descriptions and rationales of the research design and each study. Study One intends to categorize the factors influencing police work-related stress directly or indirectly from a multi-level perspective. The aim of Study Two is to examine predictors and mediators of work-related stress among Hong Kong police officers. Study Three using the semi-structured interviews with a timeline approach that aims at identifying the context, process, scenario, and subjective experiences of work-related stress among Hong Kong police officers. By conducting three interlocking and sequential studies, a comprehensive and in-depth understanding of work-related stress among Hong Kong police officers can be gained.

## **CHAPTER 4: STUDY ONE (FACTORS INFLUENCING POLICE WORK-RELATED STRESS: A SCOPING REVIEW)**

A categorization of the factors affecting work-related stress among police officers in the existing literatures is of importance. To provide this categorization, the first objective of Study One (the current study) is to consider the factors influencing police work-related stress from a multi-level perspective while the second objective is to examine the predictors, mediators, and moderators of police work-related stress. This study seeks to answer the following two research questions; (1) How can the factors influencing police work-related stress be categorized at different levels? and (2) What are the direct and indirect factors influencing police work-related stress?. Using a scoping review approach underpinned by the six-stage methodological framework, predictors of police work-related stress were categorized into six types while four mediators and three moderators were found.

### 4.1 Previous reviews and identified research gaps

In the past few years, there were several systematic reviews conducted that aimed at analysing and synthesizing the sources of police work-related stress. For example, Purba and Demou (2019) completed a systematic review of the relevant articles published between 1990 and 2017. Fifteen articles conducted with cross-sectional design across four continents were included. The results found significant associations between organisational stressors and different mental health outcomes for police officers. Besides, Wagner and colleagues (2019) reviewed sixteen articles published from 2006 to 2018 in nine countries. Their work focused on sociodemographic factors, other individual difference factors, organizational factors, and critical incident related factors of police officers' anxiety and depression. Moreover, in Galanis and colleagues (2021)'s systematic review, 29 studies published between 1985 and 2018 across fourteen countries were selected. Risk factors for stress were summarised into

the following five categories; (1) demographic characteristics; (2) job characteristics; (3) lifestyle factors; (4) negative coping strategies; and (5) negative personality traits. All these systematic reviews have provided a solid foundation for police work-related stress studies.

However, four research gaps were identified from the aforementioned reviews.

Firstly, existing literatures seem to have a heavy attention paid on individual and organisational stressors but scarcely examined family and community stressors. Secondly, although existing literatures have mainly investigated the correlates of police work-related stress, whether the correlates are predictor, mediator, or moderator remain ambiguous. Thirdly, a majority of the studies were based on the Western context, so understanding police work-related stress in the non-Western context is lacking. Lastly, many studies were conducted using quantitative methodology but researchers rarely investigated this topic using qualitative methodology.

#### 4.2 The current review

To fill these research gaps, there are two objectives of this scoping review. Through looking at worldwide publications and both quantitative and qualitative studies, the first objective is to consider the factors influencing police work-related stress from a multi-level perspective while the second objective is to examine the predictors, mediators, and moderators of police work-related stress. Although the JD-R model and the JDC model are widely applied to understand police officers' stress at the organizational level, stressors at other levels (e.g. family and community) are not taken into consideration. Therefore, a multi-level perspective is necessary to be adopted in this scoping review. The current review is important in three-folds. This is one of the first scoping reviews to categorize the factors influencing police work-related stress directly or indirectly from a multi-level perspective.

Conducting a scoping review to identify the sources of police work-related stress is important in three aspects; (1) for individuals (the well-being of police officers); (2) for organization (the goodness of police organizations); and (3) in community (for the safety of the public). Results from this scoping review may offer possible practices to be implemented at different levels to reduce work-related stress in policing context.

### 4.3 Methods

The approach of this scoping review was guided by the six-stage methodological framework (Arksey & O'Malley, 2005). The six stages include; (1) identifying the research question(s); (2) identifying relevant studies; (3) study selection; (4) charting the data; (5) collating, summarizing, reporting the results; and (6) consultation exercise (Arksey & O'Malley, 2005).

#### 4.3.1 Literature search

The following electronic databases were used (i.e. MEDLINE, Web of Science, Sociological Abstracts, Scopus, PsycINFO, PsychiatryOnline, and grey literature sources). Web of Science and Scopus are commonly used to cover social sciences topic. MEDLINE, Sociological Abstracts, PsycINFO, and PsychiatryOnline are used to find health-related articles, additional and relevant articles, psychological articles, and psychiatric articles respectively. To capture the relevant articles, the key concepts and their search terms were developed and grouped into three areas. The first key concept is “stress”, “strain”, “pressure”, “tension”, and “burnout” are considered as search terms. The second key concept is “predictor”, “antecedent”, “cause”, “contributing factor”, “stressor”, “risk factor”, “source”, and “origin” are considered as search terms. The third key concept is “police”, “policeman”, “policewoman”, and “police officer” are considered as search terms.

#### 4.3.2 Selection of studies and data extraction

Studies were selected based on a number of inclusion and exclusion criteria. Studies were included if;

1. Published between 2011 and 2020 (the time period is limited from 2011 to 2020 in order to yield the most current results and reflect the rise of demonstrations and protests in this decade)
2. Written in English
3. Included police officers
4. Empirical papers

Studies were excluded if;

1. Published before the year of 2011
2. Non-English
3. Included employees from non-policing occupations
4. Book review, conference reports, dissertation, and editorials

Inclusion and exclusion criteria are listed in Table 4. 1.

Table 4. 1 Inclusion and exclusion criteria

Criterion	Inclusion	Exclusion
Time period	2011-2020	Before the year of 2011
Language	English	Non-English
Sample	Police officers	Employees from non-policing occupations
Types of study	Empirical papers	Book review Conference reports Dissertation Editorials

Using MEDLINE, Web of Science, Sociological Abstracts, Scopus, PsycINFO, PsychiatryOnline, and grey literature sources, a total of 2,211 articles were found. After

removing the duplicated articles, 1,949 articles were identified. By viewing the titles and abstracts, 1,814 articles were irrelevant and thus excluded. The excluded reasons included; (1) not related to police work-related stress; (2) police work-related stress is not an outcome variable; (3) non-police officers; (4) included non-policing occupations in the same study; (5) intervention; (6) review; (7) non-empirical study; and (8) not predictor-outcome study. After excluding the irrelevant articles, 135 articles were identified. The full text version of the remaining articles was scrutinized. By scrutinizing the full text articles, 105 articles were excluded. The excluded reasons included; (1) police work-related stress is not an outcome variable; (2) included non-policing occupations in the same study; (3) methodological quality assessed; (4) intervention; (5) descriptive study; (6) non-empirical study; (7) not predictor-outcome study; (8) no access to full text; and (9) non-English. Finally, 30 articles were included (see Figure 4. 1 Flow diagram of the search process).

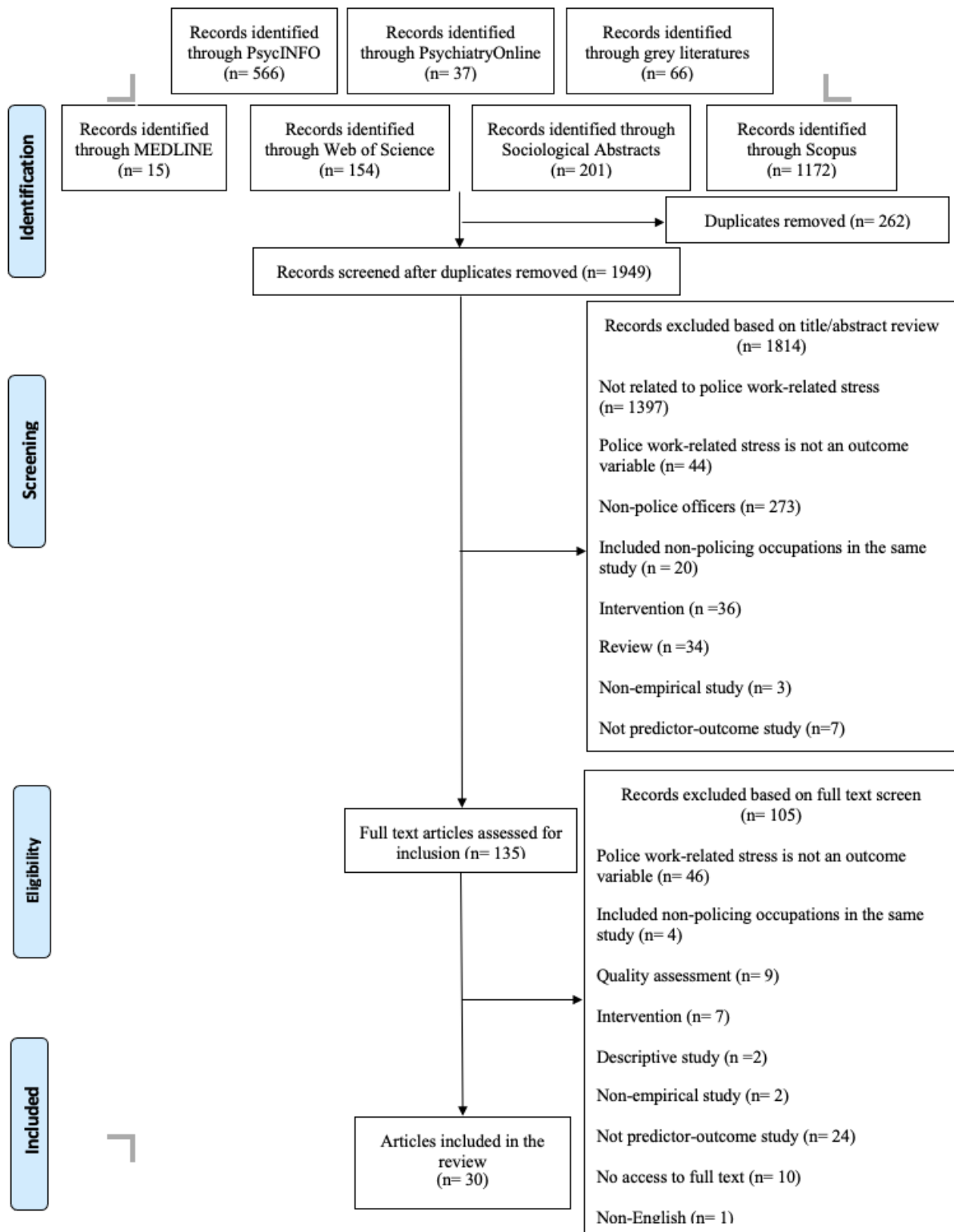


Figure 4. 1 Flow diagram of the search process

### *4.3.3 Assessment of methodological quality*

The methodological quality of the quantitative studies was assessed using the Checklist for Analytical Cross Sectional Studies developed by the Joanna Briggs Institute (2017a). The checklist consists of eight questions. Each question can be answered with “yes”, “no”, “unclear” or “not applicable” (see Table 4. 2 Assessment of methodological quality of quantitative studies). The methodological quality of the qualitative study was assessed using the Checklist for Qualitative Research developed by the Joanna Briggs Institute (2017b). The checklist consists of ten questions. Each question can be answered “yes”, “no”, “unclear” or “not applicable” (see Table 4. 3 Assessment of methodological quality of qualitative study). The methodological quality of the mixed-method study was assessed using the Evaluation Tool for ‘Mixed Methods’ Study Designs developed by Long (2005). This tool has seven review areas and consists of 52 questions in total (see Table 4. 4 Assessment of methodological quality of mixed-method study).



Table 4. 2 Assessment of methodological quality of quantitative studies

	1. Were the criteria for inclusion in the sample clearly defined?	2. Were the study subjects and the setting described in detail?	3. Was the exposure measured in a valid and reliable way?	4. Were objective, standard criteria used for measurement of the condition?	5. Were confounding factors identified?	6. Were strategies to deal with confounding factors stated?	7. Were the outcomes measured in a valid and reliable way?	8. Was appropriate statistical analysis used?
Wickramasinghe & Wijesinghe (2018)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Seok et al. (2015)	No	Yes	No	Unclear	No	No	No	Yes
McCarty et al. (2019)	No	Yes	Yes	Yes	Yes	No	Yes	Yes
Bishopp et al. (2018)	Unclear	Yes	Yes	Yes	Yes	No	Yes	Yes
Yun et al. (2015)	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ivie & Garland (2011)	No	Yes	Unclear	Yes	Yes	Yes	Unclear	Yes



Lambert et al. (2018)	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Tsai et al. (2018)	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes
Frank et al. (2017)	No	Yes	Unclear	Yes	Yes	Yes	Unclear	Yes	Yes
Kula (2017)	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lambert et al. (2017)	No	Yes	No	Yes	Yes	Yes	No	Yes	Yes
Padyab et al. (2016)	No	Yes	No	Yes	Yes	Yes	No	Yes	Yes
Rotenberg et al. (2016)	No	No	Yes	Yes	No	No	Yes	Yes	Yes
Everding et al. (2016)	No	Unclear	No	Yes	Yes	Unclear	No	Yes	Yes
Singh & Nayak (2015)	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
McCarty (2013)	No	Yes	No	Yes	Yes	Unclear	No	Yes	Yes



Wang et al. (2014)	No	No	Yes	Yes	No	No	Yes	Yes
McCarty & Skogan (2013)	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Nathawat & Dadarwal (2014)	No	Yes	No	Yes	No	No	No	Unclear

---

Table 4. 3 Assessment of methodological quality of qualitative study

Study	1. Is there congruity between the stated philosophical perspective and the research methodology?	2. Is there congruity between the research methodology and the research question or objectives?	3. Is there congruity between the research methodology and the methods used to collect data?	4. Is there congruity between the research methodology and the representation and analysis of data?	5. Is there congruity between the research methodology and the interpretation of results?	6. Is there a statement locating the researcher culturally or theoretically?	7. Is the influence of the researcher on the research and vice - versa, addressed?	8. Are participants, and their voices, adequately represented?	9. Is the research ethical according to current criteria or, for recent studies, and is there evidence of ethical approval by an appropriate body?	10. Do the conclusions drawn in the research report flow from the analysis, or interpretation of the data?
Sayed et al. (2019)	Unclear	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes

Table 4. 4 Assessment of methodological quality of mixed-method study

Review Area	Key Questions	Answer
<b>(1) STUDY EVALUATIVE OVERVIEW</b>		
Bibliographic Details	<ul style="list-style-type: none"> <li>• Author, title, source (publisher and place of publication), year</li> </ul>	Shweta Singh and Sujita Kumar Kar, Sources of occupational stress in the police personnel of North India: an exploratory study, Indian Journal of Occupational and Environment Medicine, 2015
Purpose	<ul style="list-style-type: none"> <li>• What are the aims of this paper?</li> <li>• If the paper is part of a wider study, what are its aims?</li> </ul>	Explore various sources of stress among police personnel
Key Findings	<ul style="list-style-type: none"> <li>• What are the key findings?</li> </ul>	Police personnel experience occupational stress. The sources of stress are different for different ranks of police personnel
Evaluative Summary	<ul style="list-style-type: none"> <li>• What are the strengths and weaknesses of the study and theory, policy and practice implications?</li> </ul>	In response to the increasing level of stress among police, interventions should be targeted for different sources of stress in different populations
<b>(2) STUDY AND CONTEXT (SETTING, SAMPLE AND OUTCOME MEASUREMENT)</b>		
The study	<ul style="list-style-type: none"> <li>• What type of study is this?</li> <li>• What was the intervention?</li> <li>• What was the comparison intervention?</li> <li>• Is there sufficient detail given of the nature of the intervention and the comparison intervention?</li> <li>• What is the relationship of the study to the area of the topic review?</li> </ul>	<ul style="list-style-type: none"> <li>• Exploratory</li> <li>• NA</li> <li>• NA</li> <li>• NA</li> <li>• Specific in this country, studies were conducted using sociological survey but a lack of psychological research work on this topic</li> </ul>
Context: (1) Setting	<ul style="list-style-type: none"> <li>• Within what geographical and care setting is the study carried out?</li> <li>• What is the rationale for choosing this setting?</li> <li>• Is the setting appropriate and/or sufficiently specific for examination of the research question?</li> <li>• Is sufficient detail given about the setting?</li> </ul>	<ul style="list-style-type: none"> <li>• Indian policing context (six districts of Uttar Pradesh; Lucknow, Meerut, Noida, Varanasi, Raibareilly and Ghazipur)</li> <li>• The selected location is one of the largest, most populous, diverse and, above all, the most politically important state</li> <li>• Yes</li> </ul>

Context II: Sample	<ul style="list-style-type: none"> <li>• Over what time period is the study conducted?</li> <li>• What was the source population?</li> <li>• What were the inclusion criteria?</li> <li>• What were the exclusion criteria?</li> <li>• How was the sample (events, persons, times and settings) selected? (For example, theoretically informed, purposive, convenience, chosen to explore contrasts)</li> <li>• Is the sample (informants, settings and events) appropriate to the aims of the study?</li> <li>• If there was more than one group of subjects, how many groups were there, and how many people were in each group?</li> <li>• Is the achieved sample size sufficient for the study aims and to warrant the conclusions drawn?</li> <li>• What are the key characteristics of the sample (events, persons, times and settings)?</li> </ul>	<ul style="list-style-type: none"> <li>• Yes</li> <li>• Not stated</li> <li>• Indian police personnel from six districts of Uttar Pradesh; Lucknow, Meerut, Noida, Varanasi, Raibareilly and Ghazipur</li> <li>• No inclusion criteria</li> <li>• No exclusion criteria</li> <li>• Not clearly stated</li> <li>• Yes</li> <li>• 3 groups, each group with 100 participants</li> <li>• Not clear</li> <li>• All males, 100 constables, 100 inspector, and 100 officers</li> </ul>
Context III: Outcome Measurement	<ul style="list-style-type: none"> <li>• What outcome criteria were used in the study?</li> <li>• Whose perspectives are addressed (professional, service, user, carer)?</li> <li>• Is there sufficient breadth (e.g. contrast of two or more perspective) and depth (e.g. insight into a single perspective)?</li> </ul>	<ul style="list-style-type: none"> <li>• Occupational stress questionnaire and 10 open-ended questions based on the personal experience about various sources of stress by the respondents</li> <li>• Respondents</li> <li>• Yes</li> </ul>
<b>(3) ETHICS</b>		
Ethics	<ul style="list-style-type: none"> <li>• Was Ethical Committee approval obtained?</li> <li>• Was informed consent obtained from participants of the study?</li> <li>• How have ethical issues been adequately</li> </ul>	<ul style="list-style-type: none"> <li>• Not clear</li> <li>• Yes</li> <li>• Not stated</li> </ul>



addressed?

#### **(4) GROUP COMPARABILITY**

Comparable  
Groups

- If there was more than one group was analysed, were the groups comparable before the intervention? In what respects were they comparable and in what were they not?
- How were important confounding variables controlled (e.g. matching, randomisation, or in the analysis stage)?
- Was this control adequate to justify the author's conclusions?
- Were there other important confounding variables controlled for in the study design or analyses and what were they?
- Did the authors take these into account in their interpretation of the findings?

- NA
- NA
- NA
- No
- No

#### **(5) QUALITATIVE DATA COLLECTION AND ANALYSIS**

Data  
Collection  
Methods

- What data collection methods were used in the study? (Provide insight into: data collected, appropriateness and availability for independent analysis)
- Is the process of fieldwork adequately described? (For example, account of how the data were elicited; type and range of questions; interview guide; length and timing of observation work; note taking)

- Interview
- Yes

## Data analysis

- How were the data analysed?
- How adequate is the description of the data analysis? (For example, to allow reproduction; steps taken to guard against selectivity)
- Is adequate evidence provided to support the analysis? (For example, includes original / raw data extracts; evidence of iterative analysis; representative evidence presented; efforts to establish validity - searching for negative evidence, use of multiple sources, data triangulation); reliability / consistency (over researchers, time and settings; checking back with informants over interpretation)
- Are the findings interpreted within the context of other studies and theory?

- Not stated
- Not very adequate
- Yes
- No

Researcher's  
Potential Bias

- What was the researcher's role? (For example, interviewer, participant observer)
- Are the researcher's own position, assumptions and possible biases outlined? (Indicate how these could affect the study, in particular, the analysis and interpretation of the data)

- Interviewer
- No

**(6) POLICY AND PRACTICE IMPLICATIONS**

## Implications

- To what setting are the study findings generalisable? (For example, is the setting typical or representative of care settings and in what respects? If the setting is atypical, will this present a stronger or weaker test of the hypothesis?)
- To what population are the study's findings generalisable?
- Is the conclusion justified given the conduct of the study (For example, sampling procedure; measures of outcome used and

- Indian policing context
- Indian police personnel
- Yes
- No implications for policy
- Yes (make efforts at the various levels to reduce various sources of stress which are unique to each echelon)

results achieved?)

- What are the implications for policy?
- What are the implications for service practice?

**(7) OTHER COMMENTS**

Other comments	<ul style="list-style-type: none"> <li>• What was the total number of references used in the study?</li> <li>• Are there any other noteworthy features of the study?</li> <li>• List other study references</li> </ul>	<ul style="list-style-type: none"> <li>• 14</li> <li>• No</li> <li>• No</li> </ul>
Reviewer	<ul style="list-style-type: none"> <li>• Name of reviewer</li> <li>• Review date</li> </ul>	<ul style="list-style-type: none"> <li>• Yuen Kiu Cheung</li> <li>• 19 October 2020</li> </ul>

---

## 4.4 Results

### 4.4.1 Characteristics of the selected studies

Characteristics of the selected studies included study design, location, and demographic information of the sample (see Table 4. 5 Summary of study characteristics and main findings).

#### *Study design*

Among the 30 selected studies, 29 used a quantitative design, among which 23 used questionnaires/surveys and six used secondary data (Gächter et al., 2011a, 2011b; Ivie & Garland, 2011; Rose & Unnithan, 2015; Smoktunowicz et al., 2015; Tsai et al., 2018).

Among the 29 quantitative studies, 20 were a cross-sectional design. One selected study used a qualitative design and in-depth interviews (Sayed et al., 2019).

#### *Location*

This review included 30 articles from 12 locations, 14 from the US (Bishopp et al., 2018; Gächter et al., 2011a, 2011b; Griffin & Sun, 2018; Ivie & Garland, 2011; McCarty, 2013; McCarty et al., 2019; McCarty & Skogan, 2013; Padilla, 2020; Redman et al., 2011; Rose & Unnithan, 2015; Sayed et al., 2019; Tsai et al., 2018; Violanti et al., 2018), one from the UK (Rotenberg et al., 2016), one from Spain (Marcos et al., 2019), one from Greece (Galanis et al., 2019), one from Poland (Smoktunowicz et al., 2015), two from Sweden (Backteman-Erlanson et al., 2013; Padyab et al., 2016), one from Finland (Vuorensyrja & Malkia, 2011), one from Turkey (Kula, 2017), one from Sri Lanka (Wickramasinghe & Wijesinghe, 2018), five from India (Frank et al., 2017; Kumar & Kamalanabhan, 2017; Lambert et al., 2017; Lambert et al., 2018; Singh & Nayak, 2015), one from South Korea (Yun et al., 2015), and one from China (Wang et al., 2014).

### *Demographic information of the sample*

The demographic information of police officers in the selected studies varied in terms of age, gender, education, marital status, family status, race, rank, tenure, and job nature. The age of the sample ranged from 18 years to 80 years. The percentage of male participants ranged from 53% to 100% and the percentage of female participants ranged from 0% to 56%. The education received ranged from high school to postgraduate programmes. The percentage of married participants ranged from 44.6% to 83% and the percentage of unmarried participants ranged from 0.45% to 55.4%. The number of children ranged from zero to seven. The percentage of White participants ranged from 50% to 87% and the percentage of non-White participants ranged from 0.6% to 55%. The rank of the sample varied from gazetted officers, non-gazetted officers, police officers, sergeants, lieutenants, captains, officer trainees, agents, detectives, constables, corporals or below, supervisors, line officers, sub-inspectors, head constables, inspectors, and other positions. The length of tenure ranged from zero to 44 years. The job nature of the sample varied from patrol function, non-patrol function, daily crime investigation, demanding crime investigation, public order and security, and working in an office. Noteworthy, although this scoping review covers police populations from a diverse background, a majority of them were male, White and US based police officers. Besides, not all the aforementioned demographic information were collected in the selected studies.

#### *4.4.2 Demographic predictors*

Demographic predictors of police work-related stress such as age, gender, education, marital status, family status, race, rank, tenure, and job nature were examined in the selected studies (see Table 4. 6 Demographic predictors of police work-related stress). Notably, not all the collected demographic information were analyzed for their correlations with work-related

stress. Besides, variations were observed on the results concerning demographic predictors of police work-related stress across the US, European countries and Asian countries.

### *The US*

Examining demographic predictors and police work-related stress in the US, variations were observed. Regarding the prediction of age, mixed results were found. Some studies found that age was a significant demographic predictor (Gächter et al., 2011a, 2011b; Redman et al., 2011), with the younger the age, the more the job stress and burnout, but other studies found that age was a non-significant demographic predictor (Bishopp et al., 2018; Griffin & Sun, 2018; Tsai et al., 2018). Results regarding the prediction of gender were mixed. Redman et al. (2011) highlighted that male police officers suffered from an increased risk of job stress while some researchers pointed out that female police officers experienced more work-related stress and burnout (Ivie & Garland, 2011; McCarty & Skogan, 2013). However, several studies found that gender was a non-significant demographic predictor (Bishopp et al, 2018; Gächter et al., 2011a, 2011b; Griffin & Sun, 2018; Padilla, 2020; Rose & Unnithan, 2015; Tsai et al., 2018). In relating to the predictive power of race, mixed results were found. Although, some researchers pointed out that White police officers suffered from more job stress and burnout (Griffin & Sun, 2018; Rose & Unnithan, 2015), Padilla (2020) highlighted that non-White police officers experienced an increased risk of occupational stress. Other researchers pointed out that police officers who belonged to a racial minority encountered less burnout (McCarty, 2013; McCarty et al., 2019). Several studies found that race was a non-significant demographic predictor (Bishopp et al, 2018; Gächter et al., 2011a, 2011b; Ivie & Garland, 2011; Tsai et al., 2018). Concerning the prediction of rank, Tsai et al. (2018) highlighted that higher rank police officers suffered from an increased risk of job stress but some researchers pointed out that lower rank police officers encountered more

burnout (Gächter et al., 2011a, 2011b). Others studies found that rank was a non-significant demographic predictor (Griffin & Sun, 2018; Padilla, 2020). With respect to the predictive power of tenure, some studies found that police officers with longer tenure suffered from more job stress and burnout (Gächter et al., 2011a; Redman et al., 2011; Rose & Unnithan, 2015). Nevertheless, other studies found that police officers with shorter tenure experienced an increased risk of occupational stress and a greater feeling of emotional exhaustion (McCarty et al., 2013; Padilla, 2020). Several studies found that tenure was a non-significant demographic predictor (Gächter et al., 2011b; Ivie & Garland, 2011; McCarty & Skogan, 2013; Tsai et al., 2018). Last but not least, across 70 municipal police departments and 19 full-service county Sheriff's offices, though age, gender, race, and rank predicted emotional exhaustion and depersonalization significantly, these demographic predictors explained very little variation (McCarty et al., 2019).

### *European countries*

Considering demographic predictors and police work-related stress in some European countries, discrepancies were found. Smoktunowicz et al. (2015) highlighted that age was the only significant demographic predictor of job burnout among police officers working in Poland, with the older the age, the more the job burnout. However, age did not predict burnout for Swedish police personnel (Backteman-Erlanson et al., 2013). In a police burnout study conducted in Finland, Vuorensyrja and Malkia (2011) found two significant demographic predictors of burnout. One was tenure, with Finnish police officers who worked for less than two years, two to five years, or six to 15 years encountered less burnout. Another was job nature, with Finnish police officers who worked in daily crime investigation or demanding crime investigation, but not working in public order and security, encountered

more burnout. Nevertheless, gender was a non-significant demographic predictor in this Finnish police burnout study.

#### *Asian countries*

Regarding demographic predictors and police work-related stress in some Asian countries, variations were found. In a study conducted on Sri Lankan police officers, Wickramasinghe and Wijesinghe (2018) found two significant demographic predictors of burnout subtypes. One was age, with Sri Lankan police officers who were younger perceived a greater feeling of underchallenged. Another was marital status, with Sri Lankan police officers who were non-married perceived an elevated feeling of underchallenged and worn-out. However, gender, education, family status, rank, and tenure were non-significant demographic predictors in this Sri Lankan police burnout study. An Indian police stress found two significant demographic predictors (i.e. education and rank) of work stress (Frank et al., 2017). Indian police officers with lower education or holding the rank of constable experienced a higher level of work stress. In the same study, the prediction of age, gender, and tenure were not found (Frank et al., 2017). Other Indian police stress and burnout studies found that age, gender, education, marital status, rank, and tenure did not predict job stress nor burnout subtypes (Lambert et al., 2017; Lambert et al., 2018; Singh & Nayak, 2015). A South Korean police burnout study found that age, education, marital status, rank, and tenure did not predict burnout (Yun et al., 2015).

#### *4.4.3 Personal predictors*

Regarding personal predictors and police officers' work stress and burnout, several selected studies found significant results (Backteman-Erlanson et al., 2013; Gächter et al., 2011a; Galanis et al., 2019; McCarty, 2013; McCarty & Skogan, 2013; Rose & Unnithan,



2015) and some selected studies found mixed results (Marcos et al., 2019; Padyab et al., 2016; Redman et al., 2011; Rotenberg et al., 2016). Examining personal predictors in the US, Rose and Unnithan (2015) found that in/out-group status was a predictor of job stress. Police officers who perceived themselves as not a part of the subculture suffered from an increased risk of job stress, compared to those who perceived themselves as a part of it. In addition, individual unfairness and work-life imbalance (Gächter et al., 2011a) and more work-life conflict (McCarty, 2013; McCarty & Skogan, 2013) contributed to more burnout. More positive affectivity contributed to less burnout but not job stress (Redman et al., 2011).

Considering some European countries, among British police officers, fewer reliability-based personal trust beliefs in the police identified as a risk factor, but not honesty and emotional-based personal trust beliefs in the police, of a higher level of workplace stress (Rotenberg et al., 2016). For the Spanish National police members, optimism, but not self-efficacy, protected them against job stress (Marcos et al., 2019). In terms of Greek police officers, those who had inadequate sleeping hours per day or days of physical exercise per week were susceptible to an increased risk of occupational stress (Galanis et al., 2019). In a Scandinavian country, higher stress of conscience caused greater feelings of emotional exhaustion and depersonalization for both Swedish male and female police personnel (Backteman-Erlanson et al., 2013). Likewise, higher stress of conscience caused a greater feeling of emotional exhaustion for both gender but it only led to an elevated feeling of depersonalization for male patrolling police officers (Padyab et al., 2016).

#### *4.4.4 Organizational predictors*

One source of police work-related stress comes from the organization. With reference to the explanatory theories of work-related stress and burnout, organizational predictors in the

current review composed of job demand, job control, job resources, job/workplace satisfaction, organizational commitment, internal procedural justice, and organizational problems.

### *Job demand*

Regarding the prediction of job demand, variations were observed. Examining job demand in the US, although one study found that work overload was a significant predictor of more burnout syndromes (i.e. emotional exhaustion and depersonalization) (McCarty et al., 2019), hour spent in the workplace building was a non-significant predictor of job stress nor burnout (Redman et al., 2011). Considering a European country, excessive job demands predicted an increased risk of job burnout among police officers working in Poland (Smoktunowicz et al., 2015). In a Scandinavian country, heavy work demand was a significant predictor of a greater feeling of emotional exhaustion but not depersonalization for Swedish police personnel (Backteman-Erlanson et al., 2013; Padyab et al., 2016). Regarding some Asian countries, in a study conducted on Sri Lankan police officers, Wickramasinghe and Wijesinghe (2018) found that long working hours (i.e. 50 hours or more per week) was a contributing factor of a greater feeling of being frenetic but did not contribute to being underchallenged nor worn-out. An Indian police stress study found that excessive job demands, indicated by role conflict, role ambiguity, and role overload, were risk factors of a higher level of work stress (Frank et al., 2017). Another Indian police burnout study found that role ambiguity was a significant predictor of a greater feeling of depersonalization and a reduced personal accomplishment but did not predict emotional exhaustion (Kumar & Kamalanabhan, 2017). Work overload was a significant predictor a greater feeling of emotional exhaustion but did not predict depersonalization and personal accomplishment (Kumar & Kamalanabhan, 2017).

### *Job control*

Some of the selected studies found job control was a significant predictor of burnout. Among American law enforcement officers, lower control was a significant but weak predictor of more burnout syndromes (i.e. emotional exhaustion and depersonalization) (McCarty et al., 2019). In a study conducted in Poland, lower job control significantly predicted an increased risk job burnout (Smoktunowicz et al., 2015). In two Swedish police burnout studies, lower decision latitude was a significant predictor of greater feelings of emotional exhaustion and depersonalization for males (Backteman-Erlanson et al., 2013) and females (Padyab et al., 2016) respectively.

Although the aforementioned studies found that job control was a significant predictor of burnout, decision latitude was a non-significant predictor of emotional exhaustion for Swedish female police personnel while decision latitude did not predict depersonalization for both Swedish male and female personnel (Backteman-Erlanson et al., 2013). Likewise, decision latitude did not predict emotional exhaustion and depersonalization for Swedish female police personnel and Swedish male police personnel respectively (Padyab et al., 2016).

### *Job resources*

Results regarding the prediction of job resources were mixed. Examining job resources in the US, unsupportive supervisors emerged a determinant of workplace stress (Sayed et al., 2019). Inadequate counselling support and social support from coworkers and supervisors were significant predictors of more job stress and burnout (McCarty & Skogan, 2013; Tsai et al., 2018). Considering a European country, insufficient social support was a significant predictor of an increased risk of job burnout among police officers working in

Poland (Smoktunowicz et al., 2015). In a Scandinavian country, Padyab et al. (2016) highlighted that inadequacy of social support was the only risk factor of more emotional exhaustion for Swedish female police personnel. Regarding some Asian countries, in a study conducted on Sri Lankan police officers, Wickramasinghe and Wijesinghe (2018) found that infrequency of superior guidance and dissatisfaction of higher rank officer support were contributing factors of greater feelings of being underchallenged and worn-out but did not contribute to being frenetic. An Indian police stress study found that inadequate job resources, indicated by input into decision making, formalization, and organizational support, were risk factors of a higher level of work stress (Frank et al., 2017). Another Indian police burnout study found that the fewer the work support, the more the burnout subtypes (Kumar & Kamalanabhan, 2017).

Although the aforementioned studies found that job resources were significant predictor, social support was a non-significant predictor of burnout subtypes among police personnel working in Sweden (Backteman-Erlanson et al., 2013; Padyab et al., 2016). Frequency of external influence, colleagues support satisfactory, lower rank officer support satisfactory, and public support satisfactory did not predict burnout subtypes for Sri Lankan police officers (Wickramasinghe & Wijesinghe, 2018). Kula (2017) and Yun et al. (2015) did not find supervisor support a significant predictor of burnout for Turkish National Police members and South Korean police officers.

### *Job/workplace satisfaction*

Concerning the predictive power of job/workplace satisfaction, variations were observed. Examining job satisfaction in the US, lower job satisfaction was a significant but weak predictor of a greater feeling of emotional exhaustion (McCarty et al., 2019).

Dissatisfaction of peers and supervisors was a significant predictor of more burnout syndromes (i.e. emotional exhaustion and depersonalization) but did not predict depersonalization for males (McCarty, 2013). In the same study, satisfactory views of subordinates did not predict emotional exhaustion nor depersonalization. In a Turkish police burnout study conducted by Kula (2017), lower job satisfaction predicted a higher level of work-related burnout at a significant level. Regarding some Asian countries, in a study conducted on Sri Lankan police officers, Wickramasinghe and Wijesinghe (2018) found that perceived dissatisfaction about the staff adequacy was the only risk factor of an elevated feeling of being frenetic. In the same study, perceived dissatisfaction about the infrastructure facilities, dissatisfaction about the allowances, and public service were contributing factors of a greater feeling of being underchallenged while perceived dissatisfaction about the staff adequacy, dissatisfaction about the allowances, social status, and overall job satisfaction were contributing factors of a greater feeling of being worn-out. However, satisfactory welfare facilities and satisfactory salary did not contribute to burnout subtypes. An Indian police burnout study conducted by Lambert et al. (2018) found that lower job satisfaction was a contributing factor of elevated feelings of emotional exhaustion and depersonalization but higher job satisfaction contributed to a reduced sense of personal accomplishment.

### *Organizational commitment*

Organizational commitment refers to the degree of an employee's identification with and involvement in an organization (Mowday et al., 1982). It is considered as an important job resource in this scoping review. There were variations in the findings in relating to the relationship between organizational commitment and burnout among police officers. Regarding some Asian countries, an Indian police burnout study conducted by Lambert et al. (2018) found that higher continuance commitment was a contributing factor of greater

feelings of emotional exhaustion and depersonalization but did not contribute to personal accomplishment. In the same study, higher affective commitment was a contributing factor of a reduced sense of personal accomplishment but did not contribute to emotional exhaustion and depersonalization. A South Korean police burnout study found that the lower the organizational commitment, the more the burnout (Yun et al., 2015).

### *Internal procedural justice*

Internal procedural justice refers to the procedurally fair treatments, for example decision-making processes/procedures, that police officers receive from their supervisors (Folger, 1987; Wu et al., 2017; Wang et al., 2020b). It is considered as an important job resource in this scoping review. Findings in relating to the relationship between unfairness and police officers' workplace stress and burnout were relatively consistent. Examining the problem of unfairness among police officers working in the US, some researchers pointed out that unfairness was a risk factor of more burnout (Gächter et al., 2011a; McCarty et al., 2019; McCarty & Skogan, 2013). Additionally, inequitable assignment of cases was emerged as a determinant of workplace stress (Sayed et al., 2019). Interestingly, McCarty (2013) highlighted that unfairness contributed to more burnout syndromes for male sergeants but not female sergeants. Regarding an Asian country, an Indian police burnout study conducted by Kumar and Kamalanabhan (2017) found that perceived unfairness was a risk factor of greater feelings of emotional exhaustion and depersonalization and reduced personal accomplishment.

### *Organizational problems*

Results with respect to the predictive power of organizational problems were mixed. Examining organizational problems in the US, a lack of reward and a sense of job-related

values were significant but weak predictors of more burnout syndromes (i.e. emotional exhaustion and depersonalization) (McCarty et al., 2019). Conflicting information and balancing time between different tasks were emerged as determinants of workplace stress (Sayed et al., 2019). A lack of social capital, refers to poor and ineffective cooperation between units and trust in work partners, was a significant predictor of more burnout (Gächter et al., 2011a, 2011b). A larger size of organization also predicted more burnout for sworn police personnel (McCarty & Skogan, 2013). Negative working environment and more sick building syndromes (i.e. fatigue and shortness of breath in the workplace) were significant predictors of an increased risk of job stress (Redman et al., 2011; Tsai et al., 2018) but family discussion with co-workers did not predict job stress (Tsai et al., 2018). Both effort-reward imbalance and overcommitment were contributing factors of more burnout syndromes (i.e. cynicism and exhaustion) (Violanti et al., 2018). In the same study, overcommitment, but not effort-reward imbalance, contributed to lower professional efficacy (Violanti et al., 2018). A combination of high effort-reward imbalance and high overcommitment predicted even greater feelings of cynicism and exhaustion and a lower professional efficacy (Violanti et al., 2018).

Considering some European countries, in a study conducted on Spanish National police members, organizational socialization (history, language, policies, organizational values) and collective efficacy were non-significant predictors of job stress (Marcos et al., 2019). Additionally, a Greek police stress study conducted by Galanis et al. (2019) found that working out of office predicted an increased risk of occupational stress. In some Scandinavian countries, Backteman-Erlanson et al. (2013) highlighted that although organizational climate was the only risk factor of a greater feeling of emotional exhaustion among Swedish female police personnel, leadership, organizational climate, and

organizational culture were non-significant predictors. Vuorensyrja and Malkia (2011) highlighted that more defective leadership, role conflict, and time pressure predicted more burnout for Finnish police officers.

Regarding some Asian countries, an Indian police burnout study conducted by Lambert et al. (2018) found that lower job involvement was a contributing factor of greater feelings of emotional exhaustion and depersonalization but higher job involvement contributed to a reduced sense of personal accomplishment. In the same study, higher continuance commitment was a contributing factor of greater feelings of emotional exhaustion and depersonalization but did not contribute to personal accomplishment. Higher affective commitment was a contributing factor of a reduced sense of personal accomplishment but did not contribute to emotional exhaustion and depersonalization. Another Indian police burnout study found that inflexible work hours were a risk factor of more burnout syndromes (i.e. emotional exhaustion, depersonalization, and reduced personal accomplishment) (Kumar & Kamalanabhan, 2017). A South Korean police burnout study found that although lower organizational commitment and more authoritative culture predicted more burnout at a significant level, two non-significant predictors included poor work condition and lack of collegiate cooperation (Yun et al., 2015).

#### *4.4.5 Operational predictors*

Another source of police work-related stress comes from their job nature, also refers to operational predictors. Mixed findings regarding operational predictors and police officers' work stress and burnout were observed. Examining operational predictors in the US, negative exposures, for example arresting a violent suspect and exposing to bloody crime scenes, attributed to more work-related stress and burnout (Ivie & Garland, 2011). Non-military



officers who exposed to more negative exposures experienced a higher level of work-related stress while both military and non-military officers who exposed to more negative exposures encountered more burnout. Danger, monotony, and unpredictability of work were emerged as determinants of workplace stress (Sayed et al., 2019). More traumatic events at work and more critical incident strain were predictive of more burnout (Gächter et al., 2011a, 2011b). Disciplines were only contributed to more burnout for males (McCarty, 2013), with male police sergeants who took a less hands-on orientation to discipline perceived a greater feeling of depersonalization. Greater perceptions of danger was predictive of more burnout for sworn but not civilian police personnel (McCarty & Skogan, 2013). Among Finnish police officers, more threat of violence attributed to more burnout (Vuorensyrja & Malkia, 2011). For Turkish National Police members, more operational stress was attributable to a higher level of work-related burnout (Kula, 2017). A Chinese police burnout study found that police job stress was a positive predictor of depersonalization (Wang et al., 2014). More police job stress, reflected by long-time work and training stress, were predictive of greater feelings of emotional exhaustion and personal accomplishment respectively. Less job boredom was predictive of an elevated feeling of personal accomplishment.

Though the aforementioned studies found significant results regarding operational predictors and police officers' work stress and burnout, environmental stress, shift work, frequency of consecutive shift work per week, emergency duties per month, special duties per month, and number of night shifts per month were non-significant operational predictors of burnout for American and Sri Lankan police officers (Bishopp et al., 2019; McCarty & Skogan, 2013; Wickramasinghe & Wijesinghe, 2018).

#### *4.4.6 Family-related predictors*

In this scoping review, some studies found that police officers' work stress and burnout were driven by the family issues. In general, consistent results were found regarding family-related predictors and police officers' work stress and burnout among the selected studies. Examining the family-related predictors in the US, instability at home attributed to more burnout (Gächter et al., 2011a, 2011b). Among police officers working in Greece, those who had lower support from family/friends were prone to a high level of occupational stress (Galanis et al., 2019). Two Indian police studies found that more work-family conflict was a contributing factor of more burnout and job stress (Kumar & Kamalanabhan, 2017; Singh & Nayak, 2015). Among the four dimensions in work-family conflict, more strain-based conflict, behaviour-based conflict, and family-based conflict but not time-based conflict were risk factors of an increased job stress for Indian police officers (Lambert et al., 2017). A South Korean police burnout study found that the more the work-family conflict, the more the burnout (Yun et al., 2015).

#### *4.4.7 Community predictors*

It is acknowledged that some studies in this scoping review found police officers' work stress and burnout were related to the community. The predictive power of community predictors on police officers' work stress and burnout varied among the selected studies. Examining the community predictors in the US, the law enforcement officers perceived greater feelings of emotional exhaustion and depersonalization due to the higher agreement that the public did not understand the meaning of being a police officer (McCarty et al., 2019). Lack of respect from community and media members and more criticisms from lawyers and politicians were emerged as determinants of workplace stress (Sayed et al., 2019). Considering some European countries, among British police officers, fewer

emotional-based public-ascribed trust beliefs in the police emerged as a risk factor, but not reliability and honesty-based public-ascribed trust beliefs in the police, of an increased in workplace stress (Rotenberg et al., 2016). For the Spanish National police members, social support was a risk factor of job stress (Marcos et al., 2019). Regarding some Eastern countries, an Indian police burnout study found that community stressors, reflected by political interference and public's negative attitude toward police, did not have any influence on burnout subtypes (Kumar & Kamalanabhan, 2017). One South Korean police burnout study found that the police officers experienced more burnout because of the negative police image (Yun et al., 2015).

#### *4.4.8 Mediators*

Three included articles examined the mediating effect on burnout and work-related burnout. These articles considered work–family conflict, resiliency, gender, and supervisor support as mediators. Among the US based police officers, race had an indirect effect on burnout via work-family conflict and resiliency, with work-family conflict was associated with more burnout while resiliency was associated with less burnout (Griffin & Sun, 2018) but gender was a non-significant mediating factor of burnout (Gächter et al., 2011a). For Turkish National Police members, supervisor support did not mediate the relationship between organizational and operational stress and work-related burnout (Kula, 2017).

#### *4.4.9 Moderators*

Three included articles examined the moderating effect on burnout. These articles considered social support, work support, and locus of control personality (internality) as moderators. Among Polish police officers, social support acted as a moderator in the relationship between job demands and job burnout (Smoktunowicz et al., 2015). When social

support was low, more job demands were associated with an increased in job burnout. Regarding some Eastern countries, an Indian police burnout study found that work support ameliorated the effects of organizational stressors on burnout subtypes (Kumar & Kamalanabhan, 2017). First, more work support offset the negative effects of organizational stressors (perceived unfairness and inflexible work hours) on all three burnout subtypes. Second, more work support offset the negative effects of organizational stressors (role ambiguity and work overload) on reduced personal accomplishment. However, work support did not offset the impacts of work-home interface and community stressors on burnout subtypes. A Chinese police burnout study found that locus of control personality (internality) acted as a moderator (Wang et al., 2014). With its moderating effect, first, police stress imposed a greater positive impact on depersonalization. Second, training stress imposed a greater positive impact on personal accomplishment. Third, long-time work imposed a greater positive impact on emotional exhaustion. Nevertheless, job boredom imposed a negative impact on personal accomplishment. In other words, police officers with locus of control personality (internality) were more susceptible to burnout syndromes from job stress.

#### *4.4.10 Identified knowledge gaps*

Five knowledge gaps were identified. Firstly, among the previous studies, heavy attention was paid on organizational stressors. 22 out of 30 studies reviewed in this study focused on organizational predictors, such as, job demand, job control, job resources, job/workplace satisfaction, organizational commitment, internal procedural justice, and organizational problems, but scarcely examined personal, operational, family-related, and community predictors. Secondly, 29 out of 30 selected studies were conducted using quantitative research design; the process driving police officers' work-related stress has been less investigated. Thirdly, 22 out of 30 selected studies were based on the Western context

However, a contextual understanding of work-related stress among Hong Kong police officers is still lacking. Fourthly, 24 out of 30 included articles reviewed mainly focused on the direct relationship between predictors and work-related stress but only a few studies examining the indirect relationship among variables e.g. Gächter et al. (2011a); Griffin and Sun (2018); Kula (2017); Kumar and Kamalanabhan (2017); Smoktunowicz et al. (2015); Wang et al. (2014). Finally, although some researchers have paid attention to the relationship between internal procedural justice (refers to the perceived fairness) and work-related stress e.g. Gächter et al. (2011a); Kumar and Kamalanabhan (2017); McCarty (2013); McCarty and Skogan (2013); McCarty et al. (2019); Sayed et al. (2019), empirical understanding of this relationship among Hong Kong police officers has been scant.

Table 4. 5 Summary of study characteristics and main findings

Author details	Study design	Demographic information of the sample (N; age; gender; education; marital status; family status; race; rank; tenure; job nature)	Information of scale/Questions	Mediator/Moderator	Outcome	Location
Wickramasinghe & Wijesinghe (2018)	Quantitative; cross-sectional; self-administrated questionnaire	N=709; 340 aged 20-24 years (48%), 369 aged 41-60 years (52%), M=39.6 years; 591 males (83.4%), 118 females (16.6%); 401 up to General Certificate of Examination (Advanced Level) (56.6%), 308 General Certificate of Examination (Advanced Level) above (43.4%); 580 married (81.8%), 129 unmarried/other (17.2%); 103 no children (14.5%), 606 at least one child (85.5%); no race information; 87 gazetted officers (12.3%), 622 non-gazetted officers (87.7%); 392 up to 20 years (55.3%), 317 > 20 years (44.7%), M=16.8 years; no job nature information	Questions related to socio-demographic factors, basic employment factors, work environment factors, work pattern factors, work support factors, and work satisfaction factors	/	Burnout subtypes (frenetic, underchallenged, and worn-out)	Sri Lanka
McCarty et al. (2019)	Quantitative;	N=13,146; 2281 aged 18-35 (17.35%), 2118 aged	Workload Control	/	Burnout (emotional	US

	cross-sectional; online survey	36-41 (16.11%), 1925 aged 42-45 (14.64%), 2215 aged 46-50 (16.85%), 1913 aged 51-80 (14.55%); 9404 males (71.54%), 1660 females (12.63%); 4921 less than college degree (37.43%), 6331 college degree or above (48.16%); no marital status information; no family status information; 8294 White (63.09%), 911 Black (6.93%), 1002 Latino (7.62%), 578 other (4.4%); 7609 police officer (57.88%), 2279 sergeant (17.34%), 1419 lieutenant or above (10.79%); no tenure information; no job nature information	Rewards Community Fairness The values area of worklife	exhaustion and depersonalization)	
Bishopp et al. (2018)	Quantitative; self-report web-based survey	N=1,400; 18 aged 20-25 (1.3%), 139 aged 26-30 (9.9%), 182 aged 31-35 (13%), 256 aged 36-40 (18.3%), 297 aged 41-45 (21.2%), 255 aged 46-50 (18.2%), 183 aged 51-55 (13.1%), 70 aged ≥ 56 (5%); 84% males, 16% females; 1 = some college,	Environmental strain Organizational strain	Burnout	US

		2 = bachelor's degree, 3 = graduate degree, M=2.6; no marital status information; no family status information; 60% White, 40% non-White; no rank information; no tenure information; 44% patrol, 56 non-patrol				
Yun et al. (2015)	Quantitative; cross-sectional; questionnaire	N=570; 25-60 years, M=46.1 years; 100% males; high school (1)-graduate degree (7), M=2.83; unmarried (0), married (1), M=.93; no family status information; no race information; policeman (1)-captain (5), M=3.19; 0-36 years, M=19.24 years; no job nature information	Poor work condition Negative police image Authoritative culture Lack of collegiate cooperation Work-family conflict Lack of supervisor support Organizational commitment	/	Burnout	South Korea
Ivie & Garland (2011)	Quantitative; secondary data	N=600; no age information; military: 217 males (93.9%), 14 females (6.1%), non-military: 302 males (81.8%), 66 females	Negative exposures	/	Work-related stress Burnout	US



(17.9%); military: 204 less than bachelor's (88.3%), 27 bachelor's and above (11.7%), non-military: 310 less than bachelor's (84%), 54 bachelor's and above (14.6%); military: 140 married (60.6%), 91 not married (39.4%), non-military: 219 married (59.3%), 148 not married (40.1%); no family status information; military: 146 White (63.2%), 83 non-White (35.9%), non-military: 213 White (57.7%), 153 non-White (41.5%); no rank information; non-military: M=9.12 years, military: M=9.81 years; no job nature information

Sayed et al. (2019)	Qualitative; in-depth interviews	N=20; 27-51 years, M=39.7 years; 17 males (85%), 3 females (15%); 60% at least an undergraduate degree, 20 graduate degree; 65% married, 35% unmarried (single/never married, engaged, or divorced);	Different types of stressors encountered on jobs (organizational factors, danger, monotony and unpredictability, and community	/	Workplace stress	US
---------------------	----------------------------------	--	--	---	------------------	----

		number of children: 0-4, M=1.75; 10 White (50%), 6 Hispanic (30%), 4 Black (20%); no rank information; 5-25 years, total: 310.5 years; no job nature information	and media scrutiny)		
Rose & Unnithan (2015)	Quantitative; secondary data	N=1,632; no age information; 87% males, 13% females; 7% high school, 30% some college, 23% associate's degree, 29% bachelor's degree, 6% some graduate school, 4% graduate degree, M=3.10; 72% married, 28% non-married; no family status information; 85% White, 15% non-White; no rank information; 0-30 years, M=12.86 years; no job nature information	Out-group status / In-group status	Job stress	US
Backteman-Erlanson et al. (2013)	Quantitative; cross-sectional; questionnaire	N=856; M=37 years, males: M=40 years, females: M=34 years; 419 males (53%), 437 females (56%); no education information; 670 married/living together (78%), 344 males	The General Nordic Questionnaire for and Social Factors at Work Karasek and Theorells	Burnout (emotional exhaustion and depersonalization)	Sweden

		married/living together (83%), 326 females married/living together (75%); no family status information; no race information; no rank information; M=9 years, males: M=12 years, females: M=6 years; 100% patrol	demand-control questionnaire The Stress of Conscience Questionnaire			
Gächter et al. (2011a)	Quantitative; secondary data	N=1,104; 20-66 years, M=36.04 years; 943 males (85.73%), 157 females (14.27%); 165 high school (15.08%), 603 some college (55.12%), 285 college (26.05%), 41 graduate school (3.75%); 658 married (59.87%), 88 live-in partner (8.01%), 135 divorced/separated (12.28%), 213 single (19.38%), 5 widowed (0.45%); number of children: 0-7, M=1.18; 355 African-American (32.51%), 696 Caucasian (63.74%), 14 Hispanic (1.28%), 27 other (2.47%); 91 officer trainee (8.27%), 601 officer (54.64%), 62	Social capital Individual fairness Institutional fairness Work-life balance Home index Trauma index	Gender	Burnout	US

		agent (5.64%), 144 detective (13.09%), 143 sergeant (13%), 59 lieutenant/above (5.36%); 0-44 years, M=11.5 years; no job nature information				
Gächter et al. (2011b)	Quantitative; secondary data	N=1,104; 20-66 years, M=36.04 years; 943 males (85.73%), 157 females (14.27%); college (~26%), graduate degree (~4%); 658 married (59.87%), 88 live-in partner (8.01%), 135 divorced/separated (12.28%), 213 single (19.38%), 5 widowed (0.45%); number of children: 0-7, M=1.18; 355 African-American (32.51%), 696 Caucasian (63.74%), 14 Hispanic (1.28%), 27 other (2.47%); 91 officer trainee (8.27%), 601 officer (54.64%), 62 agent (5.64%), 144 detective (13.09%), 143 sergeant (13%), 59 lieutenant or above (5.36%); 0-44 years, M=11.5 years; no job nature information	Social capital Home index Trauma index	/	Burnout	US

Padilla (2020)	Quantitative; cross-sectional; survey	N=147; no age information; males (91%); no education information; no marital status information; no family status information; non-white (55%); patrol (63%); at least 10 years (51%); no job nature information	Gender Race Rank Tenure	/	Occupational stress	US
Marcos et al. (2019)	Quantitative; cross-sectional; online survey	N=123; M=39.77 years; 91.9% males; 30.9% university studies, 22.8% combined their work with some kind of studies; no marital status information; 40.7% had a family member in the National Police; no race information; no rank information; M=171 months; no job nature information	Organizational socialization (history, language, policies, organizational values) Social support Self-efficacy Collective efficacy Optimism	/	Job stress	Spain
Galanis et al. (2019)	Quantitative; cross-sectional; self-completed paper based questionnaire	N=336; M=33.8 years; 256 males (76.2%), 80 females (23.8%); 259 high school graduates (77.1%), 52 university degree (15.5%), 25 MSc/PhD degree (7.4%); 150 married	Out of office work/Work in office Sleeping hours per day	/	Occupational stress	Greece

		(44.6%), 186 singles/divorced (55.4%); 89 had children < 18 years old (26.5%), 247 did not have children < 18 years old (73.5%); no race information; 273 constables (81.2%), 63 sergeants (18.8%); M=12.7 years; no job nature information		Days of physical exercise per week Self-estimation of family/friends support		
Griffin & Sun (2018)	Quantitative; cross- sectional; web-based survey	N=138; 0.73% aged 21-15, 7.97% aged 26-30, 18.8% aged 31-35, 27.5% aged 36-40, 22.5% aged 41-45, 16.7% aged 46-50, 5.8% aged 51-55; 87% males, 13% females; 0.72% high school, 7.25% some college, 15.22% associate degree, 64.49% bachelor degree, 12.32% master degree & above; no marital status information; no family status information; 87% White, 13% non- White; 73.9% corporal or below, 26% supervisor; no tenure information; 54.3% patrol	Demographics	Work-family conflict Resiliency	Burnout	US

Lambert et al. (2018)	Quantitative; cross-sectional; survey	N=827; 21-57 years, M=36.53 years; 88% males, 12% females; 42% college degree, 58% no college degree; no marital status information; no family status information; no race information; 69% line officer, 31% other position; 0-30 years, M=2.44 years; no job nature information	Job involvement / Job satisfaction / Organizational commitment (affective and continuance commitment)	Burnout (emotional exhaustion, depersonalization, and reduced sense of personal accomplishment)	India
Tsai et al. (2018)	Quantitative; cross-sectional; secondary data	N=594; 22-62 years, M=36.09 years; 515 males (86.7%), 79 females (13.3%); 188 Bachelor & Higher (31.6%), 406 less than Bachelor (68.4%); no marital status information; no family status information; 478 White (80.5%), 116 Minority (19.5%); 248 supervisor (41.8%), 346 officer (58.2%); 0-30 years, M=12.2 years; no job nature information	Demographics / Negative working environment / Counselling support / Family discussion with co-workers	Job stress	US
Frank et al. (2017)	Quantitative; cross-	N=827; 21-57 years, M=36.53 years; 88% males, 12% females; 42%	Job demands / (role conflict, role ambiguity,	Work stress	India

	sectional; survey	college degree, 58% no college degree; no marital status information; no family status information; no race information; 69% constable, 31% other position; 0-30 years, M=2.44 years; no job nature information	role overload, role underload, dangerousness of job) Job resources (input into decision making, formalization, organizational support, instrumental communication)			
Kula (2017)	Quantitative; cross-sectional; self-report survey	N=538; no age information; 92.6% males; 196 two-year college degrees, 238 bachelor degrees; no marital status information; no family status information; no race information; 407 police officers (75.7%); 158 11-15 years; no job nature information	Organizational Police Stress Questionnaire Operational Police Stress Questionnaire Job Satisfaction Survey Karasek's Job Content Survey (supervisor support)	Supervisor support	Work-related burnout	Turkey
Lambert et al. (2017)	Quantitative; cross-sectional; self-report survey	N=827; 21-57 years, M=36.53 years; 88% males, 12% females; 42% college degree, 58% no college degree; no marital status information; no	Work family conflict (strain-based conflict, family-based conflict, behavior-based	/	Job stress	India



		family status information; no race information; 69% line officer, 31% other position; 0-39 years, M=13.82 years; no job nature information	conflict, time-based conflict)			
Padyab et al. (2016)	Quantitative; cross-sectional; questionnaire	N=856; M=40 years (males), M=34 years (females); 419 males (53%), 437 females (56%); no education information; no marital status information; no family status information; no race information; no rank information; no tenure information; 100% patrol	Karasek and Theorells questionnaire Job Demand Control-Social Support Model The Stress of Conscience Questionnaire	/	Burnout (emotional exhaustion and depersonalization)	Sweden
Rotenberg et al. (2016)	Quantitative; cross-sectional; online survey	N=183; 22-56 years, M=38 years 11 months; 142 males, 41 females; no education information; no marital status information; no family status information; no race information; no rank information; no tenure information; no job nature information	Personal trust beliefs in the police Public-ascribed trust beliefs in the police	/	Workplace stress	UK

Singh & Nayak (2015)	Quantitative; self-report questionnaire	N=599; 65 below 20 years (10.85%), 98 20-29 years (16.36%), 107 30-39 years (17.86%), 230 40-49 years (38.4%), 99 50 years and above (16.53%); 550 males (91.82%), 49 females (8.2%); 145 under graduate (24.21%), 356 graduate (59.43%), 98 post graduate (16.36%); no marital status information; no family status information; no race information; 100% below inspector level (sub-inspectors, head constables and constables); 90 below 1 year (15.03%), 21 1-5 years (3.51%), 399 6-10 years (66.61%), 89 11 years and above (14.86%); no job nature information	Work-family conflict	/	Job stress	India
McCarty (2013)	Quantitative; cross-sectional; survey	N=908; no age information; 737 males, 171 females; 536 less than MA (72.7%) (males), 199 MA or above (27%) (males), 108 less than MA (63.2%) (females), 63 MA or above (36.8%)	Views of subordinates Satisfaction with peers and supervisors Work-life conflict Unfairness	/	Emotional exhaustion Depersonalization	US

(females); 580 married (78.7%) (males), 154 not married (20.9%) (males), 89 married (52%) (females), 81 not married (47.4%) (females); no family status information; 104 African American (14.1%) (males), 526 White (71.4%) (males), 85 Hispanic (11.5%) (males), 22 Other (3%) (males), 40 African American (23.4%) (females), 110 White (64.3%) (females), 20 Hispanic (11.7%) (females), 1 Other (0.6%) (females); 100% sergeants; 30 6-10 years (4.1%) (males), 199 11-15 years (27%) (males), 211 16-20 years (28.6%) (males), 167 21-25 years (22.7%) (males), 128 26 years or more (17.4%) (males), 12 6-10 years (7%) (females), 29 11-15 years (17%) (females), 61 16-20 years (35.7%) (females), 46 21-25 years (26.9%) (females), 23 26 years or

## Discipline

		more (13.5%) (females); no job nature information				
Vuorensyrjä & Mälkiä (2011)	Quantitative; cross-sectional; electronic survey	N=2,821; 26.3% 20-29 years, 43% 30-39 years, 20.9% 40-49 years, 9.8% 50 years; 82.7% males, 17.3% females; no education information; no marital status information; no family status information; no race information; 100% constable; 10.9% < 2 years, 24.3% 2-5 years, 36.3% 6-15 years, 16.6% 16-25 years, 11.9% > 25 years; 20.3% daily crime investigation, 15.8% demanding crime investigation, 63.8% public order and security	Defective leadership Role conflicts Threat of violence Time pressure Shift work	/	Burnout	Finland
Redman et al. (2011)	Quantitative; cross-sectional; self-completion paper based questionnaire	N=198; Median= 30-39 years; 66% males, 34% females; no education information; 61% married/living as married, 39% single/divorced/other; no family status information; no race information; 8% inspectors	Hours spent in the workplace building Positive affectivity Sick building syndromes	/	Job stress Burnout	US

		and above, 20% sergeants, 53% constables, 18% others; Median= 10 years or more; no job nature information				
Violanti et al. (2018)	Quantitative; cross-sectional; self-report survey	N=200; M=46.2 years; 143 males (72%), 57 females (28%); 13 high school/GED (6.5%), 103 college < 4 years (51.5%), 84 college 4+ years (42%); 20 single (10.1%), 137 married (68.8%), 42 divorced (21.1%); no family status information; 162 Caucasian (81%), 38 African American (19%); 110 police officer (55%), 39 sergeant/lieutenant (19.5%), 51 captain/detective (25.5%); 9 0-9 years (4.5%), 45 10-14 years (22.5%), 68 15-19 years (34%), 78 20+ years (39%); no job nature information	Effort-reward imbalance / Overcommitment		Burnout (cynicism, exhaustion, and professional efficacy)	US
Kumar & Kamalanabhan (2017)	Quantitative; survey	N=491; aged 31-39 years (43%); males (81.7%); no education information; no marital status information;	Organizational stressors (perceived unfairness,	Work support	Burnout	India

		no family status information; no race information; sub-inspectors (54.7%); 2 years; no job nature information	inflexible work hours, work overload and role ambiguity			
			Community stressors (publics negative attitude toward police and political interference)			
			Work-home interface (work-family conflict and family-work conflict)			
Smoktunowicz et al. (2015)	Quantitative; cross-sectional; secondary data	N=607; 21-61 years, M=36.64 years; 483 males (80%), 124 females (20%); no education information; no marital status information; no family status information; no race information; no rank information; 1-36 years, M=12.83 years; no job nature information	Job demands Job control Social support	Social support	Job burnout	Poland

Wang et al. (2014)	Quantitative; survey	N=521; 192 aged 40-50 (36.9%), 162 aged 30-40 (31.1%); 392 males (75.2%); no education information; no marital status information; no family status information; no race information; no rank information; no tenure information; 192 public security (36.4%), 69 criminal investigation (13.1%), 51 office (9.7%)	Police job stress	Locus of control personality (internality)	Job burnout	China
McCarty & Skogan (2013)	Quantitative; online questionnaire	N=2,564; no age information; 1871 males, 663 females; 1152 less than Bachelor's degree, 1298 Bachelor's degree or higher; no marital status information; no family status information; 365 African American, 1508 White, 422 Hispanic, 197 Others; no rank information; M=12.93 years (civilian), M=17.17 years (sworn); no job nature information	Job related (perceptions of danger, work-life conflict, shift assignment work) Organizational (social support from coworkers and supervisors, perceived unfairness of the organization, size of the organization)	/	Burnout	US

---

Table 4. 6 Demographic predictors of police work-related stress

Study	Age	Gender	Education	Marital status	Family status	Race	Rank	Tenure	Job nature
Wickramasinghe & Wijesinghe (2018)	Yes	No	No	Yes	No	/	No	No	/
McCarty et al. (2019)	Yes	Yes	/	/	/	Yes	Yes	/	/
Bishopp et al. (2018)	No	No	No	/	/	No	/	/	No
Yun et al. (2015)	No	/	No	No	/	/	No	No	/
Ivie & Garland (2011)	/	Mixed	No	No	/	No	/	No	/
Sayed et al. (2019)	/	/	/	/	/	/	/	/	/
Rose & Unnithan (2015)	/	No	No	No	/	Yes	/	Yes	/
Backteman-Erlanson et al. (2013)	No	/	/	/	/	/	/	/	/
Gächter et al. (2011a)	Yes	No	/	No	No	No	Yes	Yes	/
Gächter et al. (2011b)	Yes	No	/	No	No	No	Yes	No	/
Padilla (2020)	/	No	/	/	/	Yes	No	Yes	/
Marcos et al. (2019)	/	/	/	/	/	/	/	/	/
Galanis et al. (2019)	/	/	/	/	/	/	/	/	/
Griffin & Sun (2018)	No	No	No	/	/	Yes	No	/	No



Lambert et al. (2018)	No	No	No	/	/	/	No	No	/
Tsai et al. (2018)	No	No	No	/	/	No	Yes	No	/
Frank et al. (2017)	No	No	Yes	/	/	/	Yes	No	/
Kula (2017)	/	/	/	/	/	/	/	/	/
Lambert et al. (2017)	No	No	No	/	/	/	No	No	/
Padyab et al. (2016)	/	/	/	/	/	/	/	/	/
Rotenberg et al. (2016)	/	/	/	/	/	/	/	/	/
Singh & Nayak (2015)	No	/	/	No	/	/	/	No	/
McCarty (2013)	/	/	No	No	/	Mixed	/	Mixed	/
Vuorensyrjä & Mälkiä (2011)	/	No	/	/	/	/	/	Yes	Mixed
Redman et al. (2011)	Mixed	Mixed	/	No	/	/	/	Mixed	/
Violanti et al. (2018)	/	/	/	/	/	/	/	/	/
Kumar & Kamalanabhan (2017)	/	/	/	/	/	/	/	/	/
Smoktunowicz et al. (2015)	Yes	No	/	/	/	/	/	/	/
Wang et al. (2014)	/	/	/	/	/	/	/	/	/
McCarty & Skogan (2013)	/	Mixed	No	/	/	Yes	/	No	/

---

## 4.5 Discussion and conclusion

The current study not only systematically considered the factors influencing police work-related stress from a multi-level perspective but also examined the predictors, mediators, and moderators of police work-related stress. Results from the current review found six types of predictors; (1) demographic; (2) personal; (3) organizational; (4) operational; (5) family-related; and (6) community, four mediators; (1) work-family conflict; (2) resiliency; (3) gender; and (4) supervisor support, and three moderators; (1) social support; (2) work support; and (3) locus of control personality (internality), enriching the understanding of sources of police work-related stress.

### *4.5.1 Understanding the sources of police work-related stress from different levels*

The sources of police work-related stress can be understood from different levels, including individual, organizational, operational, family, and community level. Also, some factors can have an influence on police work-related stress indirectly.

#### *Individual level*

At the individual level, among the demographic predictors of police work-related stress, gender is worth discussing. Although results from this scoping review regarding the prediction of gender on police work-related stress were mixed, a previous systematic review conducted by Galanis and colleagues (2021) highlighted that male police officers encountered more stress. This discrepancy can be attributed to the dominance of males in policing occupation. Furthermore, inadequacy of physical exercises was found to be a personal predictor in the current review, and this is in line with a previous systematic review (Galanis et al., 2021). An advantage of engaging in physical exercises, for example yoga and swimming, is to improve police officers' well-being (Jeter et al., 2013; Silva et al., 2017).

Another personal predictor found in the current review was personality. Police officers who were characterized by optimism encountered a lower level of job stress. However, a previous systematic review conducted by Galanis and colleagues (2021) highlighted that neuroticism and psychotism were predictors of stress. It is important to note that optimism (a positive personality trait) was found in this scoping review while neuroticism and psychotism (negative personality traits) were found in Galanis et al. (2021)'s systematic review.

### *Organizational level*

At the organizational level, the core concepts of the JD-R model and the JDC model were found useful to explain police officers' job stress and burnout in more than half of the selected studies in this scoping review. In the current review, police officers were found to encounter more job stress and burnout when under high job demands, low job control, inadequate support, and a negative working environment. These results are consistent with previous systematic reviews (Galanis et al., 2021; Purba & Demou, 2019). Besides, police officers who perceived unfairness were found to encounter more burnout among some selected studies in the current review. This result not only matches a previous systematic review (Purba & Demou, 2019) but also has an implication on the potential role of internal procedural justice as a job resource to alleviate work-related stress in policing context. Last but not least, to the authors' knowledge, no review conducted considered job/workplace satisfaction and organizational commitment as sources of police work-related stress. Future research should be conducted to review these potential predictions.

### *Operational level*

At the operational level, the microsystem of the ecological model of occupational stress (i.e. operational aspect of work) and the concept of "job demand" of the JD-R model

were found applicable to understand police officers' work stress and burnout in some selected studies in this scoping review. In the current review, police officers were found to encounter more work stress and burnout under the exposure of bloody crime scenes, danger, and unpredictability of work. Likewise, a previous systematic review conducted by Sherwood et al. (2019) has found that working as an agent and frequent exposure to crimes against children as operational risk factors of burnout. In line with the assumption of the JD-R model, operational predictors, as job demands, cause police officers to experience work-related stress and burnout. However, result from the current review is inconsistent with a previous systematic review (Wagner et al., 2019). Wagner and colleagues (2019) did not find studies that examined the relationship between frequency/severity of critical incidents exposures, anxiety and depression. Two possible explanations were offered for this inconsistency. One explanation is the consideration of different mental health indicators. Work-related stress and burnout were considered in this scoping review while Wagner et al. (2019) considered anxiety and depression in their systematic review. Another explanation is the use of different search terms and databases, so yielding different studies.

#### *Family and community level*

At the family and community level, the ecological model of occupational stress has been used to explain stressors and occupational stress at these two levels. Salazar and Beaton (2000) applied this model to understand occupational stress among firefighters. One similarity between firefighters and police officers is that both are first responder occupation, who work under a highly stressful environment. So, this model can be applied to understand occupational stress in policing context. The microsystem includes inadequacy of support from family, driving work-related stress for police officers. The peri-organizational system consists of disrespect and misunderstanding of being a police officer from the community,

and an increased in political-related criticisms, influencing on work-related stress among police officers.

#### *Indirect factors influencing police work-related stress*

In addition, this scoping review discussed the mediators (i.e. work-family conflict, resiliency, gender, and supervisor support) and the moderators (i.e. social support, work support, and locus of control personality (internality) of police work-related stress. Some of these indirect factors were recognized in the ecological model of occupational stress. Since work related stress derived from job demands and the nature of policing work are inevitable, possible interventions offered for these indirect factors are worth considering.

#### *4.5.2 Practical implications*

Practical implications at different levels are generated from this scoping review aiming at alleviating work-related stress in policing occupation. Firstly, at the personal level, two suggestions are provided to deal with the in/out-group status. One suggestion is self-positioning in terms of police subculture programs (Rose & Unnithan, 2015). Another suggestion is formal mentoring programs, which are helpful for integrating police officers with diverse demographics and reducing the mindset of “us and them” (Rose & Unnithan, 2015). Also, some suggestions to maintain a work-life balance are allowing flexibility of working and arranging reasonable work schedule (Duran et al., 2019; Wang et al., 2014). Concerning the stress of conscience issue, police officers should be given opportunities to talk to their supervisors regarding their troublesome experiences confidentially (Hawkins, 2001). Secondly, at the organizational level, the importance of organizational justice is emphasised. Organizational justice refers to employees’ perceived fairness in an organization (Greenberg, 1990). It has four dimensions; (1) distributive; (2) informational; (3)

interpersonal; and (4) procedural (Colquitt, 2001). Qureshi et al. (2016) stressed the importance of organizational justice and investment of both distributive and procedural justice in long term. Apart from organizational justice, organizational-based interventions are suggested to reduce job demand, increase job control, provide more job resources, increase job/workplace satisfaction, boost organizational commitment, promote internal procedural justice, and alleviate organizational problems. Thirdly, at the operational level, Violanti et al. (2012) recommended better shift systems designs and improved rotation to minimize the risk of injury. Fourthly, at the family-related level, Yun et al. (2015) recommended creating an organizational culture with the emphasis of both individual/family life and organizational goals have equal importance. Fifthly, at the community level, the public and police management should put efforts. For the public, they should have the ability to express their concerns clearly (McCarty et al., 2019). For police management, organizing activities so as to promote trustworthy images of the police are suggested (Rotenberg et al., 2016). Last but not least, the importance of community policing is highlighted, which can be established through engagements and interactions with the community continuously (Rotenberg et al., 2016; Yun et al., 2015).

#### *4.5.3 Limitations and future research*

Three limitations of this scoping review should be noted. The first limitation is that a majority of the selected studies in the current review are cross-sectional design, so causality is difficult to determine. For example, although the results found that work-family conflicts predicted more job stress and burnout among police officers, reverse causal relationship is possible. The second limitation comes from the reliance on English publications only. Issues concerning demographics such as gender, religion, and race in police organizations published in non-English are omitted in this review, limiting the understanding of the influences of

these demographics on police work-related stress, particularly in the developing countries located in non-Western context. Finally, the selected studies mainly based on male police officers that make result generalization difficult to female police officers.

Future research conducting a review of longitudinal studies can help confirm the causal relationships between stressors and work-related stress among police officers. Besides, future studies should narrow the focus of review on particular populations such as female police officers, certain religious group, or ethnic minority group in policing context. Last but not least, evaluating the effectiveness of interventions in order to alleviate work-related stress in policing occupation is worthy.

#### *4.5.4 Conclusion*

In conclusion, Study One provided a comprehensive and systematic understanding of predictors, mediators, and moderators of police work-related stress from a multi-level perspective. Predictor of police work-related stress were categorized into six types; (1) demographic; (2) personal; (3) organizational; (4) operational; (5) family-related; and (6) community. Organizational predictors had seven subtypes; (1) job demand; (2) job control; (3) job resources; (4) job/workplace satisfaction; (5) organizational commitment; (6) internal procedural justice; and (7) organizational problems. Mediators of police work-related stress included work-family conflict, resiliency, gender; and supervisor support while moderators of police work-related stress included social support, work support, and locus of control personality (internality). Undoubtedly, police officers have been under enormous work-related stress arising from different sources. Through identifying the sources of police work-related stress, possible practices at different levels can be implemented.

This chapter focused on Study One (Factors influencing police work-related stress: A scoping review). This is a scoping review of considering the factors influencing police work-related stress from a multi-level perspective and also examining the predictors, mediators, and moderators of police work-related stress. Predictors of police work-related stress were categorized into six types while four mediators and three moderators were found. However, an empirical understanding of police work-related stress is still lacking. Further studies should be conducted to provide an empirical understanding of work-related stress among police officers.



## **CHAPTER 5: STUDY TWO (PREDICTORS AND MEDIATORS OF WORK-RELATED STRESS AMONG HONG KONG POLICE OFFICERS: A QUANTITATIVE SECONDARY SURVEY DATA ANALYSIS)**

The previous chapter has provided a comprehensive and systematic understanding of predictors, mediators, and moderators of police work-related stress from a multi-level perspective using a scoping review approach. Although the review categorized the direct and indirect factors affecting work-related stress among police officers at different levels in the existing literatures, an empirical understanding of work-related stress among police officers remains inadequate. To fill this gap, Study Two (the current study) is aimed to examine predictors and mediators of work-related stress among Hong Kong police officers based on the theoretical concepts of the JD-R model. This study seeks to answer the following research question; What are the direct and indirect factors of work-related stress among Hong Kong police officers? Drawing from the quantitative secondary survey data (see Section 3.4.1 Source of secondary survey data for more information), job demands and job resources of work-related stress among Hong Kong police officers are presented in the following chapter.

### **5.1 Descriptive results of demographic characteristics**

Percentage distributions and descriptive statistics of demographic characteristics are presented in Table 5. 1. The average age was 34.37 years, ranging from 23 years to 58 years. Participants comprised 83.1% male police officers and 16.9% female police officers. On average, the participants had 13 years of education, ranging from 7 years to 18 years. More than half of the participants were married (58.4%), and more than a third of the participants had children (38.0%). Of 335 participants, most were junior police constables (77.7%) and the least were station sergeants (.9%). On average, the participants had 11.46 years of tenure, ranging from 1 year to 38.5 years.

## 5.2 Descriptive results and reliability test results of the variables used in Study Two

Percentage distributions and descriptive statistics of the items are presented in Table 5. 1. For easier data comparison, values of each response in each variable were converted from 1 through 6 to 0 through 100 (0 for the 1<sup>st</sup> point, 20 for the 2<sup>nd</sup> point, 40 for the 3<sup>rd</sup> point, 60 for the 4<sup>th</sup> point, 80 for the 5<sup>th</sup> point, and 100 for the 6<sup>th</sup> point). Although the measures were rescaled, the meanings and relationships regarding the measures were not varied (Preston & Colman, 2000). Means of the variables used in Study Two were calculated based on composite mean. The participants seldom encountered work-related stress ( $M = 40.0$ ,  $SD = 18.7$ ). Regarding the job demands, the participants rated public stressors the most stressful ( $M = 52.2$ ,  $SD = 24.7$ ), followed by pandemic stressors ( $M = 47.4$ ,  $SD = 24.9$ ), operational stressors ( $M = 46.2$ ,  $SD = 22.0$ ), and organizational stressors ( $M = 45.1$ ,  $SD = 20.4$ ). To interpret participants' level of stress of the aforementioned job demands, value from 0 to 20, 40 to 60, and 80 to 100 indicates low, medium, and high level of stress respectively. The means of the four job demands ranged from 45.1 to 52.2, indicating that the participants had a medium level of stress in each job demand. Regarding the job resources, the participants reported to receive some supervisory support ( $M = 65.6$ ,  $SD = 20.8$ ) and perceive a relatively high level of internal procedural justice ( $M = 74.8$ ,  $SD = 16.6$ ). The participants sometimes displayed work engagement ( $M = 66.0$ ,  $SD = 15.9$ ).

Cronbach's alphas of the variables used in Study Two are presented in Table 5. 1. Reliability refers to the consistency of a scale (Bannigan & Watson, 2009). A scale is considered reliable if similar or same results are found when the same scale is used for multiple times by different persons or in different circumstances (Drost, 2011; Roberts & Priest, 2006). Reliability can be assessed by internal consistency and internal consistency can be measured by Cronbach's alpha (Bannigan & Watson, 2009). Cronbach's alpha greater

than .9 indicates an excellent internal consistency (George & Mallery, 2019). Cronbach's alpha greater than .8 indicates a good internal consistency (George & Mallery, 2019). Cronbach's alpha greater than .7 indicates an acceptable internal consistency (George & Mallery, 2019).

### *5.2.1 Work-related stress*

Eight items were originally used to measure police officers' work-related stress (McCarty et al., 2007). After the pilot test by Li's research team, two items were dropped. In Study Two, work-related stress was measured by six items. Respondents were asked to rate on a six-point Likert scale, ranging from one "never" (=1) to six "always" (=6). More than half of the participants responded "I feel tired at work even with adequate sleep" (WS1) as seldom (17.4%) or sometimes (37.1%). More than half of the participants responded "I am moody, irritable, or impatient over small problems" (WS2), "I futile about work" (WS3), and "I think I am not as efficient at work as I should be" (WS4) as rarely (32.0%; WS2, 27.8%; WS3, 28.7%; WS4) or seldom (27.5%; WS2, 25.4%; WS3, 25.4%; WS4). Roughly half of the participants responded "My resistance to illness is lowered because of my work" (WS5) as seldom (23.5%) or sometimes (27.1%). More than half of the participants responded "I have difficulty concentrating on my job" (WS6) as rarely (35.7%) or seldom (24.6%). Work-related stress demonstrated a good reliability, with Cronbach's alpha .887.

### *5.2.2 Organizational stressors*

The original source of measuring organizational police stress included 20 items (McCreary & Thompson, 2006), which can be divided into six dimensions (Shane, 2010). However, the pilot test by Li's research team not only showed a different factor structure to Shane's (2010) study but also a conceptually meaningless factor structure. Hence, only six

items were kept. Besides, responses collected in the pilot test indicated that the original seven-point scale was replaced with a six-point scale for easier understanding. Therefore, response categories include “absolutely not stressful” (=1), “not stressful at all” (=2), “little stressful” (=3), “stressful” (=4), “very stressful” (=5), and “absolutely stressful” (=6). More than half of the participants responded “Feeling like you always have to prove yourself to the organization” (ORG1), “Excessive administrative duties” (ORG2), “Staff shortages” (ORG3), “Bureaucratic red tape” (ORG4), and “Volunteer free time to work” (ORG5) as little stressful (30.7%; ORG1, 28.9%; ORG2, 29.3%; ORG3, 27.1%; ORG4, 27.1%; ORG5) or stressful (28.3%; ORG1, 27.4%; ORG2, 27.8%; ORG3, 30.4%; ORG4, 27.1%; ORG5). More than half of the participants responded “Unequal sharing of work responsibilities” (ORG6) as not stressful at all (29.5%) or little stressful (25.0%). Organizational stressors had an excellent reliability, with Cronbach’s alpha .915.

### 5.2.3 Operational stressors

The original source of measuring operational police stress included 20 items (McCreary & Thompson, 2006). For the same reasons of handling the scale measuring organizational police stress as aforementioned, six items were retained finally. Response categories include “absolutely not stressful” (=1), “not stressful at all” (=2), “little stressful” (=3), “stressful” (=4), “very stressful” (=5), and “absolutely stressful” (=6). More than half of the participants responded “Work related activities on days off (e.g., court, community events)” (OPE1) and “Not enough time available to spend with friends and family” (OPE2) as little stressful (26.2%; OPE1, 23.5%; OPE2) or stressful (32.2%; OPE1, 30.1%; OPE2). Roughly half of the participants responded “It is hard to eat healthy at work” (OPE3), “It is hard to finding time to stay in good physical condition” (OPE4), and “Lack of understanding from family and friends about your work” (OPE5) (18.7%; OPE3, 23.4%; OPE4, 20.8%;

OPE5) or stressful (30.4%; OPE3, 26.7%; OPE4, 29.8%; OPE5). More than half of the participants responded “Feeling like you always on the job” (OPE6) as little stressful (23.2%) or stressful (30.7%). Operational stressors had an excellent reliability, with Cronbach’s alpha .925.

#### *5.2.4 Public stressors*

A scale measuring police officers’ public stressors was constructed based on responses from the focus group interviews, conducted by Li in 2018. Six items were developed based on the test-retest validity results. Response categories include “absolutely not stressful” (=1), “not stressful at all” (=2), “little stressful” (=3), “stressful” (=4), “very stressful” (=5), and “absolutely stressful” (=6). More than half of the participants responded “Verbal attack by citizens” (PUB1), “Unreasonable demand by citizens” (PUB2), “Handling social movements/riots” (PUB3), and “Complaint by citizens” (PUB4) as little stressful (23.2%; PUB1, 25.2%; PUB2, 23.2%; PUB3, 24.1%; PUB4) or stressful (29.6%; PUB1, 28.6%; PUB2, 28.7%; PUB3, 29.6%; PUB4). Less than half of the participants responded “Video shooting by citizens at the time of duty” (PUB5) and “Verbal attack, negative labelled on internet platform” (PUB6) as little stressful (22.9%; PUB5, 20.7%; PUB6) or stressful (26.6%; PUB5, 26.2%; PUB6). Public stressors had an excellent reliability, with Cronbach’s alpha .949.

#### *5.2.5 Pandemic stressors*

A three-item scale measuring police officers’ pandemic stressors was developed by Li’s research team. Response categories include “absolutely not stressful” (=1), “not stressful at all” (=2), “little stressful” (=3), “stressful” (=4), “very stressful” (=5), and “absolutely stressful” (=6). More than half of the participants responded “Infection of COVID-19 virus in

your contacts with the public” (PAN1), “A threat to health when having duty at COVID-19 pandemic” (PAN2), and “Extra work bought by COVID-19 pandemic” (PAN3) as little stressful (24.8%; PAN1, 26.0%; PAN2, 28.1%; PAN3) or stressful (31.7%; PAN1, 29.6%; PAN2, 25.1%; PAN3). Pandemic stressors had an excellent reliability, with Cronbach’s alpha .947.

### *5.2.6 Supervisory support*

Supervisory support was measured using three items, adopted from Nohe and Sonntag (2014). Respondents were asked to rate on a six-point Likert scale (1 = “absolutely no support” and 6 = “enormous support”). Over two-third of the participants responded “To what extent can you count on your leader to back you up when you have difficulties combining work and family” (SS1), “To what extent can you count on your leader to listen to you when face difficulties in combing work and family” (SS2), and “To what extent can you count on your leader to help you face difficulties combining work and family” (SS3) as some support (33.8%; SS1, 36.3%; SS2, 32.9%; SS3) or much support (37.2%; SS1, 34.1%; SS2, 33.2%; SS3). Supervisory support had an excellent reliability, with Cronbach’s alpha .960.

### *5.2.7 Internal procedural justice*

Internal procedural justice was measured using five items, adopted from Wu et al. (2017). Respondents were asked to rate on a scale of 1 to 6 (1 = “strongly disagree” and 6 = “strongly agree”). A relatively higher percentage of the participants responded “When they are giving instructions, my supervisors explain why they give these instructions” (IPJ1) and “When making policy choices, my supervisors sufficiently explain why these choices are being made” (IPJ2) as rather agree (23.4%; IPJ1, 27.6%; IPJ2) or agree (51.4%; IPJ1, 47.4%; IPJ2). Over two-third of the participants responded “My supervisors are impartial when

making decision” (IPJ3), “When implementing changes, my supervisors sufficiently explain why these changes are necessary” (IPJ4), and “My supervisors give explanations for decisions they make that affect me” (IPJ5) as rather agree (22.2%; IPJ3, 27.0%; IPJ4, 25.5%; IPJ5) or agree (45.6%; IPJ3, 43.8%; IPJ4, 45.0%; IPJ5). Internal procedural justice had an excellent reliability, with Cronbach’s alpha .940.

### 5.2.8 Work engagement

Work engagement was measured by nine items from three subscales (i.e. vigor, dedication, and absorption subscales) with three items each (Schaufeli et al., 2006). Respondents were asked to rate on a six-point Likert scale, ranging from one “never” (=1) to six “always” (=6). Roughly three-quarter of the participants responded “At my work, I feel bursting with energy” (WE1) and “At my job, I feel strong and vigorous” (WE2) as sometimes (34.4%; WE1, 39.0%; WE2) or frequently (41.9%; WE1, 36.0%; WE2). More than half of the participants responded “When I get up in the morning, I feel like going to work” (WE3) as seldom (19.2%) or sometimes (39.2%). Roughly three-quarter of the participants responded “I am enthusiastic about my job” (WE4) and “My job inspires me” (WE5) as sometimes (36.2%; WE4, 36.2%; WE5) or frequently (39.2%; WE4, 38.6%; WE5). A two-third of the participants responded “I am proud of the work that I do” (WE6) as sometimes (30.5%) or frequently (36.2). A relatively higher percentage of the participants responded “I feel happy when I am working intensively” (WE7), “I am immersed in my work” (WE8), and “I get carried away when I am working” (WE9) as sometimes (36.9%; WE7, 32.3%; WE8, 38.6%; WE9) or frequently (38.4%; WE7, 45.5%; WE8, 32.3%; WE9). Work engagement had an excellent reliability, with Cronbach’s alpha .935.

Table 5. 1 Percentage distributions, descriptive statistics, and reliability test results

Variables and items	Coding and response categories (%)						<i>M</i>	<i>SD</i>	Range	$\alpha$	
	0	1	2	3	4	5					6
<b>Work-related stress (WS) (1 = never; 2 = rarely; 3 = seldom; 4 = sometimes; 5 = frequently; 6 = always)</b>							40.0	18.7	1-6	.887	
I feel tired at work even with adequate sleep (WS1)		5.4%	19.8%	17.4%	37.1%	16.2%	4.2%	3.51	1.24	1-6	
I am moody, irritable, or impatient over small problems (WS2)		8.4%	32.0%	27.5%	27.5%	4.2%	.3%	2.88	1.06	1-6	
I futile about work (WS3)		15.9%	27.8%	25.4%	27.8%	2.7%	.3%	2.75	1.12	1-6	
I think I am not as efficient at work as I should be (WS4)		10.2%	28.7%	25.4%	26.6%	7.5%	1.5%	2.97	1.18	1-6	
My resistance to illness is lowered because of my work (WS5)		10.5%	21.1%	23.5%	27.1%	14.5%	3.3%	3.24	1.31	1-6	
I have difficulty concentrating on my job (WS6)		14.1%	35.7%	24.6%	21.3%	4.2%	0%	2.66	1.09	1-5	
<b>Organizational stressors (ORG) (1 = absolutely not stressful; 2 = not stressful at all; 3 = little stressful; 4 = stressful; 5 = very stressful; 6 = absolutely stressful)</b>							45.1	20.4	1-6	.915	
Feeling like you always have to prove yourself to the organization (ORG1)		8.1%	21.1%	30.7%	28.3%	10.8%	.9%	3.15	1.15	1-6	
Excessive administrative duties (ORG2)		7.2%	21.1%	28.9%	27.4%	10.8%	4.5%	3.27	1.24	1-6	
Staff shortages (ORG3)		5.4%	13.3%	29.3%	27.8%	15.7%	8.5%	3.60	1.29	1-6	
Bureaucratic red tape (ORG4)		6.6%	16.9%	27.1%	30.4%	14.8%	4.2%	3.42	1.24	1-6	
Volunteer free time to work (ORG5)		6.9%	27.1%	27.1%	27.1%	8.4%	3.3%	3.13	1.20	1-6	
Unequal sharing of work responsibilities (ORG6)		10.8%	29.5%	25.0%	25.3%	7.5%	1.8%	2.95	1.20	1-6	
<b>Operational stressors (OPE) (1 = absolutely not stressful; 2 = not stressful at all; 3 = little stressful; 4 = stressful; 5 = very stressful; 6 = absolutely stressful)</b>							46.2	22.0	1-6	.925	
Work related activities on days off (e.g., court, community events) (OPE1)		9.9%	20.2%	26.2%	32.2%	6.6%	4.5%	3.28	2.06	1-6	
Not enough time available to spend with friends and family (OPE2)		6.9%	23.5%	23.5%	30.1%	13.6%	2.4%	3.27	1.23	1-6	



It is hard to eat healthy at work (OPE3)	6.3%	23.8%	18.7%	30.4%	15.4%	5.4%	3.41	1.32	1-6	
It is hard to finding time to stay in good physical condition (OPE4)	8.2%	17.9%	23.4%	26.7%	18.2%	5.5%	3.45	1.34	1-6	
Lack of understanding from family and friends about your work (OPE5)	10.5%	21.1%	20.8%	29.8%	12.7%	5.1%	3.28	1.35	1-6	
Feeling like you always on the job (OPE6)	8.7%	22.0%	23.2%	30.7%	12.7%	2.7%	3.25	1.25	1-6	
<b>Public stressors (PUB) (1 = absolutely not stressful; 2 = not stressful at all; 3 = little stressful; 4 = stressful; 5 = very stressful; 6 = absolutely stressful)</b>							52.2	24.7	1-6	.949
Verbal attack by citizens (PUB1)	7.0%	14.3%	23.2%	29.6%	18.0%	7.9%	3.61	1.34	1-6	
Unreasonable demand by citizens (PUB2)	7.9%	12.5%	25.2%	28.6%	17.0%	8.8%	3.61	1.36	1-6	
Handling social movements/riots (PUB3)	8.6%	10.7%	23.2%	28.7%	18.0%	10.7%	3.69	1.40	1-6	
Complaint by citizens (PUB4)	8.8%	16.5%	24.1%	29.6%	13.7%	7.3%	3.45	1.35	1-6	
Video shooting by citizens at the time of duty (PUB5)	8.6%	15.3%	22.9%	26.6%	17.4%	9.2%	3.57	1.40	1-6	
Verbal attack, negative labelled on internet platform (PUB6)	8.5%	13.4%	20.7%	26.2%	17.7%	13.4%	3.71	1.47	1-6	
<b>Pandemic stressors (PAN) (1 = absolutely not stressful; 2 = not stressful at all; 3 = little stressful; 4 = stressful; 5 = very stressful; 6 = absolutely stressful)</b>							47.4	24.9	1-6	.947
Infection of COVID-19 virus in your contacts with the public (PAN1)	7.6%	17.5%	24.8%	31.7%	11.8%	6.6%	3.43	1.30	1-6	
A threat to health when having duty at COVID-19 pandemic (PAN2)	7.6%	18.4%	26.0%	29.6%	10.3%	8.2%	3.41	1.33	1-6	
Extra work bought by COVID-19 pandemic (PAN3)	7.3%	23.0%	28.1%	25.1%	9.7%	6.9%	3.28	1.31	1-6	
<b>Supervisory support (SS) (1 = absolutely no support; 2 = no supportive at all; 3 = little support; 4 = some support; 5 = much support; 6 = enormous support)</b>							65.6	20.8	1-6	.960
To what extent can you count on your leader to back you up when you have difficulties combining work and family (SS1)	1.5%	3.9%	13.0%	33.8%	37.2%	10.6%	4.33	1.05	1-6	
To what extent can you count on your leader to listen to you when face difficulties in combing work and family (SS2)	2.1%	3.0%	13.6%	36.3%	34.1%	10.9%	4.30	1.07	1-6	
To what extent can you count on your leader to help you face difficulties combining work and family (SS3)	2.1%	4.8%	16.6%	32.9%	33.2%	10.3%	4.21	1.12	1-6	

**Internal procedural justice (IPJ) (1 = totally disagree; 2 = disagree; 3 = rather disagree; 4 = rather agree; 5 = agree; 6 = totally agree)**

							74.8	16.6	1-6	.940
When they are giving instructions, my supervisors explain why they give these instructions (IPJ1)	0%	1.8%	6.0%	23.4%	51.4%	17.4%	4.77	.87	2-6	
When making policy choices, my supervisors sufficiently explain why these choices are being made (IPJ2)	0%	2.1%	5.1%	27.6%	47.4%	17.7%	4.74	.88	2-6	
My supervisors are impartial when making decision (IPJ3)	.3%	.6%	8.4%	22.2%	45.6%	22.8%	4.81	.92	1-6	
When implementing changes, my supervisors sufficiently explain why these changes are necessary (IPJ4)	.3%	2.7%	7.8%	27.0%	43.8%	18.3%	4.66	.97	1-6	
My supervisors give explanations for decisions they make that affect me (IPJ5)	.3%	2.7%	6.6%	25.5%	45.0%	19.8%	4.72	.97	1-6	

**Work engagement (WE) (1 = never; 2 = rarely; 3 = seldom; 4 = sometimes; 5 = frequently; 6 = always)**

<b>Vigor</b>							66.0	15.9	1-6	.935
At my work, I feel bursting with energy (WE1)	.3%	1.5%	15.0%	34.4%	41.9%	6.9%	4.37	.89	1-6	
At my job, I feel strong and vigorous (WE2)	.6%	3.6%	16.2%	39.0%	36.0%	4.5%	4.20	.93	1-6	
When I get up in the morning, I feel like going to work (WE3)	2.4%	10.5%	19.2%	39.2%	24.3%	4.5%	3.86	1.11	1-6	
<b>Dedication</b>										
I am enthusiastic about my job (WE4)	.6%	3.9%	11.7%	36.2%	39.2%	8.4%	4.35	.97	1-6	
My job inspires me (WE5)	.3%	4.5%	12.0%	36.2%	38.6%	8.4%	4.34	.97	1-6	
I am proud of the work that I do (WE6)	.6%	3.9%	11.4%	30.5%	36.2%	17.4%	4.50	1.06	1-6	
<b>Absorption</b>										
I feel happy when I am working intensively (WE7)	.6%	3.0%	12.3%	36.9%	38.4%	8.7%	4.36	.95	1-6	
I am immersed in my work (WE8)	0%	1.8%	6.9%	32.3%	45.5%	13.5%	4.62	.87	2-6	
I get carried away when I am working (WE9)	2.1%	5.1%	16.8%	38.6%	32.3%	5.1%	4.09	1.04	1-6	

**Demographic characteristics**

Age (years)							34.37	7.99	23-58	
Gender (0 = male; 1 = female)	83.1%	16.9%					.17	.38		
Education (years)							13.04	2.60	7-18	
Marital status (0 = non-married; 1 = married)	41.6%	58.4%					.58	.49		

Children (0 = without children; 1 = with children)	62.0%	38.0%				.38	.49
Rank (1 = junior police constable; 2 = senior police constable; 3 = sergeant; 4 = station sergeant)	77.7%	10.7%	10.7%	.9%		.12	.23
Tenure (years)						11.46	8.48 1-38.5

---

*Note.* For easier data comparison, values of each response in each variable were converted from 1 through 6 to 0 through 100 (0 for the 1<sup>st</sup> point, 20 for the 2<sup>nd</sup> point, 40 for the 3<sup>rd</sup> point, 60 for the 4<sup>th</sup> point, 80 for the 5<sup>th</sup> point, and 100 for the 6<sup>th</sup> point). Mean for work-related stress (WS), organizational stressors (ORG), operational stressors (OPE), public stressors (PUB), pandemic stressors (PAN), supervisory support (SS), internal procedural justice (IPJ), and work engagement (WE) were calculated based on composite mean.

### 5.3 Bivariate results

Bivariate analysis is run to determine if an association exists between two variables (Sandilands, 2014). If so, the degree of an association between two variables can be found and more advanced statistical analysis can be further conducted (e.g. regression analysis) (Sandilands, 2014). The strength of an association between two variables is presented as Pearson's  $r$ . Values of .10, .30, and .50 indicate small, medium, and large effects respectively (Cohen, 1988, 1992). Correlations between all variables are presented in Table 5. 2. Age had a small and positive correlation with work-related stress ( $r = .11, p = .043$ ), suggesting an increase in age was correlated with an increase in work-related stress. No significant correlations between gender ( $r = .02, p = .675$ ), education ( $r = .09, p = .134$ ), marital status ( $r = .07, p = .247$ ), family status (having children) ( $r = -.04, p = .507$ ), rank ( $r = .11, p = .050$ ), tenure ( $r = -.03, p = .605$ ), and work-related stress were found.

Regarding the job demands, organizational stressors ( $r = .48, p < .001$ ), public stressors ( $r = .46, p < .001$ ), and pandemic stressors ( $r = .38, p < .001$ ) had medium and positive correlations with work-related stress. Operational stressors ( $r = .56, p < .001$ ) had a large and positive correlation with work-related stress. The more the stressors, the more the work-related stress. These bivariate results were consistent with hypothesis 2. SEM analysis was conducted to test the predictive power of job demands (organizational stressors, operational stressors, public stressors, and pandemic stressors) on work-related stress.

Regarding the job resources, supervisory support ( $r = -.19, p = .001$ ) had a small and negative correlation with work-related stress. Internal procedural justice ( $r = -.31, p < .001$ ) had a medium and negative correlation with work-related stress. The more the supervisory support and internal procedural justice, the less the work-related stress. These bivariate

results were consistent with hypothesis 3. SEM analysis was conducted to test the predictive power of job resources (supervisory support and internal procedural justice) on work-related stress.

Organizational stressors ( $r = -.27, p < .001$ ), public stressors ( $r = -.19, p < .001$ ), and pandemic stressors ( $r = -.23, p < .001$ ) had small and negative correlations with work engagement. Operational stressors ( $r = -.33, p < .001$ ) had a medium and negative correlation with work engagement. The more the stressors, the less the work engagement. Supervisory support ( $r = .24, p < .001$ ) had a small and positive correlation with work engagement. Internal procedural justice ( $r = .46, p < .001$ ) had a medium and positive correlation with work engagement. The more the supervisory support and internal procedural justice, the more the work engagement. Work engagement had a medium and negative correlation with work-related stress ( $r = -.40, p < .001$ ), suggesting an increase in work engagement was correlated with a decrease in work-related stress. These bivariate results were consistent with hypothesis 4a and hypothesis 4b. SEM analysis was conducted to examine the direct and indirect relationships between different types of job demands (stressors), job resources, and work-related stress via work engagement.

Table 5. 2 Correlation matrix of all variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. WS	-													
2. Age	.11*	-												
3. Gender	.02	.23***	-											
4. EDU	.09	.12*	.66***	-										
5. Marital status	.07	.31***	.96***	.75***	-									
6. Family status (having children)	-.04	.30***	.58***	.23***	.50***	-								
7. Rank	.11	.56***	.20***	.04	.20***	.19**	-							
8. Tenure	-.03	.55***	.30***	-.11*	.27***	.25***	.51***	-						
9. ORG	.48***	.07	.02	.03	.03	-.04	.11	.17**	-					
10. OPE	.56***	.03	.11*	.09	.11*	.03	.13*	.16**	.72***	-				
11. PUB	.46***	-.01	.02	.03	.03	-.07	.13*	.05	.61***	.60***	-			
12. PAN	.38***	.13*	.04	-.10	.02	.08	.12*	.19**	.52***	.47***	.52***	-		
13. SS	-.19**	-.12*	-.07	-.12*	-.09	-.02	-.08	-.02	-.34***	-.28**	-.18**	-.07	-	
14. IPJ	-.31***	-.15**	-.09	-.06	-.12*	-.07	-.11*	-.19**	-.42***	-.32***	-.23***	-.12*	.58***	-
15. WE	-.40***	-.01	-.09	.08	-.04	-.13*	-.11*	-.15*	-.27***	-.33***	-.19***	-.23***	.24***	.46***

Note. WS = work-related stress; EDU = education; ORG = organizational stressors; OPE = operational stressors; PUB = public

stressors; PAN = pandemic stressors; SS = supervisory support; IPJ = internal procedural justice; WE = work engagement. \*\*\* $p < .001$ ;

\*\* $p < .01$ ; \* $p < .05$ .

#### 5.4 SEM results

SEM results, including CFA results, model fit statistics, and path analysis results are presented in the following. In this study, there are one endogenous variable (work-related stress), six exogenous variables (organizational stressors, operational stressors, public stressors, pandemic stressors, supervisory support, and internal procedural justice), and one mediating variable (work engagement) in the hypothesized model. The statistical software of Mplus (version 8.10) was used.

It is crucial to know “how well the factor loadings of the indicators are?” and “how well the hypothesized model fit the data?”. To answer these two questions, CFA was conducted and model fit statistics was reported respectively. Running CFA is common among previous policing studies (Wu et al., 2017; Wu et al., 2019). Regarding the acceptable level of factor loading, a cutoff point of .40 is suggested (Stevens, 2002). The maximum likelihood was used to estimate model parameters. To determine an acceptable model fit, it is suggested to check the value of several indices, including (1) the value of  $\chi^2$ ,  $df$ , and associated p-value; (2) CFI; (3) TLI; (4) RMSEA; and (5) SRMR. For the value of  $\chi^2$ , the smaller the better (Hooper et al., 2008; Schermelleh-Engel et al., 2003). Recommendation for  $df$  ranges from 2-5 (Hooper et al., 2008). For  $\chi^2$  associated p-value, value larger than .05 indicates a good model fit (Barrett, 2007; Hooper et al., 2008; Schermelleh-Engel et al., 2003). However,  $\chi^2$  is very sensitive to sample size (Hooper et al., 2008; Schermelleh-Engel et al., 2003). A large sample size is associated with large  $\chi^2$  and thus the model is likely to be rejected (Barrett, 2007; Hooper et al., 2008; Schermelleh-Engel et al., 2003). Value greater than .95 for CFI and TLI (Hooper et al., 2008; Schermelleh-Engel et al., 2003), value smaller than .05 for RMSEA (Kline, 2015; Schermelleh-

Engel et al., 2003), and value smaller than .08 for SRMR indicate a good model fit (Kline, 2015; Rosenthal, 2017).

CFA results are presented in Figure 5. 1. All latent variables were statistically distinguishable. There was no evidence of cross loadings of the indicators. Factor loadings ranged from .71 to .95, above the cutoff point of .40, indicating the theoretically driven indicators were loaded onto their respective variables. However, it is important to note that factor loadings higher than .90 may have three indications; (1) the items share a lot of variance; (2) the items are too similar; and (3) the items contribute uniformly (Clark & Watson, 1995). As suggested by modification indices, the mediating variable and some of the control variables, including age, education, and family status (having children), were correlated to improve model fit. Goodness-of-fit statistics suggested a good fit of the data to the model ( $\chi^2 = 6.52$ ,  $df = 4$ ,  $p = .163$ ; CFI = .99; TLI = .94; RMSEA = .05; SRMR = .02).



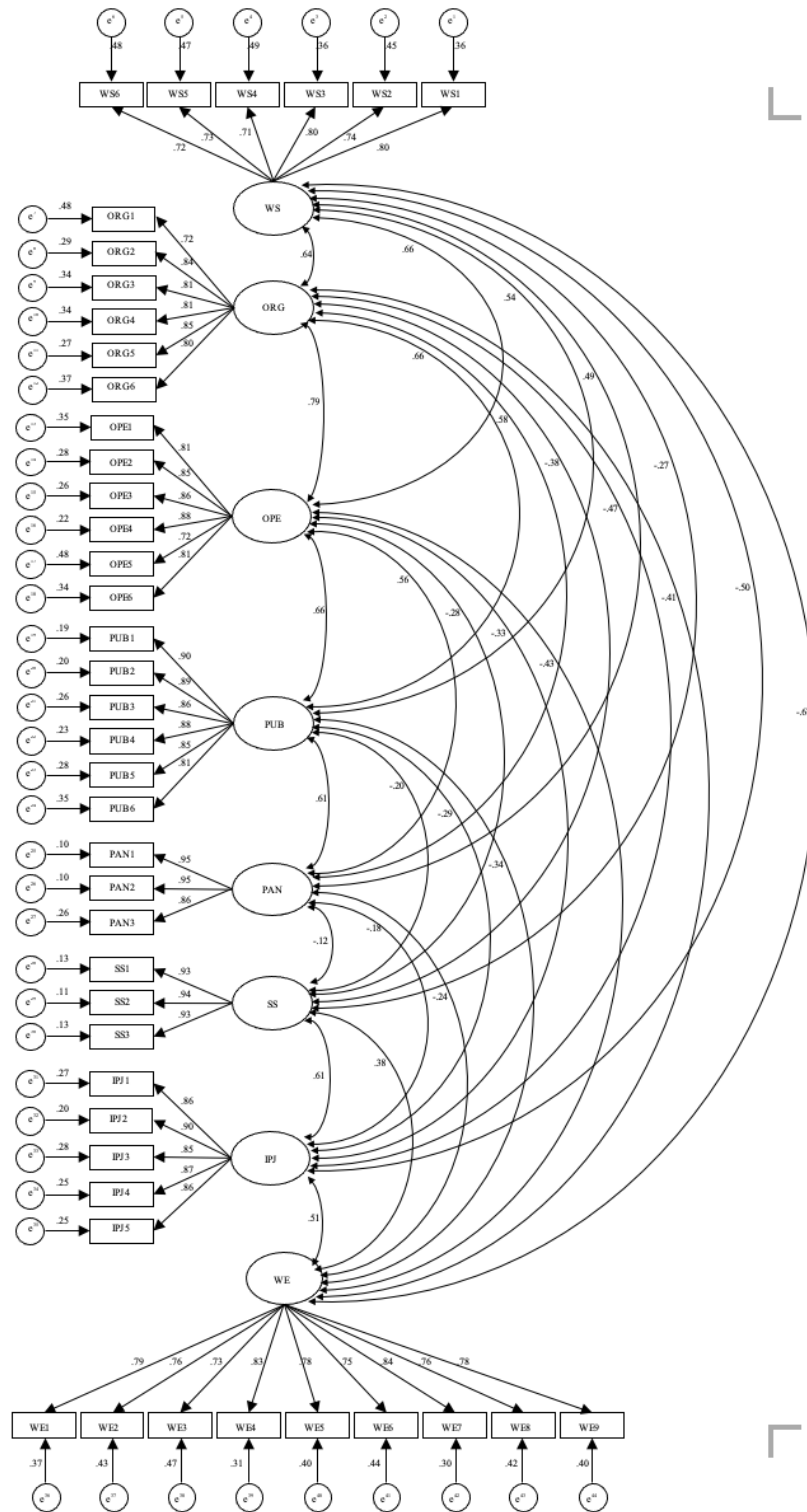


Figure 5. 1 CFA results

Note. WS = work-related stress; ORG = organizational stressors; OPE = operational stressors; PUB = public stressors; PAN = pandemic stressors; SS = supervisory support; IPJ = internal procedural justice; WE = work engagement.

## 5.5 Hypotheses testing

There are different types of SEM, such as path analysis, partial least squares path modelling, and latent growth curve model. Path analysis is used to examine the direct and indirect relationships between variables (Hamilton, 2017). It is a preferred choice for Study Two, given that the objective of Study Two is to examine predictors and mediators of work-related stress among Hong Kong police officers. The mediation was analyzed using 1000 bootstrapped samples. Bootstrap is a technique that “repeatedly sampling from the data set and estimating the indirect effect in each resampled data set.” (Preacher & Hayes, 2008, p.880). As suggested by Field (2018), 1000 bootstrapped samples is a reasonable number. Path analysis results are presented in Figure 5. 2 and Table 5. 3. Study Two includes six hypotheses. Each hypothesis was tested and presented accordingly in the following.

Hypothesis 1a is work-related stress is negatively related to age, education, rank, and tenure. As shown in Table 5. 3, work-related stress was significantly and positively related to age ( $\beta = .21, p = .002$ ) but negatively related to tenure ( $\beta = -.31, p < .001$ ). Work-related stress was not significantly related to education ( $\beta = -.04, p = .638$ ) and rank ( $\beta = .04, p = .493$ ). Hypothesis 1a was partially supported. Moreover, it indicates the impact of the participants' demographic characteristics on work-related stress is minimal.

Hypothesis 1b is more work-related stress is reported by female, non-married, and parenting police officers. As shown in Table 5. 3, work-related stress was not significantly related to gender ( $\beta = -.27, p = .300$ ), marital status ( $\beta = .35, p = .214$ ), and family status (having children) ( $\beta = -.09, p = .431$ ). Hypothesis 1b was rejected.

Hypothesis 2 is job demands (organizational stressors, operational stressors, public stressors, and pandemic stressors) have direct and positive effect on work-related stress. As shown in Table 5. 3, among the job demands, only operational stressors were directly and positively related to work-related stress ( $\beta = .35, p < .001$ ) in a significant manner. Work-related stress was not significantly related to organizational stressors ( $\beta = .06, p = .422$ ), public stressors ( $\beta = .11, p = .086$ ), and pandemic stressors ( $\beta = .10, p = .144$ ). Hypothesis 2 was partially supported.

Hypothesis 3 is job resources (supervisory support and internal procedural justice) have direct and negative effect on work-related stress. As shown in Table 5. 3, work-related stress was not significantly related to supervisory support ( $\beta = .10, p = .061$ ), and internal procedural justice ( $\beta = -.08, p = .219$ ). Hypothesis 3 was rejected.

Hypothesis 4a is work engagement can mediate the relationship between job demands (organizational stressors, operational stressors, public stressors, and pandemic stressors) and work-related stress. As shown in Table 5. 3, no significant indirect effects of organizational stressors ( $\beta = -.03, p = .333$ ), operational stressors ( $\beta = .06, p = .051$ ), public stressors ( $\beta = -.01, p = .677$ ), and pandemic stressors ( $\beta = .03, p = .214$ ) on work-related stress via work engagement were found. Hypothesis 4a was rejected.

Hypothesis 4b is work engagement can mediate the relationship between job resources (supervisory support and internal procedural justice) and work-related stress. As shown in Table 5. 3, no significant indirect effect of supervisory support on work-related stress via work engagement was found ( $\beta = .01, p = .766$ ). Internal procedural justice had a significant and indirect effect on work-related stress via work engagement ( $\beta = -.12, p < .001$ ),

but no direct effect on work-related stress ( $\beta = -.08, p = .219$ ). Therefore, work engagement fully mediated the relationship between internal procedural justice and work-related stress.

Hypothesis 4b was partially supported.

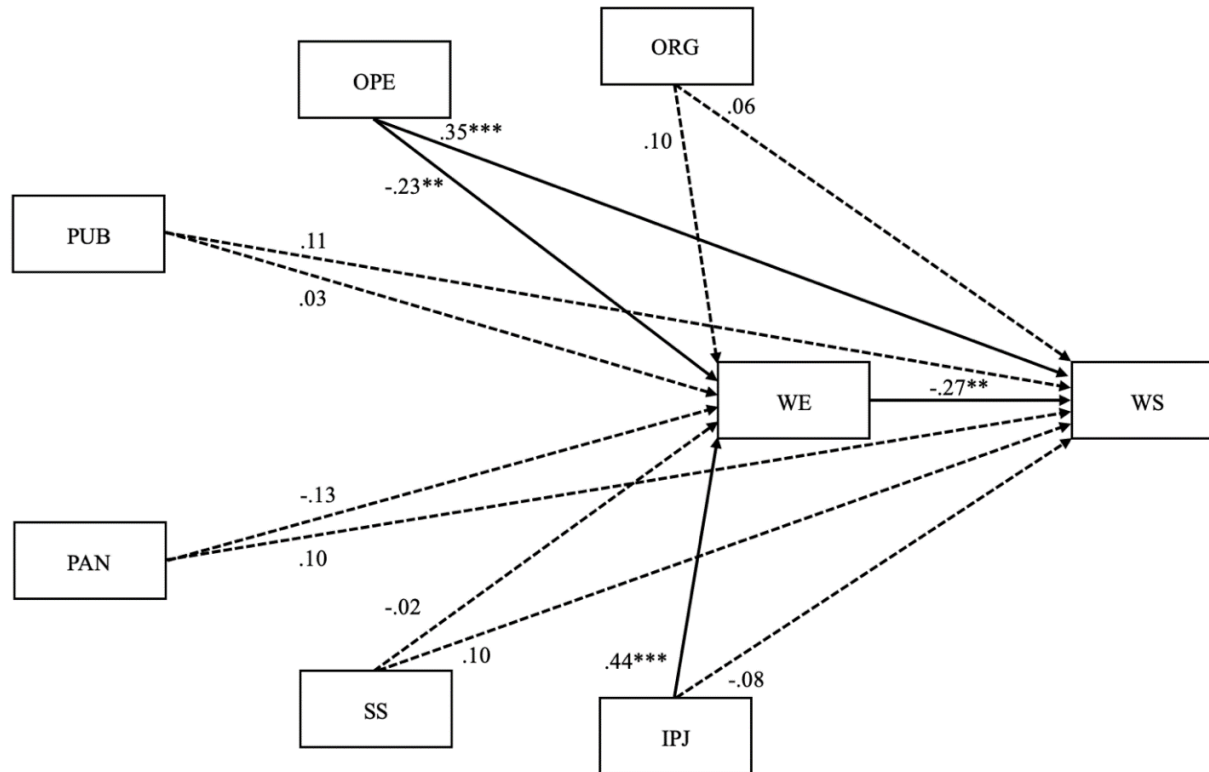


Figure 5. 2 Path analysis results

*Note.* ORG = organizational stressors; OPE = operational stressors; PUB = public stressors; PAN = pandemic stressors; SS = supervisory support; IPJ = internal procedural justice; WE = work engagement; WS = work-related stress. Standardized path coefficients are reported. \*\*\* $p < .001$ ; \*\* $p < .01$ . Solid lines represent significant paths. Dot lines represent non-significant paths.

Demographic characteristics are omitted in the figure. The analyses are based on 1000 bootstrapped samples.

Table 5. 3 Path analysis results

Variable	Work engagement (WE)	Work-related stress (WS)		
	Direct	Direct	Indirect	Total
<b>Exogenous</b>				
Organizational stressors (ORG)	.10	.06	-.03	.04
Operational stressors (OPE)	-.23**	.35***	.06	.41***
Public stressors (PUB)	.03	.11	-.01	.10
Pandemic stressors (PAN)	-.13	.10	.03	.13
Supervisory support (SS)	-.02	.10	.01	.10
Internal procedural justice (IPJ)	.44***	-.08	-.12***	-.20**
<b>Mediating</b>				
Work engagement (WE)	-	-.27**	-	-
<b>Demographic characteristics</b>				
Age	-	.21**	-	-
Gender	-	-.27	-	-
Education	-	-.04	-	-
Marital status	-	.35	-	-
Family status (having children)	-	-.09	-	-
Rank	-	.04	-	-
Tenure	-	-.31***	-	-
<b>Model fit statistics</b>				
$\chi^2 = 6.52$				
$df = 4$				
$p = .163$				
RMSEA = .05				
CFI = .99				
TLI = .94				
SRMR = .02				

*Note.* Standardized path coefficients are reported. \*\*\* $p < .001$ ; \*\* $p < .01$ . The analyses are based on 1000 bootstrapped samples.

## 5.6 Discussion and conclusion

Building on the theoretical concepts of the JD-R model, the objective of current study is to examine predictors and mediators of work-related stress among Hong Kong police officers.

Using the quantitative secondary survey data from a sample of Hong Kong police officers, age

and tenure were significant demographic predictors of work-related stress. Older police officers encountered more work-related stress. Police officers with shorter tenure encountered more work-related stress. Operational stressors and internal procedural justice had a direct and an indirect effect on work-related stress respectively. More operational stressors predicted more work-related stress. More internal procedural justice predicted more work engagement, which in turn predicted less work-related stress. Gender, education, marital status, family status (having children), rank, organizational stressors, public stressors, pandemic stressors, and supervisory support were non-significant predictors. The above results partially supported Hypothesis 1a, Hypothesis 2, and Hypothesis 4b but rejected Hypothesis 1b, Hypothesis 3, and Hypothesis 4a.

#### *5.6.1 Demographic predictors*

Demographic predictors included age, gender, education, marital status, family status (having children), rank, and tenure.

##### *Age*

To be contradictory to Hypothesis 1a, age was found to be a positive predictor of work-related stress among Hong Kong police officers. Similar to a previous result (Smoktunowicz et al., 2015), older police officers were more vulnerable to burnout because their work may become demanding with aging (Martinussen et al., 2007). Physical strength is highly important in policing occupation. However, aged police officers are likely to undergo a decline in physical strength and possibly they cannot carry out certain duties (Rose & Unnithan, 2015). They may worry about their work performance and thus encounter more work-related stress.

### *Gender*

Although previous studies have found that policewomen reported more work-related stress and burnout (Ivie & Garland, 2011; McCarty & Skogan, 2013), gender was a non-significant predictor of work-related stress among Hong Kong police officers in Study Two. In fact, female police officers may adopt an active coping strategy, for example, problem solving and information seeking in response to stress (Carroll, 2013; Martinussen et al., 2007). Besides, gender inequality was identified as a source of stress for female police officers (Greene & del Carmen, 2002; Kurtz, 2008; Morash & Haarr, 1995) but gender inequality is not an issue in Hong Kong. Under Cap. 480 Sex Discrimination Ordinance, any “kinds of sex discrimination, discrimination on the ground of marital status, pregnancy or breastfeeding, sexual harassment and harassment of breastfeeding women” are regarded unlawful (Hong Kong e-Legislation, 2022a, para.1). Although it is believed that more work-related stress is reported by female police officers in a male-dominated occupation, the items in the work-related stress scale are not specific to female police officers. Further effort of investigation on gender and work-related stress in a qualitative study is worthy.

### *Education*

Education was a non-significant predictor of work-related stress among Hong Kong police officers in Study Two. Previous studies have shown no relationship between education and work-related stress among police officers (Ivie & Garland, 2011; Lambert et al., 2017; Rose & Unnithan, 2015; Tsai et al., 2018). One might speculate that police officers are not educated with how to deal with stress, regardless the years of education they received. In the Hong Kong



education system, knowledge construction and skills development are the core (Education Bureau, 2022). Instead, curricula or resources on stress management are limited.

### *Marital status*

Study Two found that marital status did not predict work-related stress among Hong Kong police officers. Previous studies have found mixed results. Some assumed that more non-married police officers reported more work stress because they received no spouse support (Li et al., 2018). Others believed that married police officers experienced greater strain-based work-family conflict (Qureshi et al., 2016). It is postulated that, inherently, policing is a close-knit occupation (Chan, 2011). With cohesiveness among police officers, they may experience the similar stressors and have a mutual understanding of work-related stress (Kumar & Kamalanabhan, 2017; McCarty & Skogan, 2013). It is likely that supervisors and coworkers play a more supportive role, compared to a spouse.

### *Family status (having children)*

Parenting was a non-significant predictor of work-related stress among Hong Kong police officers in Study Two. Previous studies have shown no relationship between with/without children and police burnout (Gächter et al., 2011a, 2011b; Wickramasinghe & Wijesinghe, 2018). Two possible reasons are offered. On one hand, parenting police officers and non-parenting police officers were unevenly distributed in Study Two. On the other hand, children belong to the high-risk group of infection of COVID-19. As parents, they certainly are worried about health of their children. In response to the COVID-19, the Education Bureau made announcement on face-to-face class suspension (The Government of the Hong Kong Special

Administrative Region, 2022b). This measure may be helpful in alleviating parents' fear and also their level of stress.

### *Rank*

Study Two found that rank did not predict work-related stress among Hong Kong police officers. Before becoming an eligible police officer, it is required to undergo psychometric test, aiming to assess emotional resilience, in the selection process (Hong Kong Police Force, 2022b). With emotional resilience, police officers are likely to be able to deal with their stress (Ivie & Garland, 2011). Moreover, both higher-rank and lower-rank officers are exposed to stress although they experience different stressors (Narvekar & D'Cunha, 2021). For higher-rank officers, their source of stress is heavy workload such as urgency of tasks, working consecutively without sufficient time to rest, long working hours, etc (Narvekar & D'Cunha, 2021; Singh & Kar, 2015). For lower-rank officers, they feel stressful because of dealing with assemblies/riots, inadequate benefits and welfare, shift work etc (Narvekar & D'Cunha, 2021; Singh & Kar, 2015). Therefore, one might postulate that work-related stress is reported by police officers, irrespective of their rank.

### *Tenure*

Supporting Hypothesis 1a, tenure was found to be a negative predictor of work-related stress among Hong Kong police officers. Police officers with shorter tenure were more vulnerable to work-related stress can be attributable to lack of experience, which was found to be a source of stress in workplace (Mahmood et al., 2013). Policing is a highly disciplined occupation. If police officers are inexperienced, it is likely that they need to be compliant to

others. So, they do not have much control over tasks in working environment nor be involved in decision-making process. In other words, low job control. According to the JD-R model proposed by Demerouti and colleagues (2001), job control is an example of job resources. A lack of job resources predicts more negative work outcomes.

### *5.6.2 Job demands*

Job demands examined in this study came from four domains: organizational stressors, operational stressors, public stressors, and pandemic stressors.

#### *Organizational stressors*

One study has found that heavy job demands were significant predictors of Indian police work stress (Frank et al., 2017). However, organizational stressors had no direct nor indirect effect on work-related stress among Hong Kong police officers in Study Two. Among the four stressors, the Hong Kong police officers rated organizational stressors the least stressful. In other words, they perceived organizational stressors, for example, excessive administrative duties, and staff shortages a little stressful. Compared to other stressors, assumably, organizational stressor is a weaker predictor.

#### *Operational stressors*

Study Two found that operational stressors had a direct effect on work-related stress among Hong Kong police officers. When Hong Kong police officers encounter more operational stressors, they report more work-related stress. Responding to the COVID-19 pandemic, Cap. 599 Prevention and Control of Disease Ordinance was released (Hong Kong e-Legislation,

2022b). The police officers are responsible for enforcing the law. They can issue a penalty to people who disobey the social distancing measures such as maintaining 1.5m social distancing, prohibition of group gathering, and mandatory mask-wearing at all times in public places. Due to the nature of police work, unsurprisingly, they have encountered extra job demands and thus more work-related stress. One study has shown that, from a transactional perspective, operational stressors were perceived and appraised severe and occurred frequently, this threat led to emotional arousals and the associated activation of the autonomic nervous system, eventually causing burnout among Turkish National Police members (Kula, 2017). Result from Study Two echoes previous studies (Ivie & Garland, 2011; Kula, 2017; Sayed et al., 2019) and matches with the assumption of the JD-R model (Demerouti et al., 2001) in which heavy job demands predict more exhaustion. In the JD-R model, a heavy job demand working condition causes energy depletion and thus burnout (Demerouti et al., 2001).

### *Public stressors*

Public stressors had no direct nor indirect effect on work-related stress among Hong Kong police officers in Study Two, which is consistent with previous studies (Li et al, 2018). On one hand, the responses were collected in 2020 (a few years later since the Umbrella Movement/Occupy Movement and the Mong Kok riot and also a few months later since the social unrest caused by the anti-extradition law amendment bill movement). On the other hand, based on the Prevention and Control of Disease (Prohibition on Group Gathering) Regulation (Cap. 599G), public processions were rejected by the Hong Kong Police Force (The Government of the Hong Kong Special Administrative Region Press Releases, 2021b). The number of public procession has significantly dropped by 93 per cent from 2019 to 2021(Hong Kong Police Force,

2022a). Together, the influence of the public stressors on work-related stress may be weakened. Last but not least, following the social movements, police officers may have gained learning opportunities and experiences so that their confidences have been built up and they can deal with public order events. Also, not only policing training regarding crowd management is strengthened but also specialised crowd management vehicles with water spray devices are procured in order to handle public assemblies and large-scale protests/demonstrations effectively (Press Releases, 2016).

### *Pandemic stressors*

Pandemic stressors also had no direct nor indirect effect on work-related stress among Hong Kong police officers in Study Two. This result is similar to a previous study (Li et al., 2021a). Several explanations are offered. In Study Two, pandemic stressors were only measured with three items and the factor loadings were high. This may indicate that the items are too similar and contribute uniformly (Clark & Watson, 1995), thus may not reflect police officers' work related stress under the COVID-19 pandemic. One possible explanation is that masks and personal protective equipment are provided to the police officers by the Hong Kong Police Force and the Government (The Government of the Hong Kong Special Administrative Region Press Releases, 2020). Another possible explanation is provision of protective items are prioritized to the frontline police officers who are involved in implementing quarantine work so that they can carry out their duties safely and effectively (The Government of the Hong Kong Special Administrative Region Press Releases, 2020). Furthermore, the COVID-19 vaccination programme has launched since February 2021 (The Government of the Hong Kong Special Administrative Region Press Releases, 2021a). The vaccines are proven safe and

effective in protecting against the COVID-19, so everyone is highly encouraged to get vaccinated (The Government of the Hong Kong Special Administrative Region, 2022a). With masks, personal protective equipment, and vaccination, police officers' fear of infection of COVID-19 can be reduced.

### *5.6.3 Job resources*

Job resources investigated in this study comprised supervisory support, internal procedural justice, and work engagement.

#### *Supervisory support*

Likewise, supervisory support had no direct nor indirect effect on work-related stress among Hong Kong police officers in Study Two. Previous studies have found mixed results. Result from Study Two echoes Kula (2017) and Yun et al. (2015)'s results that supervisor support did not alleviate burnout among police officers. Nevertheless, result from Study Two differs from Sayed et al. (2019) and Wickramasinghe and Wijesinghe (2018)'s findings that supervisor support reduced police officers' workplace stress and burnout level respectively. In Study Two, similar to pandemic stressors, supervisory support was measured with three items only and the factor loadings were high, indicating the items are too similar and contribute uniformly (Clark & Watson, 1995). Therefore, supervisory support may not be truly measured in Study Two. Another reason is that internal procedural justice was found to be a more important predictor, which significantly reduced the predictive power of supervisory support. Moreover, police officers reported not only to encounter difficulties in adjusting with their supervisors but also to be punished by their supervisors without being investigated properly (Singh & Kar,

2015), implying a poor relationship and a lack of communication or trust between police officers and their supervisors. In this case, supervisory support may not be protective against work-related stress. Instead, coworkers are possibly more supportive than supervisors, as Page and Jacobs (2011) suggested peer-support counselling. During the COVID-19 pandemic, the relationship, communication, and trust between police officers and their supervisors is possibly worsened due to lack of supervision.

#### *Internal procedural justice and work engagement*

Study Two found that internal procedural justice had an indirect effect on work-related stress via work engagement among Hong Kong police officers but no direct effect on work-related stress. More internal procedural justice predicted more work engagement, which in turn predicted less work-related stress. Nevertheless, internal procedural justice had no direct effect on work-related stress. The relationship between internal procedural justice and work-related stress was fully mediated by work engagement, emphasizing the importance of work engagement.

Internal procedural justice plays a beneficial role and is considered as an example of job resource. Work engagement and organizational commitment are two similar concepts. The former “is defined as a positive, fulfilling, work-related state of mind that is characterised by vigor, dedication, and absorption.” (Schaufeli et al., 2002, p.74). In other words, the relationship between an employee and his or her job performance (Kim et al., 2017). The latter refers to the degree of an employee’s identification with and involvement in an organization (Mowday et al., 1982) and focuses on the relationship between an employee and the organization (Kim et al.,

2017). One study found that sufficient job resources predicted more engagement (Taris et al., 2017). Another study highlighted that organizational justice played an important role in shaping work engagement (Piotrowski et al., 2021). Job resources play a dual motivational role; intrinsic and extrinsic. When job resources play an intrinsic motivational role, they not only promote employees' learning but also satisfy basic human needs (Deci & Ryan, 1985). An example of job resource (i.e. feedback promotes learning), which in turn increases job competence (a basic human need) and finally intrinsic motivation. When job resources play an extrinsic motivational role, with sufficient job resources, employees are willing to spend more abilities and efforts on their job in order to achieve their job goals (Meijman & Mulder, 1998). With provision of feedback and support, employees are more likely to be succeeded in achieving their job goals. Taken together, when basic human needs are satisfied or job goals are achieved, positive work-related state of mind (i.e. engagement) is stimulated.

Other studies found that organizational commitment protected police officers from burnout (Lambert et al., 2018; Yun et al., 2015). Organizational commitment can be sub-categorized into two dimensions (i.e. affective commitment and continuance commitment) (Allen & Meyer, 1990). Affective commitment can be defined as employees' emotional attachment to the organization (Allen & Meyer, 1990; Mercurio, 2015). Indeed, being psychologically attached to the police agency may help police officers to build up positive psychological feelings and emotions (Lambert et al., 2018). Continuance commitment "refers to commitment based on the costs that employees associate with leaving the organization" (Allen & Meyer, 1990, p.1). Examples of costs include benefits, salary, skills etc. (Allen & Meyer, 1990).



If police officers perceive it is too costly to leave, they may need to stay. In this case, it is likely that they feel stuck in the police agency and thus feel stressful (Lambert et al., 2018).

Overall, these results match with the motivational process of the revised JD-R model (Schaufeli & Bakker, 2004; Schaufeli & Taris, 2014). Applying the motivational process of the revised JD-R model in Hong Kong policing context, when making policy choices, supervisors explain why these choices are being made in detail. Police officers are more engaged to their work and therefore encounter less work-related stress.

#### *5.6.4 Theoretical implications*

Results from Study Two have valuable theoretical implications. The current study found that operational stressor was a positive predictor of work-related stress among Hong Kong police officers. The more the operational stressors, the greater the work-related stress. This result supported one assumption of the JD-R model in which high job demands predict more exhaustion. Besides, this study found that internal procedural justice indirectly predicted work-related stress via work engagement among Hong Kong police officers. More internal procedural justice fostered increased work engagement, which in turn led to less work-related stress. This result supported the motivational process in the JD-R model. This result also implied internal procedural justice as a job resource in the JD-R model, extending the relationship between internal procedural justice and work-related stress among Hong Kong police officers. The JD-R model can be applied to explain work-related stress among Hong Kong police officers. However, this study did not find organizational stressors, public stressors, pandemic stressors, and supervisory support have direct nor indirect effects on work-related stress among Hong Kong police officers. Although these job demands and job resource and their predictions on work-

related stress were hypothesized based on the theoretical concepts in the JD-R model, these findings did not provide support to the model.

The present study attempted to examine work-related stress (as a negative organizational outcome) of the motivational process in the JD-R model. A majority of previous literatures using the JD-R model have investigated positive organizational outcomes, for example, job crafting behaviour (da Silva Júnior et al., 2021), job performance (Dan et al., 2020; De Clercq et al., 2022; van de Brake et al., 2020; Xie et al., 2022; Yao et al., 2022), job satisfaction (Awwad et al., 2022; Drüge et al., 2021; Flores et al., 2021; Kaiser et al., 2020; Muylaert et al., 2022; Ninaus et al., 2021; Wodociag et al., 2021), counterproductive workplace behaviours (Turek, 2021), intention to stay (Yu et al., 2021), occupational/organizational commitment (Hara et al., 2021; Wang et al., 2020a), and organizational citizenship behaviour (Turek, 2021; Zhang et al., 2021a). Several recent studies have applied to other positive outcomes such as life satisfaction (Chen & Hsu, 2020; Drüge et al., 2021) and quality of life (Barbieri et al., 2021). Focusing on a negative organizational outcome in this study, the JD-R model is expanded as work-related stress was found to be an outcome within the motivational process in the JD-R model.

#### *5.6.5 Methodological implications*

Study Two has an important methodological implication. In the current study, SEM was used to analyse quantitative secondary survey data. SEM is a flexible statistical analytical technique, which can deal with a series of regression equations (Nachtigall et al., 2003). SEM can consider latent variables, observed variables, and the associated measurement errors simultaneously with data analysis, resulting in greater reliability and validity (Schumacker &

Lomax, 2004). The present study provided a more accurate understanding of predictors and mediators of work-related stress among Hong Kong police officers by using SEM.

#### *5.6.6 Practical implications*

Practical implications for alleviating work-related stress among police officers are generated. Firstly, Qureshi and colleagues (2016) stressed the importance of organizational justice. In particular, internal procedural justice should be promoted in policing context. Supervisors should be consistent when making decisions (Kumar & Kamalanabhan, 2017) so that instructions/policies given to police officers will be clearer while an impartial system of reward and punishment distributions should be adopted to ensure fairness (McCarty & Skogan, 2013). Secondly, because of the job nature, police work derived stress and burnout are inevitable. Some suggestions to minimize the risk of injury include better shift systems designs, changes in scheduling practices, and improved rotation (Violanti et al., 2012). Thirdly, the list of police duties should be streamlined. Due to the advancement in technology, digital devices/tools are recommended to be applied on policing work. For example, using a virtual policing response when dealing with cases. Rapid video responses were used for domestic abuse cases (Rothwell et al., 2022). The use of rapid video responses were associated with a higher arrest rate for suspects, compared to face-to-face responses (Rothwell et al., 2022). With s, police officers are likely to achieve a greater sense of satisfaction from work, which in turn may reduce their work-related stress.

### *5.6.7 Conclusion*

In conclusion, Study Two provided important insights into the sources of work-related stress among Hong Kong police officers. Operational stressors had a direct effect on work-related stress while internal procedural justice had an indirect effect on work-related stress via work engagement. Therefore, interventions that aim at reducing police work-related stress derived from operational domain should be offered whereas internal procedural justice and work engagement should be improved in policing context.

This chapter focused on Study Two (Predictors and mediators of work-related stress among Hong Kong police officers: A quantitative secondary survey data analysis). The current study examined predictors and mediators of work-related stress among Hong Kong police officers. The results showed that operational stressors and internal procedural justice had a direct and an indirect effect on work-related stress respectively. More operational stressors predicted an increased work-related stress. More internal procedural justice fostered increased work engagement, which in turn led to less work-related stress. However, this study cannot identify causality and the context and process of forming police work-related stress. Further qualitative researches should be conducted to provide a contextual and in-depth understanding of stress in policing context.

## **CHAPTER 6: STUDY THREE (A CONTEXTUAL UNDERSTANDING OF WORK-RELATED STRESS AMONG HONG KONG POLICE OFFICERS: QUALITATIVE INTERVIEWS WITH A TIMELINE APPROACH)**

The precedent chapter has reported and discussed the predictors and mediators of work-related stress among Hong Kong police officers with the quantitative secondary data analysis. Although it provided readers an empirical understanding of the factors affecting police work-related stress based on the JD-R model, a contextual understanding of the formation of police work-related stress is lacking. To fill this gap, the JD-R model guided Study Three (the current study) that aims at capturing the context, process, scenario, and subjective experiences of police work-related stress. This study seeks to answer the following research question; What is the contextual and subjective understanding of the formation process of work-related stress among Hong Kong police officers? Using semi-structured interviews with a timeline approach, the narratives of 16 Hong Kong police officers coming from diverse demographic background across three time phases of the COVID-19 pandemic were reported in the following chapter.

### 6.1 Qualitative data collection

#### *6.1.1 A timeline approach*

In Study Three, qualitative data were collected using semi-structured interviews with a timeline approach. A timeline is a visual method used to depict a participant's significant and meaningful life events in chronological order (Berends, 2011; Kolar et al., 2015; Patterson et al., 2012). With the use of timelines, researchers can not only provide a concise and comprehensive form of presentation but also have a better understanding regarding participants' important life experiences (Berends, 2011; Kolar et al., 2015). Timelines are also helpful to recall sequential personal events (Gramling & Carr, 2004), for example

immigrant women, street-involved youth, and obese women (Kolar et al., 2015; Sheridan et al., 2011). One of the greatest advantages of combining qualitative interviews with timelines is that textual data and visual image are combined, and thus increasing data quality (Berends, 2011). Conducting qualitative interviews in conjunction with timelines is also advantageous to examine changes of events and experiences of participants across a period of time (Patterson et al., 2012). Other advantages include facilitating data management, enabling insightful analysis, and providing holistic perspective/understandings (Berends, 2011).

The use of a timeline approach in Study Three is justifiable. This study looks at police officers' lived experiences at a time-series manner (i.e. the changes of demands and resources among Hong Kong police officers at different time phases throughout the COVID-19 pandemic), so it appears to be sensible to utilize a timeline approach. Besides, timelines are useful for enhancing participants' engagement (Kendellen & Camiré, 2019; Kolar et al., 2015). Considering that police officers usually take a suspicious attitude toward outsiders (Chan, 2011), student researcher was prepared to take time to engage the interviewees (i.e. police officers) with a timeline approach in this study. More importantly, using a timeline approach has made Study Three innovative. A sample of a timeline is presented in Figure 6.

1. The timeline includes three time phases to indicate five waves of COVID-19 in Hong Kong. Through the timelines with visual information (see Figures 1 to 3 on Figure 6. 1 A timeline sheet for collecting qualitative data), interviewees can recall their memory and then they were allowed adequate time to express their emotions, feelings, and thoughts of a particular timeframe.

**Figure 1**

*Hongkongers line up for free face masks in Mong Kok on February 10*



*Note. From Wong (2020).*

**Figure 2**

*An elderly woman suspected of having COVID-19 in a Care for the Aged Centre in Tsz Wan Shan area on July 15*



*Note. From Wong (2020).*

**Figure 3**

*Some COVID-19 patients need to wait outdoors before being admitted to the hospitals on February 21*



*Note. From Wai (2022).*

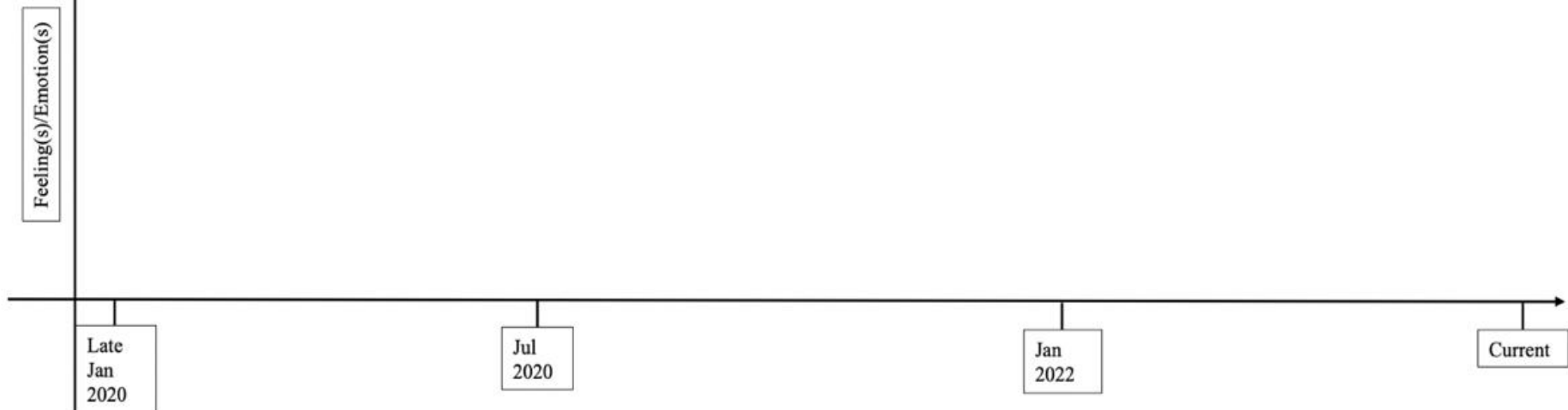


Figure 6. 1 A timeline sheet for collecting qualitative data

### *6.1.2 Process of qualitative data collection*

Before data collection, pilot test of the semi-structured interview guide was conducted with two participants in December 2021. Before conducting the interviews, a couple of meetings were held with the JPOA for the following three purposes; (1) introducing this study; (2) explaining inclusion criteria; and (3) getting a consent of potential interviewees referral. Throughout the interviews, questions were asked according to the semi-structured interview guide. The process of the semi-structured interviews were divided into four phases. Before the interviews, the interviewer gave a self-introduction, followed by introducing the information sheet and informed consent. Interviewees were then provided a few minutes to read the information sheet, sign the consent form, complete a demographic information survey, and ask questions if they had any. At the beginning of the interviews, the interviewer started the interviews by asking “When did you join the Hong Kong Police Force?”. During the interviews, the interviewer showed the timeline sheet (with visual information) and then gave a brief description of significant events occurred in that particular time phase in order to recall interviewees’ memory and thus facilitate the expression of their thoughts. The timelines were implemented in parallel with the semi-structured interviews. Interviewees were invited to write down their emotions or feelings in that particular time phase on the timeline sheet and then answered the questions being asked by the interviewer. These steps were repeated three times as the timeline includes three time phases. Towards the end of the interviews, questions related to demographic characteristics (i.e. gender, marital status, having children, rank, and tenure) and work-related stress were asked. The interviewer also asked the interviewees if they had other information that they wanted to share. Finally, the interviewer ended the interviews nicely by expressing expressed gratitude, reassuring the confidentiality of information provided, and assuring potential future interviews.



### 6.1.3 Questioning techniques

Moreover, the interviewer applied different questioning techniques during the interviews. Firstly, to introduce the topic of interest, a ground mapping question (i.e. “can you write down your feeling(s) or emotion(s)?”) was asked. Secondly, to narrow the topic of interest, some dimension mapping questions (i.e. “Can you tell me about the changes in your organization e.g. staff shortages, supervisory support/communication/trust, internal procedural justice in this time phase?” and “Can you tell me about the changes in your work nature/content e.g. working hour, shift work, contact with the public, any extra work bought by the COVID-19 pandemic in this time phase?”) were asked. To gain elaborations and explanations, an amplificatory probe (i.e. “Are these changes related to your work-related stress?”) was asked, followed by an explanatory probe (i.e. “Why?”). For further elaborations, an amplificatory probe (i.e. “Any other determinant(s) that cause you feel stressful at work?”) was asked.

### 6.2 Qualitative data analysis

This study adopted a deductive approach for qualitative data analysis. A deductive approach “is a top down approach that works with existing framed and theoretically rooted constructs and theories that guide data analysis.” (Pandey, 2018, p.147), also known as, theory-driven codes (Boyatzis, 1998). Since the student researcher already had a clear theoretical framework and the related concepts had been well reviewed and established, a deductive approach seemed justifiable.

Along with the deductive approach, template analysis was applied to analyse the data. Template analysis is a style of thematic analysis (Brooks et al., 2015; King, 2012) that refers to a set of techniques in which textual data are thematically analysed and organized (King,

2004). Prior to qualitative template analysis, researchers define codes (i.e. templates) and themes based on existing theories (Brooks et al., 2015; King, 2004). This is the use of an initial template, also a key feature of template analysis (Brooks et al., 2015). In general, an initial template includes codes, higher order codes, and themes. Similar codes are grouped together to form higher order codes, organizing in a hierarchical structure (King, 2004, 2012). This hierarchical organization of codes is another key feature of template analysis (King, 2004, 2012). The initial template can be revised through the following five main types of modifications; (1) insertion; (2) deletion; (3) merging; (4) changing the scope; and (5) changing the higher-order classification (King, 2012). The process from developing an initial template to forming a final template is iterative (Brooks et al., 2015). Details of the deductive approach to qualitative data analysis using template analysis are presented in the following paragraph. Advantage of using template analysis is its flexibility (Brooks et al., 2015; King, 2004, 2012). Template analysis offers researchers a clear, systematic, and well-structured approach to analyzing the qualitative data (Brooks et al., 2015; King, 2012).

In Study Three, the process of qualitative data analysis includes seven steps (see Figure 6. 2 Process of qualitative data analysis). With the deductive approach, the first step was to develop the initial template on the basis of the theory, the literature reviews, and the concepts investigated in Study Two (i.e. organizational stressors, operational stressors, public stressors, pandemic stressors, supervisor support, and internal procedural justice) (see Figure 6. 3 Initial template). The second step was to do transcriptions. The third step was to get familiar with the transcriptions by reading the transcriptions repeatedly. After familiarizing with the transcriptions, the initial template was modified to form the revised template. The revised template was modified by inserting more higher order codes. More codes were also inserted under corresponding higher order codes (see Figure 6. 4 Revised template). During

data coding, it was found necessary to modify the revised template. The final template was revised by inserting more codes, some minor amendments of the name of the codes, and changing categorization of codes (see Figure 6. 5 Final template). The final template was applied to the full dataset.

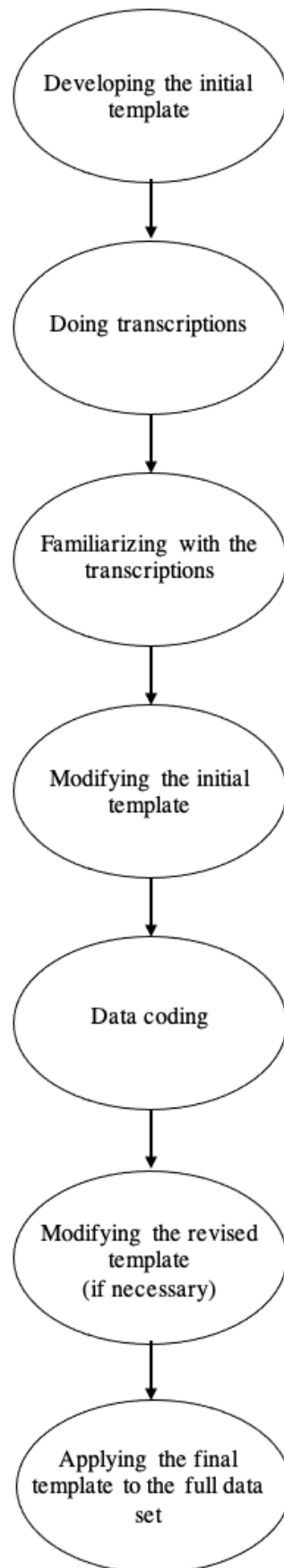


Figure 6. 2 Process of qualitative data analysis

1. Work-related stress experiences
  - 1.1 Organizational
    - 1.1.1 High job demand
    - 1.1.2 Low job control
    - 1.1.3 Lack of job resources
    - 1.1.4 Low job satisfaction
    - 1.1.5 Organizational problems
  - 1.2 Operational
    - 1.2.1 Danger
    - 1.2.2 Negative exposures
    - 1.2.3 Shift work
  - 1.3 Public
    - 1.3.1 Physical attack by the citizens
    - 1.3.2 Verbal attack by the citizens
    - 1.3.3 Disrespect from the citizens
    - 1.3.4 Dealing with social movements
  - 1.4 Pandemic
    - 1.4.1 COVID-19 related duties
2. Protective factors
  - 2.1 Supervisor support
  - 2.2 Internal procedural justice

Figure 6. 3 Initial template

1. Demands/Stressors
  - 1.1 Organizational
    - 1.1.1 Manpower
    - 1.1.2 Workload
    - 1.1.3 Working hours
    - 1.1.4 Personnel issues
  - 1.2 Operational
    - 1.2.1 Danger
    - 1.2.2 Negative exposures
  - 1.3 Public
    - 1.3.1 Handling social movements related duties
    - 1.3.2 Hostility/Being negatively labelled from the public
    - 1.3.3 Public/Society derived negative feelings
    - 1.3.4 Disclose of personal information on the Internet
    - 1.3.5 Poor attitude/Being treated unfairly from other professional groups
  - 1.4 Pandemic
    - 1.4.1 Handling COVID-19 pandemic related duties
    - 1.4.2 Concern of infection of COVID-19 when having duties
  - 1.5 Family-related
    - 1.5.1 Family conflicts
    - 1.5.2 Concern of safety of family members
    - 1.5.3 Concern of transmission of COVID-19 to family members
    - 1.5.4 No family gathering
  - 1.6 Other
    - 1.6.1 Anti COVID-19 pandemic measures
    - 1.6.2 Policing culture
2. Resources
  - 2.1 Supervisory support
    - 2.1.1 Practical support
    - 2.1.2 Psychological support
  - 2.2 Internal procedural justice
    - 2.2.1 Fairness
    - 2.2.2 Clarity of decision making/instructions from supervisors
  - 2.3 Organizational support
    - 2.3.1 Harmony
    - 2.3.2 Provision of health care products
  - 2.4 Personal support
    - 2.4.1 Mentalities
    - 2.4.2 Religion
    - 2.4.3 Personality characteristic
    - 2.4.4 Previous respiratory disease experience
    - 2.4.5 Personal coping strategies
  - 2.5 Social support
    - 2.5.1 Family support
    - 2.5.2 Friends support
  - 2.6 Preventative and control measures for COVID-19 pandemic
    - 2.6.1 Personal protective equipment
    - 2.6.2 Temperature checking
    - 2.6.3 The use of LeaveHomeSafe application
    - 2.6.4 Special work arrangements
    - 2.6.5 Closed-loop management
    - 2.6.6 Medical care
3. Changes across different waves

Figure 6. 4 Revised template

1. Demands
  - 1.1 Organizational stressors
    - 1.1.1 Manpower
    - 1.1.2 Workload
    - 1.1.3 Working hours
    - 1.1.4 Offering a safe working environment
    - 1.1.5 Relationships in workplace
  - 1.2 Operational stressors
    - 1.2.1 Job nature
    - 1.2.2 Danger
    - 1.2.3 Negative exposures
  - 1.3 Public stressors
    - 1.3.1 Handling social movements related duties
    - 1.3.2 Hostility from the public
    - 1.3.3 Doubt about self-legitimacy
    - 1.3.4 Concern of safety of family members
    - 1.3.5 Doxxing
    - 1.3.6 Poor attitude/Being treated unfairly from medical personnel
  - 1.4 Pandemic stressors
    - 1.4.1 Concern of infection of COVID-19 when having duties
    - 1.4.2 Concern of transmission of COVID-19 to family members
    - 1.4.3 Anti COVID-19 pandemic measure
    - 1.4.4 Inadequacy of medical treatment
  - 1.5 Work-family conflict stressors
    - 1.5.1 Family conflicts
    - 1.5.2 No family gathering
  - 1.6 Other stressor
    - 1.6.1 Policing culture
2. Resources
  - 2.1 Supervisory support
    - 2.1.1 Instrumental support
    - 2.1.2 Emotional support
  - 2.2 Internal procedural justice
    - 2.2.1 Fairness
    - 2.2.2 Clarity of instructions/policies from supervisors
  - 2.3 Organizational support
    - 2.3.1 Harmony
    - 2.3.2 Provision of health care products
    - 2.3.3 Preventative and control measures for COVID-19 pandemic
  - 2.4 Personal resources
    - 2.4.1 Mentalities
    - 2.4.2 Religion
    - 2.4.3 Personality characteristic
    - 2.4.4 Previous respiratory disease experience
    - 2.4.5 Personal coping strategies
  - 2.5 Social support
    - 2.5.1 Family support
    - 2.5.2 Friends support

Figure 6. 5 Final template

### 6.3 Qualitative data quality

The four criteria for ensuring data quality in qualitative research mentioned by Guba and Lincoln (1989) - credibility, transferability, dependability, and confirmability are well taken in this study. First, credibility refers to the confidence in the truth of the results. There are many techniques to establish credibility, including prolonged engagement, persistent observation, peer debriefing, negative case analysis, progressive subjectivity, and member checks (Guba & Lincoln, 1989). In the bi-weekly supervision meetings, the data analysis method and process were monitored and discussed. Besides, the student researcher was encouraged to develop her reflexivity towards the results and conduct negative case analysis. Second, transferability refers to the extent to which the results can be transferred to other samples in other contexts. Transferability can be established through thick description (Guba & Lincoln, 1989) so that other researchers can evaluate whether it is transferable to their situations (Guba & Lincoln, 1989; Maher et al., 2018). Transferability in this study was achieved with sufficient and detailed description of the time, place, setting, participants, process, and template. It provides good reference for other researchers to transfer to their samples, contexts, or situations in the future. Third, dependability is concerned with the “stability of the data over time” (Guba & Lincoln, 1989, p.242). A key technique to establish dependability is dependability audit (Guba & Lincoln, 1989), involving an inquiry auditor to examine the process (Lincoln & Guba, 1985). Fourth, confirmability is concerned with ensuring the results are determined by the participants and contexts but not by the biases, interests, motivations, perspectives, or values of the researchers. A key technique to establish confirmability is confirmability audit (Guba & Lincoln, 1989), involving an inquiry auditor to examine the products (data, results, interpretations) (Lincoln & Guba, 1985). Both dependability and confirmability were achieved by the bi-weekly supervision meetings. In



the meetings, the student researcher discussed with the supervisor regarding the process, results, and interpretations of data.

Both dependability and confirmability were also achieved concurrently using the audit trail (Lincoln & Guba, 1985) that includes the six file types (Schwandt & Halpern, 1988) as follows; (1) raw data files (including timelines, audio recordings, and transcriptions); (2) data reduction files (including category of codes, higher order codes, themes, and the initial template); (3) data reconstruction files (including hierarchy of codes, higher order codes, themes, the final template, results, discussion, and thesis); (4) process notes (including methodological notes i.e. description of study design, sampling method, sampling matrix, semi-structured interview guide, and proposed qualitative data analysis plan and trustworthiness notes i.e. involvement of a debriefer and a thick description); (5) notes about intentions and motivations (including research proposal i.e. research goals, research objectives, research questions, theoretical background, literature review, and planned methodology and personal notes i.e. self-reflection); and (6) instruments, tools, and resources (including pilot semi-structured interview guide, Mplus, and MAXQDA).

#### 6.4 Participants

Under the arrangement of the JPOA, semi-structured interviews using a timeline approach were conducted with 16 Hong Kong police officers with different genders, marital status, and tenure (see Table 6. 1 Number of participants split by gender, marital status, and tenure) from July to August in 2022 across various police stations. All interviews were conducted face-to-face, and ranged from approximately 50 minutes to 90 minutes. All interviews were conducted smoothly, except for one interviewee. In this sole case (Interviewee #14), interviewee's emotional feelings were arisen. In view of this, the interview

was suspended for a while. The interviewer comforted the interviewee by showing sympathy and providing emotional support. After expressing the emotional feelings, the interview was resumed.

Table 6. 1 Number of participants split by gender, marital status, and tenure

Gender	Marital status	Tenure		Total
		Less than 12 years	More than 12 years	
Male	Married	1	5	6
	Unmarried	1	1	2
Female	Married	0	2	2
	Unmarried	3	3	6
Total		5	11	16

Demographic characteristics of interviewees are presented in Table 6. 2. The age of interviewees ranged from 29 years to 54 years. Interviewees comprised an even distribution between male police officers and female police officers. In terms of education, five interviewees had a Bachelor's degree, five interviewees had a Diploma/Associate degree, five interviewees graduated with secondary school (senior), and one interviewee graduated with secondary school (junior). For marital status, interviewees comprised an even distribution between married police officers and unmarried (including single, divorced, and widowed) police officers. More than half of the interviewees had no children. Regarding rank, six interviewees were junior police constables, six interviewees were senior police constables, three interviewees were sergeants, and one interviewee was a station sergeant. The tenure of interviewees ranged from 5 years to 31 years. The diverse background of the interviewees is believed to generate a comprehensive picture of this topic.

Table 6. 2 Demographic characteristics of interviewees

Interviewee	Age	Gender	Education	Marital status	Children (With/ Without children)	Rank	Tenure
Interviewee 1	31	Female	Bachelor's degree	Single	No	Junior police constable	5
Interviewee 2	36	Female	Secondary school (senior)	Single	No	Junior police constable	7
Interviewee 3	42	Female	Secondary school (senior)	Single	No	Senior police constable	24
Interviewee 4	47	Female	Secondary school (senior)	Single	No	Senior police constable	29
Interviewee 5	52	Male	Diploma/Associate degree	Married	Yes (Two daughters)	Station sergeant	30
Interviewee 6	54	Female	Secondary school (senior)	Married	Yes (One son and one daughter)	Senior police constable	31
Interviewee 7	30	Male	Bachelor's degree	Single	No	Junior police constable	7
Interviewee 8	41	Male	Diploma/Associate degree	Married	Yes (One son)	Senior police constable	21
Interviewee 9	43	Male	Diploma/Associate degree	Married	No	Sergeant	25
Interviewee 10	37	Male	Bachelor's degree	Married	Yes (One son and two daughters)	Junior police constable	15
Interviewee 11	39	Male	Bachelor's degree	Divorced	No	Sergeant	15
Interviewee 12	33	Female	Diploma/Associate degree	Single	No	Junior police constable	11
Interviewee 13	29	Male	Diploma/Associate degree	Married	Yes (One son)	Junior police constable	10
Interviewee 14	48	Female	Secondary school (senior)	Widowed	Yes (Two sons)	Senior police constable	24
Interviewee 15	44	Female	Secondary school (junior)	Married	Yes (One son and one daughter)	Senior police constable	24
Interviewee 16	45	Male	Bachelor's degree	Married	No	Sergeant	28

## 6.5 Demands among Hong Kong police officers

One key concept (job demands) in the JD-R model is found applicable to understand stressors among police officers in Hong Kong. Examples of job demands in this model include physical workload, time pressure, recipient contact, physical environment, and shift work (Demerouti et al., 2001). One proposition of the model is that high job demands predict more exhaustion (Demerouti et al., 2001). In policing context, job demands such as role ambiguity, role conflict, work overload, emotional demands, and role uncertainty were associated with greater level of work stress and burnout (Frank et al., 2017; Taris et al., 2017).

Also based on the JD-R model, a scoping review and the quantitative data analysis were conducted in Study One and Study Two respectively. The results of these two studies offered foundation for formulating an initial template for data analysis of Study Three. The initial template was modified and revised to form the final template for data analysis in this study as follows. Following the key concept (job demands) in the JD-R model, six demands among Hong Kong police officers were emerged; (1) organizational stressors; (2) operational stressors; (3) public stressors; (4) pandemic stressors; (5) work-family conflict stressors; and (6) other stressor (see Figure 6. 6 Summary of themes, higher order codes, and codes on demands among Hong Kong police officers and Table 6. 3 Template checklist).

### 6.5.1 Organizational stressors

The first demand emerged in this study were organizational stressors. It refers to “certain characteristics of the organization and behaviours of its employees that may create stress for the employees” (Kula, 2017, p.148). 13 out of 16 interviewees indicated that they

had organizational stressors. Examples were manpower, workload, working hours, offering a safe working environment, and relationships in workplace.

Nearly all interviewees (15 police officers) mentioned regarding manpower and many of them described inadequate manpower. For example:

Normally, there are 12-15 colleagues on duty per day. However, only a few on duty at that time (first time phase). (Interviewee #1, aged 31, female)

During the fifth wave of COVID-19 pandemic, many of my colleagues got infected. It seemed 13 colleagues (got infected). Originally, there are 30 colleagues in the team.

Half of them got infected. (Interviewee #7, aged 30, male)

There's a shortage of staff. Particularly, during the fifth wave of COVID-19 pandemic, the shortage was severer. (Interviewee #14, aged 48, female)

All interviewees mentioned regarding workload and many of them described work overload.

For example:

I had a lot of work suddenly. That's one of the stresses. (Interviewee #1, aged 31, female)

I was responsible for administrative work. Actually, I needed to handle every single case. More people arrested at that period of time (third time phase). Yes, so at that phase (Interviewee is pointing the third time phase), I thought the stress was greater. I needed to work on many files. (Interviewee #7, aged 30, male)

(I had) greater stress at work. (I had) more workload. I thought it's moderate stress. (Interviewee #11, aged 39, male)

Although a majority of interviewees had work overload, three interviewees had no such experience:

No (extra work). (Interviewee #6, aged 54, female)

(My workload) was not heavy. (Interviewee #8, aged 41, male)

For me, no (extra workload). (Interviewee #16, aged 45, male)

More than half of the interviewees (nine police officers) mentioned regarding working hours and six of them stated that they had longer working hours. For instance:

Everyone worked for 12 hours. Longer working hours. I was tired. (Interviewee #5, aged 52, male)

Long working hours. I worked for 13-14 hours everyday. I worked at night most of the time. (Interviewee #11, aged 39, male)

One female police officer described offering a safe working environment derived stress:

As the requirement on air change or air purifiers in dine-in restaurants was suggested by the COVID-19 expert advisory panel, the canteen was closed. The fresh air ventilation system is expensive, so it's closed. It's inconvenient. Canteen is an important place. It's inconvenient. No canteen. That's stress. (Interviewee #4, aged 47, female)

One male police officer described relationships in workplace derived stress:

In terms of dealing with relationships in workplace/supervisors, I think that's greater stress. If you have good job performance, but that doesn't mean you have good relationships in workplace. I think it's hard. Even for now, some relationships in workplace. (Interviewee #13, aged 29, male)

A source of police work-related stress comes from organizational domain. The problem of workload existed commonly among police officers, yet a few of them can survive under this tough situation. Other problems in policing context included inadequacy of manpower, longer working hours, working under an environment align with COVID-19 pandemic preventative and control measures, and poor relationships in workplace.

### 6.5.2 Operational stressors

The second demand emerged in this study were operational stressors. Ten of 16 interviewees indicated that various operational stressors confronted them in workplace. These included job nature, danger, and negative exposures of policing work. Below are some examples:

All interviewees mentioned regarding job nature. They are responsible for duties such as:

Traffic wing is responsible for conducting the random breath test frequently.

(Interviewee #1, aged 31, female)

Emergency unit is responsible for handling emergency cases. Maybe a husband physically attacks his wife using weapons at home. We need to handle (this type of case). (Interviewee #2, aged 36, female)

Our duties mainly focus on places of amusement, amusement game centers, and bars. When they can open but limited to two persons per table, we conducted joint-operations with the Food and Environmental Hygiene Department. (Interviewee #10, aged 37, male)

People were attracted to come to Tung Chung and also Cap. 599 related cases. So, (I had) greater stress at work. (Interviewee #11, aged 39, male)

Although a majority of interviewees not only needed to perform their usual duties but were also involved in COVID-19 pandemic related duties, three interviewees expressed that they had no significant change on their job content. For instance:

No change. Duties remained the same. (Interviewee #13, aged 29, male)

There's not much change on my duties. (Interviewee #16, aged 45, male)

A female police officer described the danger in this way:

When handling cases, I may have contacts with the criminals or others. During investigation, he/she can suddenly attack me using a knife. For example, an arson

case, after firefighting, we then carry out the investigation, but the scope of investigation is full of unknowns. We need to enter the scope of investigation. There's a chance of danger. (Interviewee #12, aged 33, female)

A male police officer described his negative exposures in this way:

I was responsible for transferring dead bodies to Fu Shan Public Mortuary. Basically, I needed to deal with at least 30 to 40 dead bodies per day. When performing duties at the time, I needed to open the container and I felt sad. (Interviewee #10, aged 37, male)

Inevitably, police officers experienced work-related stress derived from operational domain. They were involved in a wide range of duties. During an unusual period like the COVID-19 pandemic, they needed to take up additional duties. Some of them even confronted danger and negative exposures when having duties. These situations are not typically seen in other occupations.

### *6.5.3 Public stressors*

The third demand emerged in this study were public stressors. 14 out of 16 interviewees indicated that they had public stressors. Examples were handling social movements related duties, hostility from the public, doubt about self-legitimacy, concern of safety of family members, doxxing, and poor attitude/being treated unfairly from medical personnel.

Five interviewees mentioned regarding handling social movements related duties. For example:

In terms of handling social movements related duties, I have stress until now although it has been a few years. From that moment, I had insomnia. Even for now, I still have insomnia. For the arrangement of training for five hundred colleagues, or their basic



necessities of life, I was the only one who was responsible for these. So, I was quite stressed at that time. (Interviewee #9, aged 43, male)

At that period (second time phase), I was responsible for tiderider operations in Lantau Island areas. I needed to handle social movements related duties. (Interviewee #11, aged 39, male)

Among the 16 interviewees, quite a lot of interviewees (11 police officers) experienced hostility from the public. For example:

When performing duties, there're some (hostilities from the public). For example, I arrest a person because he/she steals a purse. Others may gather and take photos. They may verbally attack against me. Now, I am in police uniform when performing duties. When others look at me, the label may be more negative. (Interviewee #9, aged 43, male)

Many young people in Tin Shui Wai area are antagonistic. (Interviewee #10, aged 37, male)

I think it's not very offensive. Maybe (he/she) took a poor attitude at the beginning or showed hostility. (Interviewee #12, aged 33, female)

Although a majority of interviewees had experience of hostility from the public, two female police officers had no such experience:

In this time phase (first time phase), not at all (social movements related negative labels nor verbal attacks). (Interviewee #4, aged 47, female)

No. (social movements related negative labels nor attacks). (Interviewee #6, aged 54, female)

One respondent casted doubt on his self-legitimacy of being a police officer:

I think this occupation is isolated. Although social movements in Hong Kong become stable, it's very contradictory. How a police officer is viewed from the perspective of

society? Or, the role of a police officer in society. I have stress, even I work as a police officer for many years. When I meet a stranger, I cannot proudly introduce myself as a police officer. Or, I cannot properly introduce myself as a police officer. I think it's problematic. It's a decent employment. It's intangible stress. To me, it's an issue that weighs heavily in my heart. (Interviewee #5, aged 52, male)

Three interviewees showed their concern of safety of family members. For instance:

I tell my wife: When you are on the way home with the son (by taxi), please tell the (taxi driver) that you get off at somewhere nearby our residence. Because when she is alone, you don't know what's going to happen. (Interviewee #8, aged 41, male)

I need to protect my family members. I tell them: When they are on their way home, be alert! Make sure it's safe when you go home. (Interviewee #13, aged 29, male)

A few interviewees (three police officers) mentioned regarding doxxing. For example:

One of the cases I handled was uploaded on the Internet by someone. Some people can recognize me. My personal information was posted on social media. (Interviewee #13, aged 29, male)

Three respondents mentioned regarding poor attitude/being treated unfairly from medical personnel. For example:

Some (medical personnel) wore scowl on their face. They may not verbally attack against us. But they were mean verbally. Also, sometimes they took a poor attitude. (Interviewee #14, aged 48, female)

Since the Umbrella Movement/Occupy Movement in 2014, public stressors have become influential. When handling social movements related duties, hostility between police officers and the public was caused, thus raising concern of safety of family members, being doxxing, having doubt about self-legitimacy and eventually driving police officers to feel

stressed. Noteworthy, stressful feelings derived not only from citizens but also medical personnel.

#### *6.5.4 Pandemic stressors*

The fourth demand emerged in this study were pandemic stressors. Ten out of 16 interviewees indicated that they had pandemic stressors. This included concern of infection of COVID-19 when having duties, concern of transmission of COVID-19 to family members, anti-COVID-19 pandemic measure, and inadequacy of medical treatment.

Among the 16 interviewees, seven interviewees showed their concern of infection of COVID-19 when having duties while five interviewees had no such concern. For instance:

When performing duties, I need to put my mask on. I am scared. I am worried. I don't know if he or she (the driver) is diagnosed with (COVID-19) or not. I remember once: (The driver) told me that (he or she) had fever but didn't know if diagnosed with (COVID-19) or not. I was scared but I still needed to conduct (the random breath test). (Interviewee #1, aged 31, female)

We needed to go to the homes for the elderly (for investigation). Our stress increased because of this. We needed to go to these high-risk places and perform our duties.

How can we handle this? (Interviewee #10, aged 37, male)

Among the 16 interviewees, eight interviewees showed their concern of transmission of COVID-19 to family members. For instance:

(I live with my grandmother. She is a centenarian). I am very worried that I get infected and then transmitted to my family members. (Interviewee #4, aged 47, female)

Because I have contacts with different people when performing duties. When I go home after work, I am worried that my family members may get infected.

(Interviewee #7, aged 30, male)

I have three children. So, I am very scared. After handling COVID-19 pandemic related duties, will my children get infected when I return home? Actually, I am scared about the sequelae. The death rate is high. I am very scared about the high infectiousness. Because one of my children was born in 2020. (Interviewee #10, aged 37, male)

However, one respondent showed no such concern:

I am not worried that if I get infected then I may transmit to my family members. As time goes on, I know this disease can't take away our lives. At the beginning, I thought it's a severe disease. But now, it's not as severe as I think. I expect that I will get infected someday. (Interviewee #5, aged 52, male)

One interviewee described that stress caused by the anti COVID-19 pandemic measure, namely travel restrictions:

I think maybe I am depressed, and I stay in Hong Kong for a long period of time. I have this feeling. I think many people also have this feeling. No travel. (Interviewee #7, aged 30, male)

One male police officer described the inadequacy of medical treatment derived stress:

Recently, I had great stress. I knew if I got infected, it's very difficult to seek medical treatment at that time (third time phase). Also, there was no place for me to receive medical treatment appropriately. In case I got infected, there was no medical treatment. Maybe you queued up for ten hours and you can only get some painkiller. (Interviewee #10, aged 37, male)

Since the COVID-19 pandemic, everyone has been in a panic, police officers are no exception. Throughout the COVID-19 pandemic, police officers not only had concern of infection of COVID-19 when having duties but also had concern of transmission of COVID-19 to family members. To combat the COVID-19 pandemic, travel restrictions is a commonly adopted strategy, so police officers cannot travel to other places for relaxation. Noteworthy, the inadequacy of medical treatment triggered different negative emotions for police officers during the peak of the fifth wave of COVID-19 pandemic in Hong Kong.

#### *6.5.5 Work-family conflict stressors*

The fifth demand emerged in this study was work-family conflict. Work-family conflict “is a form of interrole conflict in which the general demands of, time devoted to, and strain created by the job interfere with performing family-related responsibilities” (Netemeyer et al., 1996, p.401). Three out of 16 interviewees indicated that they experienced work-family conflict, including family conflicts and no family gathering.

Two interviewees mentioned regarding family conflicts and responded this way:

I have arguments with my family members. Because my mother is opposing. Yes.

That’s (opposing positions among family members) stress. We have different opinions and positions among family members. This problem exists until now. That’s a source of stress. (Interviewee #1, aged 31, female)

I had conflicts with my family members. We had arguments when discussing politics basically. My sister-in law is very extreme. She sent messages in our family WhatsApp group, for example, verbal attacks against police officers, or some very extreme political opinions. We may have conflicts. That’s quite difficult to deal with.

(Interviewee #13, aged 29, male)

One female police officer responded no family gathering in this way:

(I had) stress for sure. I had meals alone. I can't have meal together with others.

That's stress. Of course, it's great stress. I can't have dinner with my family members.

When I had dinner at home, I kept distance (with my family members). I had dinner alone, with a few dishes, at the corner. No communication with my family members.

(Interviewee #4, aged 47, female)

It is clear from the above cases, policing work not only triggered arguments with family members but also caused no family gathering. Policing work interfered the role as a member in the family, creating stressful feelings among police officers. Therefore, the importance of work-family balance is stressed.

#### *6.5.6 Other stressor*

The sixth demand in this study was other stressor. Only one interviewee indicated that he had other stressor, namely policing culture. Policing culture is defined as "a set of values, attitudes, and norms that are widely shared among officers" (Paoline et al., 2000, p.575).

Policing culture of authoritarianism was a determinant of police burnout (Yun et al., 2015).

One respondent described that stress caused by policing culture, namely unification:

Unification in policing culture causes some colleagues (to feel stressful). Other colleagues may not accept those who have opposite opinions. Unification is a policing culture. For some colleagues, this's stress. (Interviewee #5, aged 52, male)

It is clear from the above case, having different opinions/views created dilemmas or psychological tension in policing context. Police officers believed they had to uphold the policing culture of unification, but they found their opinions/views not in line with their fellows.

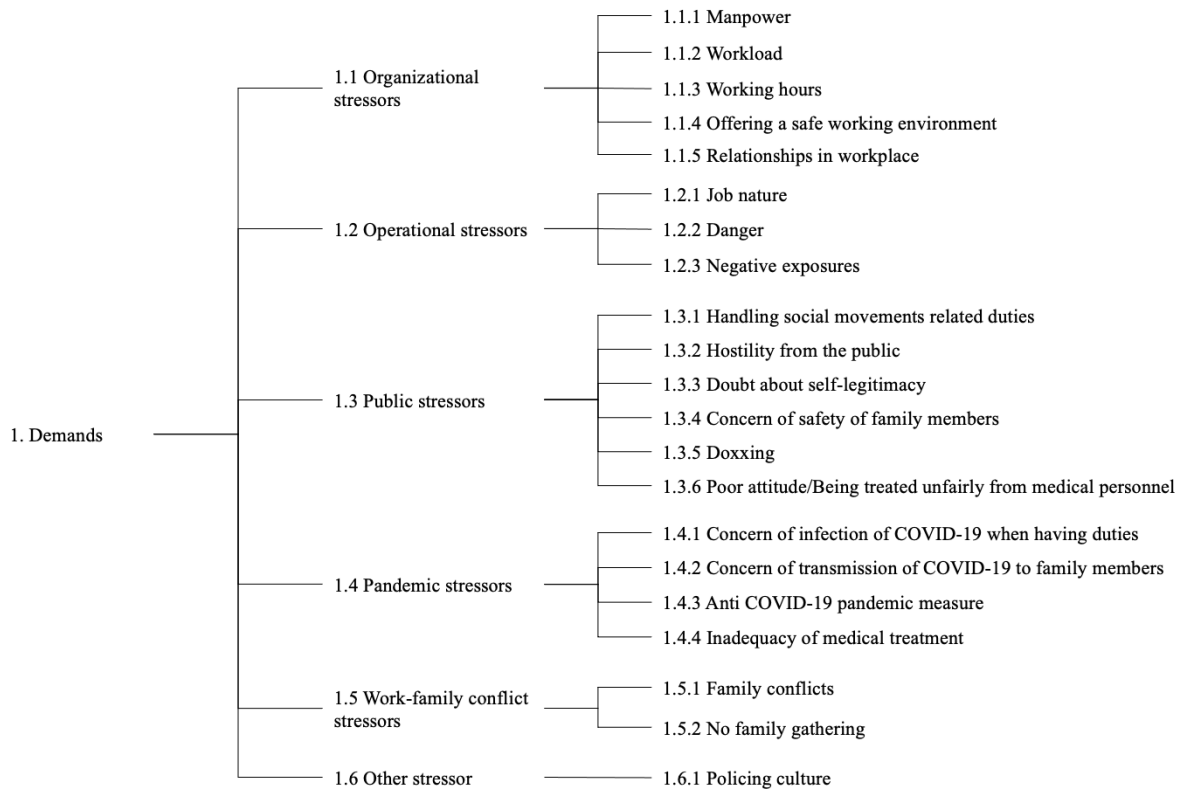


Figure 6. 6 Summary of themes, higher order codes, and codes on demands among Hong Kong police officers

## 6.6 Resources among Hong Kong police officers

The key concept of “job resources” in the JD-R model is found useful to explain resources among police officers in Hong Kong. Examples of job resources in this model include feedback, rewards, job control, participation, job security, and supervisor support (Demerouti et al., 2001). This model posits that a lack of job resources predict more disengagement (Demerouti et al., 2001). In policing occupation, job resources such as formalization, organizational support, job involvement, job satisfaction, organizational commitment, growth opportunities, and support from supervisors were associated with lower level of work stress and burnout (Frank et al., 2017; Lambert et al., 2018; Taris et al., 2017). Five resources among Hong Kong police officers were emerged following the key concept

(job resources) in the JD-R model; (1) supervisory support; (2) internal procedural justice; (3) organizational support; (4) personal resources; and (5) social support (see Figure 6. 7 Summary of themes, higher order codes, and codes on resources among Hong Kong police officers and Table 6. 3 Template checklist).

### *6.6.1 Supervisory support*

The first resource emerged in this study was supervisory support. 12 out of 16 interviewees indicated that they received supervisory support, including instrumental support (i.e. providing materials and resources) (Cohen & Wills, 1985) and emotional support (i.e. feelings of caring and love) (Morelli et al., 2015).

A few interviewees (three police officers) received instrumental support from supervisors.

For example:

At that time (first time phase), we can get whatever we requested. Supervisor was very supportive at that period (second time phase). (Interviewee #9, aged 43, male)

However, one respondent described no instrumental support received from supervisors:

In brief, no practical support. No practical support for the colleagues. (Supervisor) cannot provide places (for colleagues to rest). At that moment (second time phase), everyone wanted to take some rest after work in one of the community isolation facilities. But no such in fact. (Interviewee #5, aged 52, male)

Quite a lot of interviewees (11 police officers) mentioned they received emotional support from supervisors. For example:

Yes. (Supervisor) is considerate. If it's dangerous, prioritize yourself. Your life is the most important. Be careful when performing duties. (Interviewee #12, aged 33, female)



My madam cares for the colleagues and asks: How's he/she? How are his/her family members? She calls and asks (the colleagues): How's your situation? How's your body condition? (Interviewee #14, aged 48, female)

Supervisor cares for us and always reminds us: In case we feel unwell, seek medical treatment. (Interviewee #15, aged 44, female)

Both instrumental and emotional support from supervisors could protect police officers against work-related stress. Interestingly, the above cases illustrated that police officers received more emotional support than instrumental support from their supervisors. Truly, both types of support are important and should be provided in policing context.

#### *6.6.2 Internal procedural justice*

The second resource emerged in this study was internal procedural justice. 13 out of 16 interviewees indicated they perceived internal procedural justice, including fairness and clarity of instructions/policies from supervisors. A previous study conducted on police officers in Germany has found the lower the perceived fairness, the greater the emotional exhaustion (Wolter et al., 2019).

Four respondents mentioned fairness and all of them perceived fairness. For instance:

I am transferred to emergency unit. Actually, I think there is no fairness nor unfairness in a team. At least, I don't think I am treated unfairly. (Interviewee #2, aged 36, female)

It's fine. There are four teams. The manpower in each team is evenly distributed.

Overall, I think it's OK. (Interviewee #11, aged 39, male)

A majority of interviewees mentioned about instructions/policies received from their supervisors during the COVID-19 pandemic. Quite a lot of interviewees (11 police officers) expressed they received clear instructions/policies from supervisors. For instance:

But the only policy I thought it was good and that was: the suspension of random breath test at that time (first time phase). (Interviewee #1, aged 31, female)

Because of the COVID-19 pandemic, our chief inspector gave us this order: Don't go to high-risk places and handle (cases) if it is not necessary. He gave this order and requested us to follow this instruction. I think that's good. (Interviewee #10, aged 37, male)

Very clear (instructions from supervisor). My supervisor can tell us the work arrangement comprehensively. (Interviewee #12, aged 33, female)

However, ten respondents expressed they received unclear instructions/policies from supervisors. For instance:

Actually, my supervisor at the beginning...(I was) very straight-forward. Supervisor didn't give us special guidance. Supervisor really didn't give any special guidance. (Supervisor) didn't give any instructions: Because of the COVID-19 pandemic, you should reduce interviews with candidates. No! (Supervisor) never ever mentioned this. For example, for non-urgent interviews, you can suspend. Perhaps you can meet those urgent interviews. No such instructions! No instructions at all! No! (Interviewee #3, aged 42, female)

Not very clear. Supervisor may not have a clear instruction and tell you how to do.

There were many confusions and thus caused stress. (Interviewee #11, aged 39, male)

The above cases illustrated that, on the one hand, fairness could play a protective role to alleviate work-related stress in policing context but only a few officers perceived fairness. On the other hand, a clear instruction from supervisors during an unusual period like the COVID-19 pandemic was regarded as important by the police officers. Nevertheless, their experiences were rather diverse. Importantly, internal procedural justice should be promoted by ensuring fairness and providing clear instructions/policies in policing context.

### 6.6.3 Organizational support

The third resource emerged in this study was organizational support. Organizational support refers to the degree of an organization provides encouragements and resources to the employees (Eisenberger et al., 1990; Lin, 2006). The importance of providing both physical and mental health care support to police officers has been emphasized (Hong Kong Police Force, 2021g; Hong Kong Police Review, 2019; Jetelina et al., 2020; Stogner et al., 2020). In the present study, 13 out of 16 interviewees indicated that they received organizational support. This included harmony, provision of health care products, and preventative and control measures for COVID-19 pandemic.

Two male police officers mentioned regarding harmony and responded this way:

We work under a harmonious atmosphere. The atmosphere in traffic wing is different from other departments. We have close relationships. Because the atmosphere is fine in our team, I don't have many discontents. (Interviewee #7, aged 30, male)

It's harmonious at that moment (second time phase). Overall, I was very happy.

Because we all had meal together, regardless of rank. Even (our) chief inspector also had meal together. (Interviewee #11, aged 39, male)

Harmony existed in policing context. When working under a harmonious atmosphere, police officers experienced positive emotions.

Three interviewees mentioned provision of health care products. Health care products such as soup, vitamins, medicines, and supplements were provided. One of the interviewees responded this way:

Actually, I can tell our welfare department tried their best. Free soup was provided for the colleagues by the canteen. It was provided regularly, three days per week in every police station. Everyone was given some vitamins. I felt better psychologically.

(Interviewee #5, aged 52, male)

The provision of health care products could possibly alleviate police officers' stressful feelings.

Quite a lot of interviewees (12 police officers) mentioned regarding the implementation of preventative and control measures for COVID-19 pandemic. Below are some examples:

Protective gowns, goggles, and N95 surgical masks were provided, available on the emergency unit police car. (Interviewee #2, aged 36, female)

There are some preventative and control measures for COVID-19 pandemic implemented in the police stations. If people come and report crime, they are required to do a temperature checking. (Interviewee #10, aged 37, male)

Before entering the police stations, it is required to scan the QR code. (Interviewee #4, aged 47, female)

The aforementioned strategies were implemented to minimize the risk of infection of COVID-19 among police officers

Special work arrangements and closed-loop management (i.e. a management method used to strictly control the flow of people in a particular area during the COVID-19 pandemic) (Bai et al., 2022) were not implemented for them. For instance:

Although the government suggested everyone to work from home, we were not allowed to. We gave up this idea! No work from home! (Interviewee #3, aged 42, female)

If closed-loop management is implemented, I will then perform my duties.  
(Interviewee #5, aged 52, male)

To stringently prevent and control the risk of infection of COVID-19 among police officers, both special work arrangements and closed-loop management are strongly suggested to be implemented.

Organizational support is possibly helpful to reduce work-related stress in policing context in three-folds, as aforementioned. Practical implications from an organizational perspective can be generated. Police organizations should offer esteem, informational, social companionship and instrumental support.

#### *6.6.4 Personal resources*

The fourth resource emerged in this study was personal resources. Personal resources are conceptualized as “aspects of the self that are generally linked to resiliency” (Hobfoll et al., 2003, p.632). Examples of personal resources include personal health, personal transportation (e.g. car), and sense of pride/success (Hobfoll, 2001). Six out of 16 interviewees indicated that they had personal resources. Examples were mentalities, religion, personality characteristic, previous respiratory disease experience, and personal coping strategies.

A few interviewees (three police officers) mentioned regarding mentalities and described as follow:

Because I feel at ease under all circumstances. I won't say no. Maybe (supervisor) arranges these duties for me, I'll just take them. (Interviewee #2, aged 36, female)

I have a calm demeanor. I am not particularly concerned, worried, nor panic. So, I think it's really a calm demeanor, even though I get infected. Mentality is important.

You don't have to panic. It's an issue in society. It's worldwide. Why worry? Why concern? So, it's really a calm demeanor. Even though I am worried, it's useless.

(Interviewee #6, aged 54, female)

I have 'preciousness gain after difficulties' in my mind. I overcome many difficulties.

It's difficult but it's possible, then you can gain preciousness. When you encounter

many difficulties in life, think of this motto. This can solve many problems.

(Interviewee #16, aged 45, male)

The protective role of religion against job strain, burnout, and poor mental health was well-supported in occupations such as teachers and healthcare workers (Chirico, 2017; Chow et al. 2021). In policing occupation, one female police officer described the benefits of having a religious belief as follow:

I am mentally prepared. Because I have a religious belief. God will arrange how long is everyone's life and the experience towards the end of the life. Everything is arranged. I pray for everyone can spend every day peacefully. It's good to have a religious belief, which can support me psychologically. (Interviewee #6, aged 54, female)

One female police officer responded personal characteristic, namely emotional stability, in this way:

(I am) very calm. I am very emotional stable. I don't feel anxious nor insomniac because of the COVID-19 pandemic. (I am) very emotional stable. I don't overreact. Very calm. (Interviewee #6, aged 54, female)

A few interviewees (three police officers) mentioned regarding previous respiratory disease experience, namely severe acute respiratory syndrome (SARS). For example:

For the COVID-19 pandemic in the beginning of 2020. I was not particularly worried. Because I have been through SARS. So now for the COVID-19 pandemic, I have no particular concerns about work. (Interviewee #3, aged 42, female)

Because it was the first time to encounter SARS in 2003. From SARS to COVID-19, everything is getting clearer. Both SARS and COVID-19 are similar. (Interviewee #6, aged 54, female)

Two interviewees mentioned regarding personal coping strategies and responded this way:

Actually, I personally think that if the issue can't be solved, even though you keep putting stress on yourself, that issue still can't be solved. So, (I would rather) stop for a while, think for a while, and then think of other solutions. I don't have stress because I can solve the issue by myself. I think I know how to solve the issue. If it can't be solved, then put it aside. I think that's better at work. (Interviewee #8, aged 41, male)

I can tell my story, but I cannot guarantee if it's useful for you. If yes, I am happy. Because it's meaningful. (Interviewee #16, aged 45, male)

Apparently, some police officers could make use of their personal resources to deal with job demands. The successful experiences articulated above could offer practical implications from a personal perspective.

#### *6.6.5 Social support*

The fifth resource emerged in this study was social support. Social support can come from family and friends (Lin et al., 1979).

Only one female police officer received family support and described as follow:

My family members also work as a police officer. We have a common topic. I don't chat much with my father before. When I become a police officer, we chat more, and we have a common topic. We have a close relationship. (Interviewee #14, aged 48, female)

Four interviewees mentioned that they received no friends support in the following:

Some of my friends even blocked me (on social networking sites). Obviously, I have fewer friends. I really have fewer friends. We have different thoughts. It cannot be forced. (Interviewee #2, aged 36, female)

Some of my friends we know each other since we are young, they have opposing political views. We don't have contact anymore. (Interviewee #9, aged 43, male)

I have little contacts with my friends. (I was) forced to quit the groups. (I was) unfriended on social media. (Interviewee #13, aged 29, male)

I lost contacts with many of my friends. Previously, I kept in touch with them via WhatsApp. We had dinner together regularly. But now, we have no contacts. Some of them even deliberately spoke (regarding negative police images) in front of me. (Interviewee #14, aged 48, female)

Family support could be effective in alleviating stressful feelings for police officers, unless their family members are also employed in policing occupation. The sole yet successful case could offer practical implications from a social perspective. However, police officers did not receive any support from friends. Contrary to the above cases, family and friends have shown to be supportive in previous studies (Galanis et al., 2019; Li et al., 2018; Schantz et al., 2020). In the past decade, Hong Kong has confronted several riots and social movements. The relationship between police officers and their family members or friends was escalated, resulting in clashes. Therefore, it seemed that social support from family and friends were not salient to Hong Kong police officers.



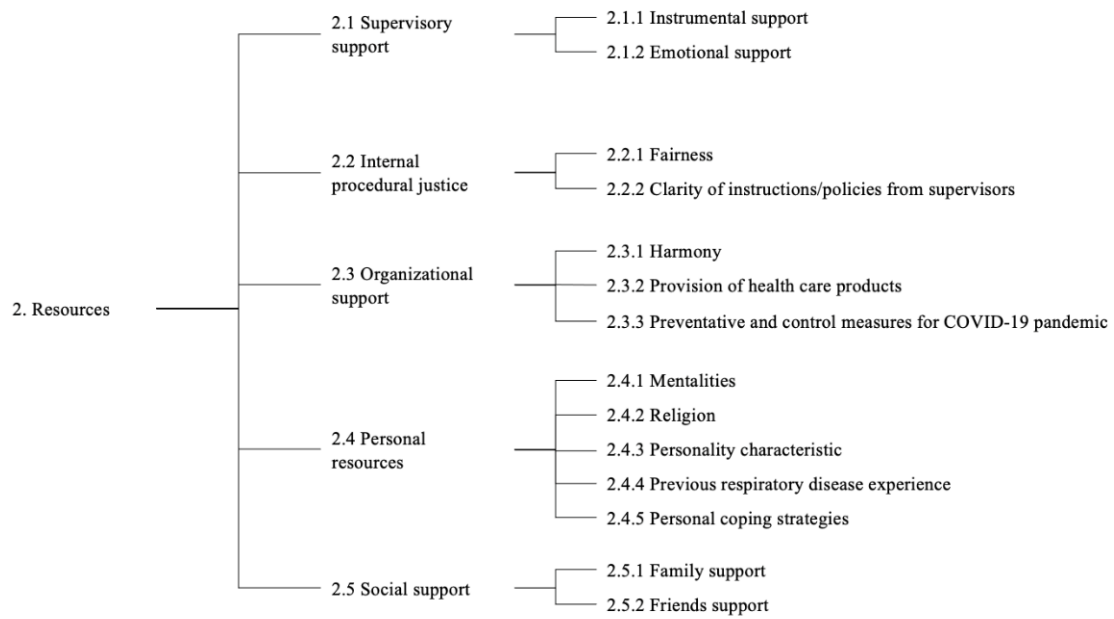


Figure 6. 7 Summary of themes, higher order codes, and codes on resources among Hong Kong police officers

Table 6. 3 Template checklist

		Interviewees																
		I01	I02	I03	I04	I05	I06	I07	I08	I09	I10	I11	I12	I13	I14	I15	I16	
1. Demands	1.1 Organizational	1.1.1 Manpower	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	
		1.1.2 Workload	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		1.1.3 Working hours	✓	✓	✗	✗	✓	✗	✓	✗	✓	✓	✓	✗	✗	✓	✗	✓
		1.1.4 Offering a safe working environment	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
		1.1.5 Relationships in workplace	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✓	✗	✗	✗
	1.2 Operational	1.2.1 Job nature	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		1.2.2 Danger	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✓	✗	✗	✗	✗
		1.2.3 Negative exposures	✗	✗	✗	✗	✗	✗	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗
	1.3 Public	1.3.1 Handling social movements related duties	✗	✗	✗	✗	✗	✗	✓	✓	✓	✗	✓	✗	✓	✗	✗	✗
		1.3.2 Hostility from the public	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✗	✓	✗
		1.3.3 Doubt about self-legitimacy	✗	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
		1.3.4 Concern of safety of family members	✗	✗	✗	✗	✗	✗	✗	✓	✗	✗	✗	✗	✓	✓	✗	✗
		1.3.5 Doxxing	✗	✗	✗	✗	✗	✗	✗	✗	✗	✓	✗	✗	✓	✓	✗	✗
		1.3.6 Poor attitude/Being treated unfairly from medical personnel	✗	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗	✓	✗	✓
	1.4 Pandemic	1.4.1 Concern of infection of COVID-19 when having duties	✓	✓	✓	✗	✗	✗	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓
		1.4.2 Concern of transmission of COVID-19 to family members	✓	✓	✗	✓	✓	✗	✓	✗	✗	✓	✗	✓	✗	✓	✗	✓
		1.4.3 Anti COVID-19 pandemic measure	✗	✗	✗	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗
		1.4.4 Inadequacy of medical treatment	✗	✗	✗	✗	✗	✗	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗
1.5.1 Family conflicts		✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✓	✗	✗	

	1.5 Work-family conflict	1.5.2 No family gathering	x	x	x	✓	x	x	x	x	x	x	x	x	x	x	x	x
	1.6 Other	1.6.1 Policing culture	x	x	x	x	✓	x	x	x	x	x	x	x	x	x	x	x
	2.1 Supervisory support	2.1.1 Instrumental support	x	x	x	x	✓	x	x	x	✓	✓	x	✓	x	x	x	x
		2.1.2 Emotional support	✓	✓	x	x	✓	✓	✓	✓	✓	x	x	✓	✓	✓	✓	x
		2.2.1 Fairness	✓	✓	x	x	x	x	x	x	x	x	✓	✓	x	x	x	x
	2.2 Internal procedural justice	2.2.2 Clarity of instructions/policies from supervisors	✓	x	✓	✓	✓	✓	x	✓	✓	✓	✓	✓	✓	✓	✓	✓
		2.3.1 Harmony	x	x	x	x	x	x	✓	x	x	x	✓	x	x	x	x	x
		2.3.2 Provision of health care products	x	x	x	x	✓	x	x	x	x	✓	x	x	x	✓	x	x
2. Resources	2.3 Organizational support	2.3.3 Preventative and control measures for COVID-19 pandemic	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	x
		2.4.1 Mentalities	x	✓	x	x	x	✓	x	x	x	x	x	x	x	x	x	✓
		2.4.2 Religion	x	x	x	x	x	✓	x	x	x	x	x	x	x	x	x	x
	2.4 Personal resources	2.4.3 Personality characteristic	x	x	x	x	x	✓	x	x	x	x	x	x	x	x	x	x
		2.4.4 Previous respiratory disease experience	x	x	✓	x	x	✓	x	x	x	✓	x	x	x	x	x	x
		2.4.5 Personal coping strategies	x	x	x	x	x	x	x	✓	x	x	x	x	x	x	x	✓
	2.5 Social support	2.5.1 Family support	x	x	x	x	x	x	x	x	x	x	x	x	x	✓	x	x
		2.5.2 Friends support	x	✓	x	x	x	x	x	x	✓	x	x	x	✓	✓	x	x

## 6.7 Changes of demands/resources across the three time phases

This study assumes that job demands and job resources would change alongside with the development of the COVID-19 pandemic. The understanding of these changes may help formulate more relevant policies and practices for mitigating work-related stress among police officers. In the following paragraphs, changes in (1) organizational stressor (workload); (2) operational stressor (job nature); (3) public stressor (hostility from the public); and (4) internal procedural justice (clarity of instructions/policies from supervisors) across the three time phases were presented (see Figure 6. 8 Changes of demands/resources across the three time phases).

### *6.7.1 Change in organizational stressor (workload) across the three time phases*

An increase of workload from the first time phase to the third time phase was emerged. This increase can be attributed to the shortage of manpower.

Despite the outbreak of COVID-19 pandemic in Hong Kong in late January 2020, only a few colleagues got infected, so police officers had no significant change on their workload. Two male police officers described the manpower during the first time phase:

At the beginning, not many colleagues got infected. I remembered everyone went to work normally. (Interviewee #7, aged 30, male)

No impact on manpower. Because only a few colleagues got infected. (Interviewee #9, aged 43, male)

As time goes on, more colleagues got infected, or some colleagues were transferred to Centre for Health Protection. Police officers needed to share the workload, so they had more workload. Two interviewees described the manpower during the second time phase:

At that time, there's less manpower. Because some colleagues got infected, some needed quarantine. (Interviewee #5, aged 52, male)

There's less manpower. Some of my colleagues were transferred to Centre for Health Protection and assisted in anti-pandemic duties. (Interviewee #12, aged 33, female)

Finally, the high infectiousness of the omicron variant triggered the fifth wave of COVID-19 in Hong Kong in January 2022. Therefore, there was a manpower shortage and police officers had work overload. Two respondents described the manpower during the third time phase:

During the fifth wave of COVID-19 pandemic, many of my colleagues got infected. It seemed 13 colleagues (got infected). Originally, there are 30 colleagues in the team. Half of them got infected. (Interviewee #7, aged 30, male)

There's a shortage of staff. Particularly, during the fifth wave of COVID-19 pandemic, the shortage was severer. (Interviewee #14, aged 48, female)

There was an increase of workload across the three time phases due to the inadequacy of manpower.

#### *6.7.2 Change in operational stressor (job nature) across the three time phases*

A difference in job nature across the three time phases was emerged. Duties of police officers in the three time phases and the reasons beyond the difference were presented in the following.

Because of the outbreak of COVID-19 pandemic in Hong Kong in late January 2020, flow of people in society was reduced, still, police officers needed to perform their usual duties. One interviewee described his duties during the first time phase:

My duties...Yes. No significant change. Because I am mainly responsible for Road Traffic Ordinance. If there is one or ten drivers on the road, as long as the driver's behavior is illegal. Actually, we then carry out the relevant procedures. No change. (Interviewee #7, aged 30, male)

To fight the COVID-19 pandemic in Hong Kong, Cap.599 Prevention and Control of Disease Ordinance was released. Interviewees were involved not only in their usual duties but also the enforcement of Cap. 599 Prevention and Control of Disease Ordinance in the second time phase. Under this ordinance, police officers were responsible for:

Of course. For example, restriction-testing declaration operations. I needed to provide assistance to conduct compulsory testing in buildings. (Interviewee #5, aged 52, male)

Our duties mainly focus on places of amusement, amusement game centers, and bars. When they can open but limited to two persons per table, we conducted joint-operations with the Food and Environmental Hygiene Department. (Interviewee #10, aged 37, male)

During the third time phase, interviewees were responsible for their usual duties and COVID-19 pandemic related duties. Given that the COVID-19 pandemic situation in Hong Kong was severe, still, police officers were involved in the relevant duties, as aforementioned. Also, they needed to handle more complicated and serious cases such as drug trafficking:

Some people or the triads trafficked dangerous drugs. We often can find dangerous drugs on (their) cars. (Interviewee #7, aged 30, male)

One respondent explained why more complicated and serious cases happened:

Due to the COVID-19 pandemic in Hong Kong, the triads may suspend their criminal activities for a long period of time. The triads need income, so they resume their criminal activities. More criminals arrested on a charge of drug trafficking at this phase (the third phase). (Interviewee #7, aged 30, male)

Job nature changed across the three time phases. Police officers were involved in different duties. The underlying reasons were discussed above.

### 6.7.3 *Change in public stressor (hostility from the public) across the three time phases*

A decrease of hostility from the public from the first time phase to the third time phase was emerged. The sources of hostility come from negative labels, poor attitude, and verbal attacks by the public. At the beginning, interviewees had more experience of hostility from the public. During the second time phase, interviewees had less such experience. In the third time phase, interviewees experienced the least. This decrease can be attributed to two reasons.

One reason is the shifted attention to the COVID-19 pandemic:

The COVID-19 pandemic occurred in January 2020. Maybe everyone worried about their safety, and they avoided assemblies. Because of the COVID-19 pandemic, hostility from the public is reduced. (Interviewee #2, aged 36, female)

Because everyone focuses on the number of COVID-19 infections. (Interviewee #5, aged 52, male)

Another reason is the implementation of the National Security Law:

After the implementation of the National Security Law, hostility from the public is really reduced. (Interviewee #1, aged 31, female)

Because of the National Security Law, and it is stringently enforced. Actually, with this law, I think that's much better. (Interviewee #10, aged 37, male)

The decrease of hostility from the public across the three time phases was attributed to the shifted attention to the COVID-19 pandemic and the implementation of the National Security Law.

*6.7.4 Change in internal procedural justice (clarity of instructions/policies from supervisors) across the three time phases*

An increase of clarity of instructions/policies from supervisors from the first time phase to the third time phase was emerged. The reason of this increase is the clarity of flow of policies from the government to the supervisors.

In response to the COVID-19 pandemic, the government implemented many preventative and control measures (i.e. Cap. 599 Prevention and Control of Disease Ordinance). To fight the virus, police officers play a role, and they are responsible for enforcing the law. However, these preventative and control measures for COVID-19 implemented by the government kept changing and thus caused confusions. These confusions flowed from the government, the Civil Service Bureau, the Hong Kong Police Force, to the supervisors. Therefore, police officers received confused instructions from their supervisors. Two female police officers responded the flow of policies from the government to the supervisors during the first time phase:

Yes. The policies were confused. (Interviewee #1, aged 31, female)

Because it's very messy at the beginning. (Interviewee #3, aged 42, female)

As time goes on, the flow of policies from the government to the supervisors became clearer, so police officers received clearer instructions from their supervisors. Two interviewees responded the flow of policies from the government to the supervisors during the second time phase:

It's much better. It's systematic. (Interviewee #14, aged 48, female)

It's getting stable. The operation was smooth. (Interviewee #16, aged 45, male)

Two interviewees responded the flow of policies from the government to the supervisors during the third time phase:



In the third phase, actually it's mature. I don't think it's very messy. (Interviewee #5, aged 52, male)

It's not messy. The policies were not confused. (Interviewee #15, aged 44, female)

The increase of clarity of instructions/policies from supervisors across the three time phases is attributable to the increase of clarity of flow of policies from the government to the supervisors over time.

Demands/Resources	Changes		
Organizational stressor (workload)	No significant change	More workload*	Work overload#
Operational stressor (job nature)	Usual duties	Usual duties Enforcement of Cap.599 Prevention and Control of Disease Ordinance	Usual duties COVID-19 pandemic related duties More complicated and serious cases e.g. drug trafficking
Public stressor (hostility from the public)	More	Less	Least
Internal procedural justice (clarity of instructions/policies from supervisors)	Confused	Unclear	Clear
	First time phase: Late January 2020 – June 2020	Second time phase: July 2020 – December 2021	Third time phase: January 2022 – Time of interview

Figure 6. 8 Changes of demands/resources across the three time phases

*Note.* \*Police officers had additional workload but they can still handle. #Police officers had too much workload which they cannot handle.

## 6.8 Demographic comparisons

Demographic comparison among (1) gender; (2) marital status; and (3) tenure was made (see Figure 6. 9 Demographic comparison on work-related stress).

### 6.8.1 Gender

Male police officers encountered more work-related stress than female police officers. Because of gendered duty allocation, three male police officers expressed that they were stressful while three female police officers expressed that they did not feel stressed.

Male police officers described their gender related stressful experiences:

More (work-related stress) for sure. As a male police officer, I encounter more stress. Personally, I think everyone expects that a male police officer has a higher ability. So, in terms of work arrangements, (male police officers are arranged more challenging duties). Or in terms of citizens' expectations, I think their expectations on male police officers are higher. So, (we) expect more from him. I always mention this: When some supervisors give orders, they won't tell a female colleague to do so if it's heavy. (Interviewee #8, aged 41, male)

Yes. There's a relationship (between gender and work-related stress). Others perceive that males with high ability is a must. For females, if they have relatively poor performance, no one blame them. Females don't have to be the tops. For males, we need to have good performance in everything. (Interviewee #13, aged 29, male)

It is clear from the above cases, male police officers are perceived more capable, so others not only have higher expectations on them but also expect they should have good performance. These anticipations caused male police officers to feel more stressed.

Nevertheless, female police officers expressed that they were not stressful at all:

It's not a stress. I think it's a preferential treatment. When performing duties, male colleagues help me with everything. Yes. I think I get preferential treatments.

(Interviewee #1, aged 31, female)

For example, equipment or (we) need to carry some tools when performing duties.

Some are light. Some are heavy. They carry those which are heavy. We carry those which are light. So, I'm not very stressful. (Interviewee #12, aged 33, female)

Interestingly, there is a gendered duty allocation in Hong Kong policing context (i.e. male police officers should take over the more challenging duties and physical demanding jobs). Responding to this, female police officers were pleased to accept it while male police officers might perceive it a source of work-related stress.

### 6.8.2 *Marital status*

Both married and unmarried police officers did not encounter work-related stress.

Married police officers expressed that they were not stressful since they had spouse support:

In my situation, my wife supports me a lot. I don't spend much time at home. I spend most of my time on work, no matter daily duties, or JPOA related duties. My wife is supportive. (Interviewee #9, aged 43, male)

For example, maybe I need to work overtime. Or maybe I need to promote to a higher rank during that phase. So, I may spend less time at home. I tell my wife and she is considerate. (Interviewee #10, aged 37, male)

Although unmarried police officers did not have spouse support, one interviewee expressed that she was not stressful because she had less to worry about:

I have less work-related stress as I am not married. I don't need to worry about (marriage, spouse, and children). (Interviewee #2, aged 36, female)

Another unmarried interviewee did not encounter work-related stress because she had friends support:

I don't have a partner, then I share with others. If I really want to talk to others, I will chat with my friends. (Interviewee #3, aged 42, female)

Apparently, married police officers have some experiences of work-family conflict. Although they spent more time on work which may have interference in their role as a husband or father in the family, they received spouse support. Unmarried police officers also experience some work-family conflicts such as family quarrels and no family gathering. Their work may interfere their role as a son/daughter/grandchild in the family. Nevertheless, their work-related stress was mitigated through friends support.

### *6.8.3 Tenure*

Police officers with shorter tenure encountered more work-related stress than police officers with longer tenure.

Police officers with shorter tenure expressed that they were stressful since they were inexperienced:

Certainly. When performing duties, in particular, when we have contact with the public, there's a chance of sudden occurrences. If I have experience, I can handle it well. Experience is important. (Interviewee #7, aged 30, male)

Yes. Because there're a lot of variations. (I have) greater stress because I don't know how to do so. There're unknowns. (Interviewee #12, aged 33, female)

Nevertheless, police officers with longer tenure did not encounter work-related stress since they were experienced:

Now, I think I know how to release and handle stress. Because I work as a police officer for many years, now I am mature and I know how to handle. (Interviewee #4, aged 47, female)

There's certainly a relationship between tenure and work-related stress. As I have experience, I can handle (cases and sudden occurrences). Others have greater confidence on me. (Interviewee #5, aged 52, male)

Truly, being experienced play an important role to mitigate work-related stress among police officers. Due to lack of experience, police officers with shorter tenure felt more stressed than police officers with longer tenure.

Demographic characteristics		Work-related stress
Gender	Male	More
	Female	Less
Marital status	Married	Not comparable*
	Single	
Tenure	Short	More
	Long	Less

Figure 6. 9 Demographic comparison on work-related stress

*Note.* \*Both married and single police officers did not experience work-related stress.

## 6.9 Discussion and conclusion

Guided by the JD-R model, the objective of current study is to capture the context, process, scenario, and subjective experiences of work-related stress among Hong Kong police officers. Drawing from semi-structured interviews with a timeline approach conducted with 16 Hong Kong police officers, six demands (1) organizational; (2) operational; (3) public; (4) pandemic; (5) work-family conflict; and (6) other while five resources (1) supervisory support; (2) internal procedural justice; (3) organizational support; (4) personal resources;

and (5) social support were emerged. Also, four changes of demands/resources; (1) an increase of workload; (2) a difference in job nature; (3) a decrease of hostility from the public; and (4) an increase of clarity of instructions/policies from supervisors across the three time phases were presented. Demographic comparison among (1) gender; (2) marital status; and (3) tenure was made.

#### *6.9.1 Demands among Hong Kong police officers*

Providing support to the assumption of job demands in the JD-R model, demands among Hong Kong police officers were categorized into six types; (1) organizational stressors; (2) operational stressors; (3) public stressors; (4) pandemic stressors; (5) work-family conflict stressors; and (6) other stressor.

##### *Organizational stressors (Issues deriving from the organization)*

Study Three found that in organizational domain, police officers' work-related stress came from inadequacy of manpower, work overload, longer working hours, working under an environment align with COVID-19 pandemic preventative and control measures, and poor relationships in workplace. Consistent with several literatures, heavy job demands and long working hours were identified as risk factors of work stress and burnout among police officers (Frank et al., 2017; Taris et al., 2017; Wickramasinghe & Wijesinghe, 2018; Wolter et al., 2019; Yulianti & Rohmawati, 2020). Additionally, results from the current study provided support to the assumption of the JD-R model, suggesting this model is well suited to explain police work-related stress in Hong Kong. Although results regarding inadequacy of manpower, working under an environment align with COVID-19 pandemic preventative and control measures, and poor relationships in workplace were not confirmed in previous

studies, these potential predictors were recognized. Further efforts to investigate their predictions on work-related stress and burnout are worthy.

#### *Operational stressors (A wide range of duties)*

The current study found that in operational domain, job nature, danger, and negative exposures caused work-related stress among police officers. They were involved in different duties. They needed to take up their usual duties such as arresting criminals and preventing crime but also played a role to fight the COVID-19 pandemic by enforcing the relevant law. Besides, potential danger came from having contacts with criminals and investigating scopes with many unknowns. In some situations, they were exposed to dead bodies. Consistently, two previous literatures have identified exposing to bloody crime scenes and transporting prisoners as sources of work stress for police officers (Ivie & Garland, 2011; Sayed et al., 2019). Results from the current study not only supported the role of operational stressors as job demands in the JD-R model but also suggested this model is applicable in understanding work-related stress among Hong Kong police officers.

#### *Public stressors (Opposing political views)*

One key demand found in Study Three was public stressors. For example, police officers in this study experienced public stressors derived from handling social movements related duties and hostility from the public. Results in this study match Wolter et al.'s (2019) study but contradict the finding of a previous study that public was a non-significant predictor of work stress among police officers (Li et al., 2018). One possible explanation is that a more comprehensive picture of public stressors was depicted in the current study, with the consideration of doubt about self-legitimacy, concern of safety of family members, doxxing, and poor attitude/being treated unfairly from medical personnel. However, public

stressors were examined with a strong focus on citizens-derived hostility such as complaints and verbal attacks (Li et al., 2018).

*Pandemic stressors (great concerns amid the COVID-19 pandemic)*

Another key demand found in the current study was pandemic stressors. Police officers' stressful feelings arose from concern of infection of COVID-19 when having duties, concern of transmission of COVID-19 to family members, anti COVID-19 pandemic measures, and inadequacy of medical treatment. These results echo Stogner et al.'s (2020) study that COVID-19 policing was a significant stressor and police officers had a great concern of transmitting the virus to family members after contracting with the public when having duties. Unlike findings of a recent study that showed pandemic was a non-significant predictor of work engagement and work performance for police officers (Li et al., 2021a). It is speculated that pandemic stressors were more well-captured in the current study as data collection was conducted from July to August in 2022 (a period after the peak of the fifth wave of COVID-19 pandemic in Hong Kong). After experiencing the most severe period, police officers were likely to give different responses regarding pandemic stressors. Whereas, Li et al.'s (2021a) data were collected in May and June 2020.

*Work-family conflict stressors (Interfering with my family life)*

Result from Study Three revealed that policing work not only caused conflicts but also no gathering with family members. This was in agreement with several literatures that found work-family conflict was a determinant of work stress and burnout among police officers (Kumar & Kamalanabhan, 2017; Li et al., 2018; Li et al., 2021b; Yun et al., 2015). The JD-R model is limited by its application to understand family-related stressors (Barnett et al., 2012). Alternatively, these findings can be explained using concepts in the model of



COR. This model assumes that individuals innately conserve current resources and build new resources (Hobfoll, 1988, 1989). Stress occurs in one of the following circumstances; a potential loss of resources, an actual loss of resources, or a lack of resource gain after resource investment (Hobfoll, 1989, 2001). Resources, for example “time with loved ones” and “intimacy with spouse or partner”, are valued by the individuals (Hobfoll, 1989, 2001). Applying the model of COR to policing, officers are likely to feel stressed if their work reduces resources they valued. For instance, work overload and long working hours associated with policing work can interfere maintaining relationships with family members and performing responsibilities in the family, causing police officers to experience work stress (Li et al., 2018, 2021b).

*Other stressor (Policing culture of unification)*

Study Three found that policing culture is conceptualized as unification. For instance, a discrepancy of opinions on a matter created stressful feelings for police officers. A previous study found police subculture was a predictor of job stress, with American police officers who perceived themselves as not a part of the subculture were prone to a higher level of job stress (Rose & Unnithan, 2015). Another previous study found authoritative culture in policing context predicted more burnout (Yun et al., 2015). Nevertheless, these previous studies did not specifically look at policing culture of unification. Though policing culture of unification was recognized as a factor influencing police work-related stress in this study, further efforts of investigations not only on its prediction but also its role as a job demand in the JD-R model are worthy.

### 6.9.2 Resources among Hong Kong police officers

Supporting the assumption of inadequate job resources predict more disengagement in the JD-R model, resources among Hong Kong police officers were categorized into five types; (1) supervisory support; (2) internal procedural justice; (3) organizational support; (4) personal resources; and (5) social support.

#### *Supervisory support as a resource (Instrumental and emotional support from supervisors)*

Study Three found that police officers, who received instrumental or emotional support from their supervisors, felt less stressed. Although this result echoes several literatures that support from supervisors was salient in policing occupation (Sayed et al., 2019; Sørengaard & Langvik, 2022; Taris et al., 2017; Tummers & Bakker, 2021; Wickramasinghe & Wijesinghe, 2018), conceptual definition of supervisory support varied among studies. Supervisory support emerged in the current study included instrumental and emotional support. Sayed et al.'s (2019) study considered credits and praises given by supervisors while Wickramasinghe & Wijesinghe's (2018) study considered frequency and level of satisfaction of support from supervisors. Thus, different forms of supervisory support should be taken into consideration. The present results suggest that the JD-R model is helpful to explain work-related stress among Hong Kong police officers.

#### *Internal procedural justice as a resource (Treated with fairness)*

The current study found that internal procedural justice reduced stress effectively in policing occupation. Police officers, who perceived fairness or received clear instructions/policies from supervisors, were less stressful. In line with several literatures, fairness played a protective role to reduce work stress and burnout in both Western and Eastern policing context (Kumar & Kamalanabhan, 2017; Sayed et al., 2019; Wolter et al.,

2019). Notably, one recent study applied the JD-R model and highlighted the important role of fairness for police officers in a European country (Wolter et al., 2019). The potential role of internal procedural justice (fairness) as a job resource to reduce work-related stress among Hong Kong police officers is implied. Future research to examine the relationship between clarity of instructions/policies from supervisors and police work-related stress is worth considering.

*Organizational support as a resource (A variety of support from the organization)*

In the current study, organizational support was found to protect police officers against stress. For example, officers' stress level was mitigated through the existence of harmony in policing context. Likewise, two previous literatures conducted on American police officers pointed out the beneficial functions of support from their organization/workplace (Brady et al., 2017; Tsai et al., 2018). Noteworthy, organizational support was conceptualized differently between the aforementioned studies. Organizational support emerged in the current study included working under a harmonious atmosphere, provision of health care products, and implementation of preventative and control measures for COVID-19 pandemic, reflecting organizational support provided, particularly during the COVID-19 pandemic. Organizational support was measured by workers' perceived support given by the organization in Brady et al.'s (2017) study whereas support in workplace was operationalized by counselling support from top management or union in Tsai et al.'s (2018) study. So, support provided by the organizations is essential during both a usual period and a tough time such as the COVID-19 pandemic. More importantly, the present results not only provided support to the JD-R model but also extended the understanding of police work-related stress during the COVID-19 pandemic.

*Personal resources (Self-help and resilience)*

Police officers in the present study can manage their stress using personal resources. Five types of personal resources were emerged in this study. Firstly, one of the personal resources emerged in this study was mentalities, yet it seems to be a rarely investigated concept. Police officers who had a positive mind can cope with stress effectively. Secondly, one police officer in this study pointed out that having religious beliefs could be helpful to deal with stress. Similarly, two previous literatures have highlighted the potential benefits of spirituality (Robinson, 2019; Subhashini, 2018). Religiosity and spirituality have been shown to reduce depressive symptoms (Braam & Koenig, 2019) and improve job performance (Robinson, 2019). Thirdly, one police officer in this study who was characterized by emotional stability can deal with stress effectively. Likewise, a recent study conducted on Spanish National Police members found that being optimistic was less vulnerable to job stress (Marcos et al., 2019). Although these studies considered different personality characteristics, it is likely that positive personality traits play an important role in buffering stress. Fourthly, being specific to Hong Kong context, having previous respiratory disease experience is possibly to be a protective factor. People in Hong Kong demonstrated resilience following SARS in 2003 (Li, 2020), so they can withstand difficulties arising from the COVID-19 pandemic. “Resilience is characterized by the absence of functional impairment or psychopathology following highly adverse events.” (Southwick et al., 2014, p.11). Finally, the present study found some personal coping strategies for managing stress while a previous study considered mindfulness as a personal practice to reduce mental symptoms of strain (Fisher et al., 2019). Though there are different types of personal coping strategies, they are proven to be effective, and individuals can practice the copings that suit themselves. Personal resources are uncommonly used among police officers in this study, but the beneficial effect is well-noted. Theoretically speaking, positive mentality as a personal resource is implied in

the JD-R model whereas religion, positive personality characteristics, previous respiratory disease experience, and personal coping strategies can be integrated as personal resources in this model.

*Social support as a resource (Support and understanding from family members)*

The current study found that police officers received social support from family domain, so their stress level was alleviated. This result matches two recent literatures conducted on American and Greek police officers that found family or friends support were protective factors (Galanis et al., 2019; Schantz et al., 2020). Truly, social support could be helpful to promote better psychological health including improved self-esteem and more positive affect (Wills & Shinar, 2000). The JD-R model is weakened by its application to understand family-related resources (Barnett et al., 2012). The present findings can be explained by the model of COR. Family support can be an example of resource gain, which is in line with a core concept in the model of COR. A previous study adopted the model of COR and found that the more the family support, the more the work engagement for police officers in Hong Kong (Li et al., 2018). Nevertheless, police officers in the current study did not receive any friends support. This result differs from Galanis et al. (2019)'s study and Schantz et al. (2020)'s study. It could be true that because of the increased tensions and loss of trust between Hong Kong police officers and their friends after several riots and social movements in the past decade, support from friends has been diminishing and thus police officers' stressful feelings cannot be mitigated. In the model of COR, companionship and "intimacy with at least one friend" are listed as examples of resources (Hobfoll, 2001), providing an implication to friends support as a resource in the model. As friends support was found to reduce occupational stress and burnout in policing context, future studies are suggested to examine its beneficial effect among Hong Kong police officers.

### 6.9.3 Theoretical implications

Results from Study Three have valuable theoretical implications. The current study found organizational stressors, operational stressors, public stressors, and pandemic stressors were demands of work-related stress among Hong Kong police officers. These results supported one assumption of the JD-R model (i.e. heavy job demands predict more exhaustion). Moreover, work-family conflict stressors and policing culture of unification emerged as demands in this study. However, being subject to constraints of the JD-R model, these two demands and their effects on work-related stress cannot be explained using this model.

This study also found support from supervisors and organization were resources of work-related stress among Hong Kong police officers. These results supported another assumption of the JD-R model (i.e. a lack of job resources predict more disengagement). Therefore, with the support from supervisors, quite a lot of police officers in this study demonstrated to be less stressful. Besides, internal procedural justice was found to be a resource to alleviate work-related stress among Hong Kong police officers in this study. This result provided an implication that internal procedural justice as a job resource in the JD-R model, extending the understanding of internal procedural justice and work-related stress among Hong Kong police officers. Although social support emerged as a resource in this study, the JD-R model is subject to constraints. Social support and its impacts on work-related stress cannot be explained using this model.

One strength of the JD-R model is its integration of personal resources and this study shed light on the beneficial role played by personal resources. Many previous literatures using the JD-R model have examined personal resources, for instance, adaptability

(Cockerham et al., 2022), employability (Wodociag et al., 2021), resilience (Farewell et al., 2022; Mette et al., 2020; Rattray et al., 2021; Yu et al., 2021), self-efficacy (Barbieri et al., 2021; da Silva Júnior et al., 2021; Jasiński, 2021), trait emotional intelligence (Tesi, 2021). In the current study, personal resources including mentalities (e.g. feeling at ease under all circumstances), religion, positive personality characteristics (e.g. emotional stability), previous experiences of confronting communicable diseases, and personal coping strategies (e.g. personal story telling) were emerged. The JD-R model is extended with the consideration of these additional personal resources.

#### *6.9.4 Methodological implications*

Previous studies have implemented timelines among immigrant women, street-involved youth, and obese women (Kolar et al., 2015; Sheridan et al., 2011). One previous policing study has used a qualitative research design to understand police officers' workplace stress (Sayed et al., 2019). Another previous policing study has used a qualitative research design to understand lived experiences of police officers during the COVID-19 pandemic (Helfers & Nhan, 2022). To the student researcher's knowledge, Study Three was a first attempt to adopt this novel data collection approach (i.e. a timeline approach), and this has an important methodological implication. The current study provided a better understanding of work-related stress among Hong Kong police officers throughout the COVID-19 pandemic by using semi-structured interviews with a timeline approach. Using timeline is a relatively novel approach to collect data (Marshall, 2019). As a novice in conducting qualitative researches, using a timeline approach to collect data is manageable in which data are organized clearly and systematically. This study presented the changes of demands and resources among Hong Kong police officers at different time phases throughout the COVID-19 pandemic. The use of a timeline approach is particularly appropriate in articulating such

changes because timelines are helpful to look at lived experiences of individuals at a time-series manner. In addition, semi-structured interviews with a timeline approach were conducted with police officers in this study. Given that police officers typically regard individuals and issues with suspicion (Balch, 1972), this study using a timeline approach is suitable since timelines are useful to enhance participants' engagement (Kendellen & Camiré, 2019; Kolar et al., 2015) so that police officers are more willing to express their feelings and thoughts.

#### *6.9.5 Practical implications*

Practical implications are generated to alleviate work-related stress in policing occupation at different levels. Personally, mentalities and personality characteristics are inherent. Practical implications at the personal level are offered regarding religion, resilience, and personal coping strategies. Religion functions as a resource in improving both physical and mental health is well-researched (Lucchetti et al., 2021). By voluntary, police officers are encouraged to engage in religious practices including confession, forgiveness, liturgy, and personal prayer (Behere et al., 2013). Efforts aim at fostering resilience for police officers appear to be worthwhile. Police officers' practical skills in communication, real-time problem solving, and tactical decision making are needed to be strengthened (Bishopp et al., 2018; Griffin & Sun, 2018). Also, emotional regulation skills can be practised to help police officers in building up their confidence about abilities and strengths, and managing stress derived responses (i.e. emotions and impulses) (Bishopp et al., 2018; Griffin & Sun, 2018). Other effective personal coping strategies, such as adaptive coping, constructive coping, and mindfulness (Fisher et al., 2019; Griffin & Sun, 2018; Ivie & Garland, 2011; Sayed et al., 2019) can be taken into consideration.



At the organizational level, organizational-based interventions should aim to (1) reduce job demands; (2) consider the issue of long working hours; (3) improve relationships in workplace; (4) provide necessities and support amid a pandemic; and (5) shift organizational culture. Firstly, several suggestions to cope with work overload include administrative changes in police organizations, modifying current policies and procedures so that they match preferable tasks and work routines, assigning less paperwork, and multitasking competencies training (Frank et al., 2017; Galanis et al., 2019; Kumar & Kamalanabhan, 2017). Secondly, a suggestion for the long working hours is a shift system with stipulated working hours and the provision of incentives (Kumar & Kamalanabhan, 2017). Thirdly, one suggestion for relationships in workplace derived stress is a social program aiming at improving social capital (Gächter et al., 2011b). In other words, to establish effective and good cooperation with units. Fourthly, in response to a pandemic, policing organizations should provide health care products (i.e. vitamins and supplements) and personal protective equipment (i.e. surgical masks, googles, protective gloves, protective gowns, and disinfectant). In addition, policing organizations should implement the following; (1) preventative and control measures (i.e. temperature checking before entering the police stations and tracking visit records via digital tools); (2) special work arrangement (i.e. work from home); and (3) closed-loop management. The implementation of closed-loop management is particular important to police officers during a pandemic. If police officers' scope of activities is strictly controlled in a particular area after performing duties, the risk of spreading the virus to their family members is avoided and thus police officers' concern can be reduced. Finally, organizational culture should shift its focus from unification in policing context to emphasizing the importance of both family life and organizational goals (Yun et al., 2015).

At the family level, police officers often encounter a dilemma between work and family responsibilities, promoting a family-friendly working environment is the key to deal with work-family conflict. Relevant measures to be taken comprise special leaves (e.g. compassionate leave, marriage leave, and parental leave) and flexible work arrangements (e.g. flexible working hours, five-day work week, and work from home). Another possible way to deal with work-family conflict is to organize programs or workshops, which aim at assisting police officers to understand this dilemma, reduce its effects, and more importantly, encounter this conflict proactively (Lambert et al., 2017).

#### *6.9.6 Reflexivity*

Following the interactions with the police officers, I had two changes on my thoughts and perceptions. As a female, I have some pre-assumptions, for example I believe that female police officers are more vulnerable to work-related stress. However, after interacting with the police officers, my thought was changed. Contradictory, male police officers feel more stressed than female police officers. The underlying reason is the gendered duty allocation in Hong Kong policing context. For male police officers, they are responsible for more challenging duties and physical demanding jobs. For female police officers, they are responsible for easier tasks. Also, as a student researcher, I have a different background and experiences from the police officers, which can be a challenge when interacting with them during qualitative data collection. Through recognizing the tough working condition, showing my sympathy, and more importantly, using a timeline approach, the police officers were willing to share their personal experiences during the interviews.

### *6.9.7 Conclusion*

In conclusion, Study Three provided a contextual and in-depth understanding of work-related stress among Hong Kong police officers. Demands among Hong Kong police officers consisted of six types. Resources among Hong Kong police officers included five types. Four changes of demands/resources, including an increase of workload, a difference in job nature, a decrease of hostility from the public, and an increase of clarity of instructions/policies from supervisors, across the three time phases were presented. Three demographic comparisons were made. In response to the demands among Hong Kong police officers, resources should be provided from the corresponding levels.

This chapter focused on Study Three (A contextual understanding of work-related stress among Hong Kong police officers: Qualitative interviews with a timeline approach). The current study identified the context, process, scenario, and subjective experiences of work-related stress among Hong Kong police officers by presenting the results into four parts; (1) six demands among Hong Kong police officers; (2) five resources among Hong Kong police officers; (3) four changes of demands/resources (i.e. an increase of workload, a difference in job nature, a decrease of hostility from the public, and an increase of clarity of instructions/policies from supervisors) across the three time phases; and (4) three demographic comparisons. However, results from this study have limited generalizability to police officers at management level and non-local police officers because data were collected only from junior police officers. Future studies should aim at greater diversity by recruiting inspectors, superintendents, and police officers from ethnic minority background.

## CHAPTER 7: DISCUSSION AND CONCLUSION

This is a theory-driven empirical research that aims at gaining a comprehensive and in-depth understanding of work-related stress among Hong Kong police officers. With the triangulation of methods, a scoping review of existing literatures, secondary data analysis of a survey study, and the semi-structured interviews with a timeline approach were adopted. This concluding chapter begins with the summary of the studies, followed by theoretical implications, practical implications, limitations and suggestions for future research, and ends with a conclusion of this research.

### 7.1 Summary of the studies

This research includes three interlocking and sequential studies. The sequence of conducting these studies is as follows; (1) Study One (Factors influencing police work-related stress: A scoping review); (2) Study Two (Predictors and mediators of work-related stress among Hong Kong police officers: A quantitative secondary survey data analysis); and (3) Study Three (A contextual understanding of work-related stress among Hong Kong police officers: Qualitative interviews with a timeline approach). A summary of each study was given in the following. Key findings on demands and resources of the three studies are summarized in Table 7. 1.

#### *7.1.1 Study One (Factors influencing police work-related stress: A scoping review)*

Study One is intended to categorize the factors influencing police work-related stress directly or indirectly from a multi-level perspective. This scoping review not only considered the factors influencing police work-related stress from a multi-level perspective but also examined the predictors, mediators, and moderators of police work-related stress. Adopting a scoping review approach underpinned by the six-stage methodological framework, 30 studies

were selected from six electronic databases and grey literature sources. Study One categorized six types of predictors of police work-related stress; (1) demographic; (2) personal; (3) organizational (job demand, job control, job resources, job/workplace satisfaction, organizational commitment, internal procedural justice, and organizational problems); (4) operational; (5) family-related; and (6) community. This study also found four mediators; (1) work-family conflict; (2) resiliency; (3) gender; and (4) supervisor support and three moderators; (1) social support; (2) work support; and (3) locus of control personality (internality). Although this study categorized the direct and indirect factors affecting work-related stress among police officers at different levels, an empirical understanding is still lacking. Hence, the subsequent studies were conducted to provide an empirical understanding of work-related stress among police officers. Undoubtedly, policing is a stressful occupation. Therefore, to reduce stress in the context of police work, interventions should be provided at different levels.

#### *7.1.2 Study Two (Predictors and mediators of work-related stress among Hong Kong police officers: A quantitative secondary survey data analysis)*

The objective of Study Two is to examine predictors and mediators of work-related stress among Hong Kong police officers. Permission to use the quantitative secondary survey data based on 335 Hong Kong police officers was obtained from the principal investigator of the WSWE study. SEM results showed that age and tenure were significant predictors of work-related stress. Aged police officers and police officers with shorter tenure encountered more work-related stress. Job demand (operational stressors) and job resource (internal procedural justice) had a direct and an indirect effect on work-related stress respectively. More operational stressors predicted more work-related stress. More internal procedural justice predicted more work engagement, which in turn predicted less work-related stress.

These results provide support for one of the assumptions and the motivational process in the JD-R model. Police work-related stress can be reduced at the operational level. Other practical implications include improving internal procedural justice and work engagement in policing context. However, demographic characteristics (gender, education, marital status, family status (having children), and rank), organizational stressors, public stressors, pandemic stressors, and supervisory support were non-significant predictors.

### *7.1.3 Study Three (A contextual understanding of work-related stress among Hong Kong police officers: Qualitative interviews with a timeline approach)*

Drawing upon the JD-R model, Study Three is aimed to identify the context, process, scenario, and subjective experiences of work-related stress among Hong Kong police officers. Data were collected via semi-structured interviews using a timeline approach with 16 Hong Kong police officers, and analyzed using template analysis. Results were presented under six demands (1) organizational; (2) operational; (3) public; (4) pandemic; (5) work-family conflict; and (6) other and five resources (1) supervisory support; (2) internal procedural justice; (3) organizational support; (4) personal resources; and (5) social support. These results support the JD-R model. Also, changes of demands/resources across the three time phases were presented as the following four domains; (1) an increase of workload; (2) a difference in job nature; (3) a decrease of hostility from the public; and (4) an increase of clarity of instructions/policies from supervisors. Whereas, demographic characteristics (gender, marital status, and tenure) comparisons were made.

Table 7. 1 Summary of key findings on demands and resources of the three studies

	Demands	Resources
Study One	Personal predictors Organizational predictors (job demand, job control, job/workplace satisfaction, organizational problems) Operational predictors Family-related predictors Community predictors	Support from supervisors and coworkers Organizational commitment Internal procedural justice
Study Two	Organizational stressors Operational stressors Public stressors Pandemic stressors	Supervisory support Internal procedural justice Work engagement
Study Three	Organizational stressors Operational stressors Public stressors Pandemic stressors Work-family conflict stressors Policing culture	Supervisory support Internal procedural justice Organizational support Personal resources Social support

## 7.2 Theoretical implications

This research is theoretically guided by the JD-R model. Theoretical implications are provided. The original version of the JD-R model, proposed by Demerouti and colleagues in 2001, has two assumptions. One assumption is high job demands (i.e. physical workload, time pressure, recipient contact, physical environment, and shift work) predict more exhaustion (Demerouti et al., 2001). Another assumption is insufficient job resources (i.e. feedback, rewards, job control, participation, job security, and supervisor support) predict more disengagement (Demerouti et al., 2001).

The later version of the JD-R model includes two independent processes. The first one is the energetic/health impairment process, which posits high job demands cause more burnout, resulting in physical and mental health problems including cardiovascular disease and depression (Schaufeli & Taris, 2014). The second one is the motivational process, which

postulates more job resources play a motivational role, engagement is boosted, leading to organizational outcomes, such as lower turnover intention and better job performance (Schaufeli & Bakker, 2004; Schaufeli & Taris, 2014).

The recent version of the JD-R model recognizes two interaction effects (Bakker et al., 2014). In the first interaction effect, job resources (i.e. social resources/support, shared values, and positive leadership climate) ameliorate the influence of job demands (i.e. authoritative organizational culture, assaults by citizens while being on duty, and high workload) on burnout and organizational commitment (Choi et al., 2020; Santa Maria et al., 2018). In the second interaction effect, job demands boost the influence of job resources on work engagement. Breevaart and Bakker (2018) found that when an employee had heavy cognitive demands and work overload, more daily transformational leadership behavior played an important role in boosting work engagement.

### *7.2.1 Consistency with previous studies using the JD-R model*

Operational stressors, as job demands, were found to be sources of work-related stress among Hong Kong police officers in the current research. This result echoes one of the propositions in the original version of the JD-R model, providing support to the application of this model in understanding work-related stress in Hong Kong policing context.

Consistently, previous policing studies using the JD-R model have found that high job demand was a predictor of more work stress and burnout. Considering some European countries, more job demands, indicated by workload, emotional demands, role uncertainty, administrative stressors, and verbal assaults by citizens, predicted greater feelings of burnout for Dutch and German police officers (Taris et al., 2017; Wolter et al., 2019). Regarding



some Asian countries, heavy job demands, operationalized by role ambiguity, role conflict, role overload, and emotional demands, predicted more work stress and burnout for police officers in India and Indonesia respectively (Frank et al., 2017; Yulianti & Rohmawati, 2020). As can be seen, the JD-R model has been applied to understand work stress and burnout among police officers around the world.

Result regarding job demands (operational stressors) and work-related stress in the current research was also consistent with previous studies using the JD-R model and applying on different occupational groups worldwide. In the European context, more job demands (i.e. overtime, work-family conflicts, experienced aggression, and work stressors) were predictors of a greater feeling of emotional exhaustion among Swiss home care workers (Möckli et al., 2020). Four German studies found that heavy job demands, conceptualized as quantitative demands/workload, emotional demands, work–privacy conflict, role conflicts, qualitative workload, environmental stress, and time pressure predicted more burnout for teachers, social workers, and intralogistics workers (Drüge et al., 2021; Hartwig et al., 2020; Mette et al., 2020; Schmid & Thomas, 2020). Besides, two Italian studies found that public universities administrative staff and supermarket workers encountered more burnout driven by greater perceived risk of being infected with COVID-19 during daily work, quantitative job demand overload, more physical load, and more emotional load (Guidetti et al., 2022; Ramaci et al., 2021). A study conducted on Chinese healthcare workers by Zhou et al. (2022) highlighted that more epidemic-related job stressors were predictors of more burnout. From the aforementioned studies, the JD-R model has been widely applied to understand mental well-being in various occupations and countries.

### *7.2.2 Inconsistency with previous studies using the JD-R model*

The current research considered the COVID-19 pandemic as a job demand in the JD-R model. This research examined the impact of the COVID-19 pandemic on work-related stress among Hong Kong police officers. However, work-related stress imposed by the COVID-19 pandemic was not investigated in previous policing studies (Lambert et al., 2022; Sørengaard & Langvik, 2022; Yulianti & Rohmawati, 2020).

Furthermore, the current research highlighted the protective role of internal procedural justice (as a job resource). Internal procedural justice can help Hong Kong police officers to reduce their work-related stress both directly and indirectly. A previous study conducted on German police officers found that perceived fairness was associated with improved well-being (Wolter et al., 2019). The current research found both direct and indirect effects but previous policing studies only found a direct effect. In the present research, internal procedural justice had a direct effect on police work-related stress. Also, internal procedural justice had an indirect effect on police work-related stress via work engagement. Whereas, a direct effect of fairness on stress associated outcomes was found in previous policing studies. The conceptualization of internal procedural justice could be one possible explanation for the differences among studies. In the present research, internal procedural justice was considered as a two-dimensional concept, including fairness and clarity of instructions/polices from supervisors, but previous policing studies only considered fairness.

In addition, this research focused on a negative organizational outcome (i.e. work-related stress) of the motivational process in the JD-R model. Nevertheless, many previous studies have investigated positive organizational outcomes of the motivational process in the

JD-R model, for example job performance, job satisfaction, and occupational commitment (Dan et al., 2020; Flores et al., 2021; Hara et al., 2021).

Another inconsistency between the current research and previous studies using the JD-R model is the consideration of personal resources. The current research divided some of its attentions to personal resources, for example personality characteristic (i.e. emotional stability) and personal coping strategy (i.e. personal story telling). Previous studies using the JD-R model considered different personal resources. Some studies considered personality traits including, optimism (Marcos et al., 2019; Zhang et al., 2021a; Zhang et al., 2021b), proactive personality (Callea et al., 2022), and psychological capital (Sarwar et al., 2021). Other studies considered personal coping strategies, such as mindfulness (Farewell et al., 2022; Tulucu et al., 2022; Xie et al., 2022).

### *7.2.3 Expansion of the JD-R model*

The JD-R model has expanded in four-folds. Results from the current research enrich the JD-R model by considering demands, resources, and work-related stress in policing occupation during an adverse period. In other words, advancing the understanding of police officers' work-related stressful experiences in the COVID-19 pandemic. Moreover, the current research was an attempt to position a novel job resource (i.e. internal procedural justice) in the JD-R model. Internal procedural justice was found to function as a job resource among Hong Kong police officers in two ways; (1) protect against work-related stress; and (2) reduce work-related stress via work engagement. These results contribute to the JD-R model by showing the protective role of internal procedural justice on police work-related stress in a direct or indirect way.

In this research, internal procedural justice (independent variable) reduced work-related stress (outcome variable) via work engagement (mediator), supporting work-related stress as a negative organizational outcome of the motivational process in the JD-R model, and thus extending the model. Finally, this research found mentalities, religion, personality characteristic (i.e. emotional stability), previous respiratory disease experience, and (i.e. personal story telling) as personal resources for Hong Kong police officers to alleviate their work-related stress. Considering these additional personal resources, the JD-R model is thus expanded.

### 7.3 Practical implications

Regarding policing occupation, practical implications at the organizational, public, and pandemic levels are generated from this research.

#### *7.3.1 Practical implications at the organizational level*

At the organizational level, it is suggested to increase manpower, provide more support, and promote organizational justice (in particular internal procedural justice).

##### *Practical implications for increasing manpower*

Currently, the Hong Kong Police Force is encountering a severe shortage of manpower. Manpower can be increased from two ways; (1) retaining current police officers; and (2) attracting more candidates to join the Hong Kong Police Force.

To retain current police officers, more benefits and welfare should be provided. For example, higher salary, more vacation leave, some tax allowance etc. Besides, better housing benefits, education assistance, and medical care should be offered. Housing benefits can be

improved by shortening the waiting time of housing. Education assistance can be improved by increasing the allowance, covering university tuition fee, and providing some educational allowance for police children, particularly for police officers who are appointed with the new entry system. Medical care can be improved by providing more quotas for civil servants. A foreseeable career path is also recognized as important. More job positions should be offered such as assistant sergeant and assistant station sergeant. More importantly, the nature of policing work is dangerous (as pointed out by Interviewee #12), an insurance specific for this occupation is preferred. Moreover, providing benefits for police officers' family members should be taken into consideration. For instance, organizing interest classes or recreational activities for the children. Finally, targeting on police officers who reach their retirement age soon, one retention strategy is the option for extension of the service of civil servants (The Government of the Hong Kong Special Administrative Region Press Releases, 2023). So, police officers can extend their services for five more years and retire at the age 60.

To attract more candidates to join the Hong Kong Police Force, three suggestions are provided. The first suggestion is the provision of preferable working conditions in terms of salary, benefits, and welfare etc., compared to other disciplined services. The second suggestion is publicity through regularly organizing recruitment activities, for example the Police Recruitment Experience and Assessment Day, Police Mentorship Programme, Project ACHIEVE, Auxiliary Police Recruitment Express, and Auxiliary Undergraduate Scheme (The Government of the Hong Kong Special Administrative Region Press Releases, 2023). The third suggestion is recruitment targeting on specific groups (e.g. university students and the ethnic minority group). To attract university students to join the Hong Kong Police Force, organizing the Police University Recruitment Express at local universities is considered as a possible recruitment strategy (The Government of the Hong Kong Special

Administrative Region Press Releases, 2023). Furthermore, to facilitate the ethnic minorities joining the Hong Kong Police Force, lowering entry qualifications (i.e. language proficiency requirements) is suggested. For the ethnic minority group, basic Chinese Language ability is required. If they have other language abilities, which can be considered as an advantage.

### *Practical implications for providing more support*

In policing context, more support should be provided, particularly in different forms. Also, support from supervisors, co-workers, and police organizations should be considered. Support resources are categorized into four types; (1) esteem; (2) informational; (3) social companionship; and (4) instrumental (Cohen & Wills, 1985). The first type is esteem support. The definition of esteem support is “information that a person is esteemed and accepted” (Cohen & Wills, 1985, p.313). This type of support also refers to emotional support (Cohen & Wills, 1985). For example, supervisors showed care and sympathy during the tough time (as expressed by both Interviewee #14 and Interviewee #15). The second type is informational support. With informational support, it is helpful to define, understand, and deal with problems (Cohen & Wills, 1985). For instance, supervisors should give advice and guidance, such as the direction of investigation, when handling a criminal case. The third type is social companionship support, defined as “spending time with others in leisure and recreational activities” (Cohen & Wills, 1985, p.313). Supervisors are encouraged to do sports or outdoor activities with officers to promote both physical and mental health. Yoga and swimming have been shown to be effective in reducing stress, negative moods, and coronary risk (Jeter, Cronin & Khalsa, 2013; Silva et al., 2017). The fourth type is instrumental support, refers to “the provision of financial aid, material resources, and needed services” (Cohen & Wills, 1985, p.313). The provision of health care products is essential (as indicated by Interviewee #5). Preventative and control measures, special work managements,

and closed-loop management during pandemics should be implemented by the police organizations (as pointed out by Interviewee #10, Interviewee #3, and Interviewee #5 respectively). Apart from supervisory support, support from co-workers and organization/workplace have been proven to be protective (Brady et al., 2017; Martinussen et al., 2007; McCarty & Skogan, 2013; Padyab et al., 2016; Smoktunowicz et al., 2015; Tsai et al., 2018). Therefore, the provision of different types of support resources (i.e. esteem, informational, social companionship, and instrumental) and different sources of support (i.e. supervisors, co-workers, and police organizations) is of importance.

*Practical implications for promoting organizational justice (in particular internal procedural justice)*

Additionally, attentions should be paid on organizational justice, which can be promoted from the four following involvements; (1) police officers; (2) supervisors; (3) police administrators; and (4) police organizations. Firstly, police officers can be encouraged to express their concerns fearlessly (Agrawal & Mahajan, 2022). Secondly, it is suggested that supervisors should have interactions with the frontline officers or their subordinates (Agrawal & Mahajan, 2022). Thirdly, police administrators should deal with the criticisms (arise from police officers) constructively and seriously (Agrawal & Mahajan, 2022). Finally, police organizations should provide a working atmosphere and environment where police officers are allowed to convey their concerns without fear of retaliation and participate in social activities actively (Kaygusuz & Beduk, 2015; Qureshi et al., 2016).

Particularly considering internal procedural justice, police supervisors and managers should be trained for its dispensation (Van Craen & Skogan, 2017a). Internal procedural justice can be promoted in policing context in the following two ways; (1) ensuring fairness;

and (2) giving clear instructions/policies to police officers. Increased fairness can be achieved by adopting participative and transactional leadership styles (Van Craen & Skogan, 2017b). Police supervisors should not only promote greater fairness in duty allocation but also maintain the atmosphere in the workplace as fair as possible (Donner, 2021; Wang et al., 2020a). Equitable policies and procedures should be designed and implemented by police administrators (Donner et al., 2015; Wu et al., 2017) while rewards and punishments should be distributed impartially by police organizations (McCarty & Skogan, 2013). To give clear instructions/policies to the subordinates, consistent decisions should be made (Kumar & Kamalanabhan, 2017) whereas reasons beyond the ambiguous decisions being made should be explained (Agrawal & Mahajan, 2022; Roberts & Herrington, 2013). Police supervisors should also foster greater transparency in disciplinary decisions (Donner, 2021).

### *7.3.2 Practical implications at the public level*

In Hong Kong, the relationship between the police officers and the public has ruptured following several riots and social movements since the last decade. To rebuild the relationship, the Police Public Relations Branch has been upgraded to become the Public Relations Wing since July 2022 (The Hong Kong Police Force Offbeat, 2022). One of the main responsibilities of the Public Relations Wing is quashing fake news and rumours rapidly (The Hong Kong Police Force Offbeat, 2022). Deploying advanced technology methods, a round-the-clock public opinion tracking system, aims at monitoring online information, identifying rumours as early as possible, and combating rumours, was set up (Sun, 2022). Regarding practical implications for the police-public relationship, efforts from both police management and the public are important. Police management may organize activities aiming to promote trustworthy images of the police (Rotenberg et al., 2016) while the public should be given opportunities to express their concerns or views clearly (McCarty et al., 2019;



Roberts & Herrington, 2013). More importantly, the relationship between the police and the community is highlighted. To establish this relationship, continuous engagements and interactions with community members are advised (Rotenberg et al., 2016; Yun et al., 2015). The importance of community policing is stressed.

### *7.3.3 Practical implications at the pandemic level*

Practical implications for the pandemics are offered in two ways (i.e. during a pandemic and after a pandemic). During a pandemic, the provision of health care products such as vitamins is essential (as indicated by Interviewee #5) so that police officers can be physically stronger. Personal protective equipment (i.e. surgical masks, goggles, protective gloves, protective gowns, and disinfectant) should be also provided (as mentioned by Interviewee #2) in order to reduce police officers' risk of infection when having duties. Besides, to ensure a safe working environment, the implementation of preventative and control measures, such as temperature checking before entering the police stations and tracking visit records via digital tools, is important (as pointed out by Interviewee #10 and Interviewee #4 respectively). More importantly, special work arrangement (i.e. work from home) and closed-loop management during a pandemic should be implemented (as strongly emphasized by Interviewee #3 and Interviewee #5 respectively). The former is suggested for police officers who are responsible for office duties. The latter is suggested for frontline police officers. In other words, their scope of activities is restricted in a particular area after performing duties. By avoiding close contact with family members, the chance of transmission of virus to them is thus reduced, which is particularly important for police officers who live with children or elders (as expressed by both Interviewee #4 and Interviewee #10).

In response to future pandemics, an emergency plan for operating usual duties continuously and effectively in case of a sudden manpower shortage is important (Brito et al., 2009; Richards et al., 2006). This should contain deployment of manpower and resources for more critical and essential duties (Brito et al., 2009). Police departments should provide training aims at developing and improving skills for successful coping in the face of adversities (Stogner et al., 2020). Police departments should also make sure the provision of personal protective equipment, for example surgical masks, hand sanitizer, goggles, protective gloves and gowns, are in stock at all times (Brito et al., 2009). Moreover, to be in agreement with personal protective equipment suppliers, the provision of personal protective equipment to police organizations should be prioritised in case of a shortage (Brito et al., 2009).

#### 7.4 Limitations and suggestions for future research

Although four limitations should be noted when interpreting the results from current research, these results have provided some insights that future research may need to consider for further investigations. This research only examined the indirect effect of job resources on work-related stress via work engagement based on the motivational process in the JD-R model as a conceptual framework. Taking the energetic/health impairment process in the JD-R model into account, there is a possibility that work-related stress serves as a mediator. Future studies are suggested to investigate the indirect effect of job demands on work engagement via work-related stress.

Besides, this research used secondary cross-sectional survey data, so the causal relationships between the explanatory variables (i.e. job demands and job resources) and the outcome variable (i.e. work-related stress) are difficult to make. For example, though this

research highlighted a non-significant effect of supervisory support on Hong Kong police officers' work-related stress, reverse relationship is possible. It appears to be reasonable that police officers with more work-related stress may receive more support from their supervisors. Another direction of effect can be thus ruled out. Future studies collecting longitudinal data on police officers' demands, resources, and work-related stress at different time points should be conducted to confirm the causal relationships.

Moreover, results regarding gender difference in police work-related stress were not validated in this research. No gender difference was detected in the secondary survey data analysis while male police officers were found more stressful, compared to female police officers, in the qualitative timeline interviews. Results regarding gender difference in police work-related stress were also varied among previous literatures. For better understanding of this phenomenon, it would be a useful endeavour for further studies to design a gender specific scale to measure work-related stress for male and female police officers separately.

Finally, this research only identified factors influencing police work-related stress. Intervention studies aim at evaluating the effectiveness to reduce work-related stress in policing occupation are worthy. This research had a narrow focus on supervisory support, which may not comprehensively reflect all types of supervisory support that police officers received. Therefore, investigating different types of supervisory support, such as informational and social companionship, and their effectiveness on alleviating work-related stress among police officers should be considered. Though internal procedural justice has been a relatively understudied concept in previous literatures, this research highlighted that internal procedural justice protected Hong Kong police officers from work-related stress.

Further studies should consider to examine the effectiveness of internal procedural justice on mitigating work-related stress in other policing contexts.

### 7.5 Conclusion

This research provided a comprehensive and in-depth understanding of work-related stress among Hong Kong police officers in the COVID-19 pandemic. The protective role of internal procedural justice as a job resource in the JD-R model was supported. The impact of operational stressors on work-related stress among Hong Kong police officers was validated by using different methodologies. Although work-related stress among police officers is a great concern, practical implications at different levels are provided to reduce work-related stress for this occupation.

This chapter is about the discussion. A summary of each study was given. Taken together, with all three interlocking and sequential studies, a comprehensive and in-depth understanding of work-related stress among Hong Kong police officers was provided. Theoretical implications, practical implications, limitations, and suggestions for future research are discussed.

## REFERENCES

- Acker, J. (1990). Hierarchies, jobs, bodies: A theory of gendered organizations. *Gender & society, 4*(2), 139-158. <https://doi.org/10.1177/089124390004002002>
- Agnew, R. (1992). Foundation for a general strain theory of crime and delinquency. *Criminology, 30*(1), 47-88. <https://doi.org/10.1111/j.1745-9125.1992.tb01093.x>
- Agnew, R. (2001). Building on the foundation of general strain theory: Specifying the types of strain most likely to lead to crime and delinquency. *Journal of research in crime and delinquency, 38*(4), 319-361. <https://doi.org/10.1177/0022427801038004001>
- Agnew, R. (2014). General strain theory. In G. Bruinsma & D. Weisburd (Eds.), *Encyclopedia of criminology and criminal justice* (pp. 1892-1900). Springer New York.
- Agrawal, M., & Mahajan, R. (2022). The influence of distributive and procedural justice on work–family conflict, enrichment, and mental health of Indian police. *Police Practice and Research, 24*(2), 245-265. <https://doi.org/10.1080/15614263.2022.2067156>
- Akbari, J., Akbari, R., Shakerian, M., & Mahaki, B. (2017). Job demand-control and job stress at work: A cross-sectional study among prison staff. *Journal of education and health promotion, 6*. [https://doi.org/10.4103/jehp.jehp\\_68\\_14](https://doi.org/10.4103/jehp.jehp_68_14)
- Alarcon, G. M., Edwards, J. M., & Menke, L. E. (2011). Student burnout and engagement: A test of the conservation of resources theory. *The Journal of psychology, 145*(3), 211-227. <https://doi.org/10.1080/00223980.2011.555432>
- Allen, J. A., Crowe, J., Baran, B. E., & Scott, C. (2016). Organizational identification: A context-specific mitigating resource of work–family conflict. *Journal of Contingencies and Crisis Management, 24*(1), 27-35. <https://doi.org/10.1111/1468-5973.12102>

- Allen, N. J., & Meyer, J. P. (1990). The measurement and antecedents of affective, continuance and normative commitment to the organization. *Journal of Occupational Psychology*, 63(1), 1-18. <https://doi.org/10.1111/j.2044-8325.1990.tb00506.x>
- Allisey, A., Rodwell, J., & Noblet, A. (2012). Personality and the effort-reward imbalance model of stress: Individual differences in reward sensitivity. *Work & Stress*, 26(3), 230-251. <https://doi.org/10.1080/02678373.2012.714535>
- Allisey, A., Rodwell, J., & Noblet, A. (2016). An application of an extended effort-reward imbalance model to police absenteeism behaviour. *Personnel review*, 45(4), 663-680. <https://doi.org/10.1108/PR-06-2014-0125>
- Ângelo, R.-P., & Chambel, M.-J. (2013). An intervention with firefighters to promote psychological occupational health according to the job demands-resources model. *Revista de psicologia social*, 28(2), 197-210. <https://doi.org/10.1174/021347413806196753>
- APA Dictionary of Psychology. (2020). *Stressor*. <https://dictionary.apa.org/stressor>
- Arksey, H., & O'Malley, L. (2005). Scoping studies: Towards a methodological framework. *International journal of social research methodology*, 8(1), 19-32. <https://doi.org/10.1080/1364557032000119616>
- Atena, F. W., & Tiron-Tudor, A. (2019). Gender as a dimension of inequality in accounting organizations and developmental HR strategies. *Administrative Sciences*, 10(1), 1. <https://doi.org/10.3390/admsci10010001>
- Awwad, R. I., Aljuhmani, H. Y., & Hamdan, S. (2022). Examining the relationships between frontline bank employees' job demands and job satisfaction: A mediated moderation model. *SAGE Open*, 12(1), 1-19. <https://doi.org/10.1177/21582440221079880>

- Azungah, T. (2018). Qualitative research: Deductive and inductive approaches to data analysis. *Qualitative Research Journal*, 18(4), 383-400. <https://doi.org/10.1108/QRJ-D-18-00035>
- Backteman-Erlanson, S., Padyab, M., & Brulin, C. (2013). Prevalence of burnout and associations with psychosocial work environment, physical strain, and stress of conscience among Swedish female and male police personnel. *Police practice & research*, 14(6), 491-505. <https://doi.org/10.1080/15614263.2012.736719>
- Baeriswyl, S., Krause, A., Elfering, A., & Berset, M. (2017). How workload and coworker support relate to emotional exhaustion: The mediating role of sickness presenteeism. *International journal of stress management*, 24(S1), 52-73. <https://doi.org/10.1037/str0000018>
- Bai, D.-S., Geng, P., Wang, Z.-D., Wang, X.-L., Xu, G.-R., Ye, Q., Guo, N., Zhao, Y., Yang, C., Song, H., Jiang, G.-Q., & Xu, D.-L. (2022). Practice and experience of regional medical center entrance linkage and closed-loop management under the wartime situation of the COVID-19 in China. *Annals of Translational Medicine*, 10(2), 112-112. <https://doi.org/10.21037/atm-22-61>
- Bakker, A. B., & Demerouti, E. (2007). The job demands-resources model: State of the art. *Journal of managerial psychology*, 22(3), 309-328. <https://doi.org/10.1108/02683940710733115>
- Bakker, A. B., Demerouti, E., & Sanz-Vergel, A. I. (2014). Burnout and work engagement: The JD-R approach. *Annual Review of Organizational Psychology and Organizational Behavior*, 1, 389-411. <https://doi.org/10.1146/annurev-orgpsych-031413-091235>

- Bakker, A. B., Hakanen, J. J., Demerouti, E., & Xanthopoulou, D. (2007). Job resources boost work engagement, particularly when job demands are high. *Journal of educational psychology, 99*(2), 274. <https://doi.org/10.1037/0022-0663.99.2.274>
- Balch, R. W. (1972). The police personality: Fact or fiction?. *The Journal of Criminal Law, Criminology & Police Science, 63*(1), 106-119. <https://doi.org/10.2307/1142281>
- Baltes, P. B. (1997). On the incomplete architecture of human ontogeny: Selection, optimization, and compensation as foundation of developmental theory. *American psychologist, 52*(4), 366. <https://doi.org/10.1037/0003-066X.52.4.366>
- Bannigan, K., & Watson, R. (2009). Reliability and validity in a nutshell. *Journal of Clinical Nursing, 18*(23), 3237-3243. <https://doi.org/10.1111/j.1365-2702.2009.02939.x>
- Barbieri, B., Balia, S., Sulis, I., Cois, E., Cabras, C., Atzara, S., & De Simone, S. (2021). Don't call it smart: Working from home during the pandemic crisis. *Frontiers in Psychology, 12*(741585), 1-13. <https://doi.org/10.3389/fpsyg.2021.741585>
- Barkworth, J. M., & Murphy, K. (2015). Procedural justice policing and citizen compliance behaviour: The importance of emotion. *Psychology, Crime & Law, 21*(3), 254-273. <https://doi.org/10.1080/1068316X.2014.951649>
- Barnett, R. C., Brennan, R. T., Gareis, K. C., Ertel, K. A., Berkman, L. F., & Almeida, D. M. (2012). Conservation of resources theory in the context of multiple roles: An analysis of within- and cross-role mediational pathways. *Community, Work & Family, 15*(2), 131-148. <https://doi.org/10.1080/13668803.2010.539066>
- Barrett, P. (2007). Structural equation modelling: Adjudging model fit. *Personality and Individual Differences, 42*(5), 815-824. <https://doi.org/10.1016/j.paid.2006.09.018>
- Beehr, T. A., & Newman, J. E. (1978). Job stress, employee health, and organizational effectiveness: A facet analysis, model, and literature review. *Personnel Psychology, 31*(4), 665-699. <https://doi.org/10.1111/j.1744-6570.1978.tb02118.x>



- Beehr, T. A., Johnson, L. B., & Nieva, R. (1995). Occupational stress: Coping of police and their spouses. *Journal of Organizational Behavior, 16*(1), 3-25.  
<https://doi.org/10.1002/job.4030160104>
- Behere, P. B., Das, A., Yadav, R., & Behere, A. P. (2013). Religion and mental health. *Indian Journal of Psychiatry, 55*(Suppl 2), S187-S194. <https://doi.org/10.4103/0019-5545.105526>
- Berends, L. (2011). Embracing the visual: Using timelines with in-depth interviews on substance use and treatment. *Qualitative Report, 16*(1), 1-9.  
<https://doi.org/10.46743/2160-3715/2011.1036>
- Biggs, A., Brough, P., & Barbour, J. P. (2014). Exposure to extraorganizational stressors: Impact on mental health and organizational perceptions for police officers. *International journal of stress management, 21*(3), 255.  
<https://doi.org/10.1037/a0037297>
- Bishopp, S. A., Piquero, N. L., Worrall, J. L., & Piquero, A. R. (2019). Negative affective responses to stress among urban police officers: A general strain theory approach. *Deviant behavior, 40*(6), 635-654. <https://doi.org/10.1080/01639625.2018.1436568>
- Bosma, H., Peter, R., Siegrist, J., & Marmot, M. (1998). Two alternative job stress models and the risk of coronary heart disease. *American journal of public health, 88*(1), 68-74. <https://doi.org/10.2105/AJPH.88.1.68>
- Boyatzis, R. E. (1998). *Transforming qualitative information: Thematic analysis and code development*. Sage Publications.
- Braam, A. W., & Koenig, H. G. (2019). Religion, spirituality and depression in prospective studies: A systematic review. *Journal of Affective Disorders, 257*, 428-438.  
<https://doi.org/10.1016/j.jad.2019.06.063>

- Brady, P. Q. (2017). Crimes against caring: Exploring the risk of secondary traumatic stress, burnout, and compassion satisfaction among child exploitation investigators. *Journal of Police and Criminal Psychology*, 32(4), 305-318. <https://doi.org/10.1007/s11896-016-9223-8>
- Breevaart, K., & Bakker, A. B. (2018). Daily job demands and employee work engagement: The role of daily transformational leadership behavior. *Journal of Occupational Health Psychology*, 23(3), 338-349. <https://doi.org/10.1037/ocp0000082>
- Brezina, T. (2010). Agnew, Robert: General strain theory. In F. T. Cullen & P. Wilcox (Eds.), *Encyclopedia of criminological theory* (pp. 7-13). SAGE Publications, Inc.
- Brezina, T. (2017). *General strain theory*.  
<https://doi.org/10.1093/acrefore/9780190264079.013.249>
- Brito, C. S., Luna, A. M., & Sanberg, E. L. (2009). *Benchmarks for developing a law enforcement pandemic flu plan*. <https://www.publicsafety.gc.ca/lbrr/archives/cnmcs-plcng/cn34974-eng.pdf>.
- Britton, D. M. (2000). The epistemology of the gendered organization. *Gender & Society*, 14(3), 418-434. <https://doi.org/10.1177/089124300014003004>
- Brooks, J., McCluskey, S., Turley, E., & King, N. (2015). The utility of template analysis in qualitative psychology research. *Qualitative research in psychology*, 12(2), 202-222. <https://doi.org/10.1080/14780887.2014.955224>
- Brunetto, Y., Farr-Wharton, B., Wankhade, P., Saccon, C., & Xerri, M. (2023). Managing emotional labour: The importance of organisational support for managing police officers in England and Italy. *International Journal of Human Resource Management*, 34(4), 832-854. <https://doi.org/10.1080/09585192.2022.2047755>

- Bryman, A. (1992). Quantitative and qualitative research further reflections on their integration. In J. Brannen (Ed.), *Mixing methods: Qualitative and quantitative research* (pp. 57-78). Alderbury.
- Bryman, A. (2008). *Social research methods* (3rd ed.). Oxford University Press.
- Burant, C. J. (2016). Latent growth curve models: Tracking changes over time. *International Journal of Aging & Human Development*, 82(4), 336-350.  
<https://doi.org/10.1177/0091415016641692>
- Callea, A., Caracuzzo, E., Costanzi, M., & Urbini, F. (2022). Promoting flow at work through proactive personality: A sequential mediation model with evidence from Italian employees. *Sustainability (Basel, Switzerland)*, 14(2477), 1-14.  
<https://doi.org/10.3390/su14052477>
- Cannon, W. (1929). *Bodily changes in pain, hunger, fear, and rage*. Appleton.
- Carayon, P., & Zijlstra, F. (1999). Relationship between job control, work pressure and strain: Studies in the USA and in The Netherlands. *Work & Stress*, 13(1), 32-48.  
<https://doi.org/10.1080/026783799296174>
- Carroll, L. (2013). Active coping. In M. D. Gellman & J. R. Turner (Eds.), *Encyclopedia of behavioral medicine* (pp. 21-21). Springer.
- Chan, J. (2011). Researching police culture: A longitudinal mixed method approach. In D. Gadd, S. Karstedt, & S. F. Messner (Eds.), *The SAGE handbook of criminological research methods* (pp. 301-311). SAGE Publications.
- Charoensukmongkol, P., & Phungsoonthorn, T. (2020). The effectiveness of supervisor support in lessening perceived uncertainties and emotional exhaustion of university employees during the COVID-19 crisis: The constraining role of organizational intransigence. *The Journal of General Psychology*, 148(4), 431-450.  
<https://doi.org/10.1080/00221309.2020.1795613>

- Chen, C.-F., & Hsu, Y.-C. (2020). Taking a closer look at bus driver emotional exhaustion and well-being: Evidence from Taiwanese urban bus drivers. *Safety and Health at Work, 11*(3), 353-360. <https://doi.org/10.1016/j.shaw.2020.06.002>
- Chirico, F. (2017). Religious belief and mental health in lay and consecrated Italian teachers. *Journal of Religion and Health, 56*(3), 839-851. <https://doi.org/10.1007/s10943-016-0242-7>
- Cho, S., Noh, H., Yang, E., Lee, J., Lee, N., Schaufeli, W. B., & Lee, S. M. (2020). Examining the job demands-resources model in a sample of Korean correctional officers. *Current psychology (New Brunswick, N.J.), 39*(5), 1521-1534. <https://doi.org/10.1007/s12144-020-00620-8>
- Choi, J., Kruis, N. E., & Yun, I. (2020). When do police stressors particularly predict organizational commitment? The moderating role of social resources. *Police Quarterly, 23*(4), 527-546. <https://doi.org/10.1177/1098611120923153>
- Chow, S. K., Francis, B., Ng, Y. H., Naim, N., Beh, H. C., Ariffin, M. A. A., Yusuf, M. H. M., Lee, J. W., & Sulaiman, A. H. (2021). Religious coping, depression and anxiety among healthcare workers during the COVID-19 pandemic: A Malaysian perspective. *Healthcare, 9*(1), 79-94. <https://doi.org/10.3390/healthcare9010079>
- Clark, L. A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment, 7*(3), 309-319. <https://doi.org/10.1037/1040-3590.7.3.309>
- Cockerham, M., Beier, M. E., Branson, S., & Boss, L. (2022). Nurse adaptability and post-traumatic stress disorder symptoms during the COVID-19 pandemic: The effects of family and perceived organizational support. *Frontiers in Psychology, 12*(749763), 1-11. <https://doi.org/10.3389/fpsyg.2021.749763>

- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). L. Erlbaum Associates.
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, *112*(1), 155-159.  
<https://doi.org/10.1037/0033-2909.112.1.155>
- Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin*, *98*(2), 310-357. <https://doi.org/10.1037/0033-2909.98.2.310>
- Colman, A. M. (2015). *Oxford dictionary of psychology* (4th ed.). Oxford University Press.
- Colquitt, J. A. (2001). On the dimensionality of organizational justice: A construct validation of a measure. *Journal of applied psychology*, *86*(3), 386.  
<https://doi.org/10.1037//0021-9010.86.3.386>
- Cooper, C. L., Dewe, P. J., & O'Driscoll, M. P. (2001). *Organizational stress*. SAGE Publications.
- Cox, T. (1978). *Stress*. Macmillan Pr.
- Cox, T., & Griffiths, A. (2010). Work-related stress: A theoretical perspective. In S. Leka & J. Houdmont (Eds.), *Occupational health psychology* (pp. 31-56). Nottingham University Press.
- Creswell, J. W. (2018a). *Designing and conducting mixed methods research* (3rd ed.). SAGE.
- Creswell, J. W. (2018b). *Qualitative inquiry & research design: Choosing among five approaches* (4th ed.). SAGE.
- da Silva Júnior, D. I., Ferreira, M. C., & Valentini, F. (2021). Work demands, personal resources and work outcomes: The mediation of engagement. *Universitas Psychologica*, *20*, 1-13. <https://doi.org/10.11144/Javeriana.upsy20.wdpr>

- Dan, C.-I., Roşca, A. C., & Mateizer, A. (2020). Job crafting and performance in firefighters: The role of work meaning and work engagement. *Frontiers in Psychology, 11*(894), 1-12. <https://doi.org/10.3389/fpsyg.2020.00894>
- De Clercq, D., Jahanzeb, S., & Fatima, T. (2022). Abusive supervision, occupational well-being and job performance: The critical role of attention-awareness mindfulness. *Australian Journal of Management, 47*(2), 273-297. <https://doi.org/10.1177/03128962211037772>
- De Jonge, J., & Kompier, M. A. (1997). A critical examination of the demand-control-support model from a work psychological perspective. *International journal of stress management, 4*(4), 235-258.
- De Jonge, J., Bosma, H., Peter, R., & Siegrist, J. (2000). Job strain, effort-reward imbalance and employee well-being: A large-scale cross-sectional study. *Social science & medicine, 50*(9), 1317-1327. [https://doi.org/10.1016/S0277-9536\(99\)00388-3](https://doi.org/10.1016/S0277-9536(99)00388-3)
- De la Fuente Solana, E. I., Aguayo Extremera, R., Vargas Pecino, C., & Canadas de la Fuente, G. R. (2013). Prevalence and risk factors of burnout syndrome among Spanish police officers. *Psicothema, 25*(4), 488-493. <https://doi.org/10.7334/psicothema2013.81>
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. Plenum.
- Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied psychology, 86*(3), 499. <https://doi.org/10.1037/0021-9010.86.3.499>
- Denzin, N. K. (1978). *The research act : A theoretical introduction to sociological methods* (2nd ed.). McGraw-Hill.

- Dollard, M. F., Tuckey, M. R., & Dormann, C. (2012). Psychosocial safety climate moderates the job demand–resource interaction in predicting workgroup distress. *Accid Anal Prev*, *45*, 694-704. <https://doi.org/10.1016/j.aap.2011.09.042>
- Dollard, M. F., Winefield, A. H., & Winefield, H. R. (2003). *Occupational stress in the service professions*. Taylor & Francis.
- Donner, C. M. (2021). Does low self-control contribute to police officers' procedurally unjust treatment of citizens? A unique test of Gottfredson and Hirschi's generality hypothesis. *Police Practice & Research*, *22*(1), 240-256. <https://doi.org/10.1080/15614263.2020.1821679>
- Donner, C., Maskaly, J., Fridell, L., & Jennings, W. G. (2015). State-of-the-art review policing and procedural justice: A state-of-the-art review. *Policing: An International Journal of Police Strategies & Management*, *38*(1), 153-172. <https://doi.org/10.1108/PIJPSM-12-2014-0129>
- Drost, E. A. (2011). Validity and reliability in social science research. *Education, Research and Perspectives*, *38*(1), 105-124.
- Drüge, M., Schladitz, S., Wirtz, M. A., & Schleider, K. (2021). Psychosocial burden and strains of pedagogues - Using the job demands-resources theory to predict burnout, job satisfaction, general state of health, and life satisfaction. *International Journal of Environmental Research and Public Health*, *18*(7921), 1-13. <https://doi.org/10.3390/ijerph18157921>
- Duran, F., Woodhams, J., & Bishopp, D. (2019). An interview study of the experiences of police officers in regard to psychological contract and wellbeing. *Journal of Police and Criminal Psychology*, *34*(2), 184-198. <https://doi.org/10.1007/s11896-018-9275-z>
- Education Bureau. (2022). *Education system and policy*. <https://www.edb.gov.hk/en/index.html>

- Eikenhout, L. M. J., Delahaij, R., Van Dam, K., Kamphuis, W., Hulshof, I. L., & Van Ruysseveldt, J. (2021). Chronic stressors and burnout in Dutch police officers: Two studies into the complex role of coping self-efficacy. *Frontiers in Psychology, 13*(1054053), 1-13. <https://doi.org/10.3389/fpsyg.2022.1054053>
- Eisenberger, R., Fasolo, P., & Davis-LaMastro, V. (1990). Perceived organizational support and employee diligence, commitment, and innovation. *Journal of Applied Psychology, 75*(1), 51-59.
- Esteves, A., & Gomes, A. R. (2013). Occupational stress and cognitive appraisal: A study with security forces. *Saúde e Sociedade, 22*, 701-713. <https://doi.org/10.1590/S0104-12902013000300005>
- Farewell, C. V., Quinlan, J., Melnick, E., Powers, J., & Puma, J. (2022). Job demands and resources experienced by the early childhood education workforce serving high-need populations. *Early Childhood Education Journal, 50*(2), 197-206. <https://doi.org/10.1007/s10643-020-01143-4>
- Fereday, J., & Muir-Cochrane, E. (2006). Demonstrating rigor using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. *International Journal of Qualitative Methods, 5*(1), 80-92. <https://doi.org/10.1177/160940690600500107>
- Field, A. P. (2018). *Discovering statistics using IBM SPSS statistics* (5th ed.). SAGE Publications.
- Fisher, D. M., Kerr, A. J., & Cunningham, S. (2019). Examining the moderating effect of mindfulness on the relationship between job stressors and strain outcomes. *International journal of stress management, 26*(1), 78-88. <https://doi.org/10.1037/str0000090>



- Flores, N., Moret-Tatay, C., Gutiérrez-Bermejo, B., Vázquez, A., & Jenaro, C. (2021). Assessment of occupational health and job satisfaction in workers with intellectual disability: A job demands–resources perspective. *International Journal of Environmental Research and Public Health*, 18(4), 1-17.  
<https://doi.org/10.3390/ijerph18042072>
- Folger, R. (1987). Distributive and procedural justice in the workplace. *Social Justice Research*, 1(2), 143-159. <https://doi.org/10.1007/BF01048013>
- Frank, J., Lambert, E. G., & Qureshi, H. (2017). Examining police officer work stress using the job demands–resources model. *Journal of Contemporary Criminal Justice*, 33(4), 348-367. <https://doi.org/10.1177/1043986217724248>
- Frenkel, M. O., Giessing, L., Egger-Lampl, S., Hutter, V., Oudejans, R. R., Kleygrewe, L., Jaspert, E., & Plessner, H. (2021). The impact of the COVID-19 pandemic on European police officers: Stress, demands, and coping resources. *Journal of Criminal Justice*, 72, 101756. <https://doi.org/10.1016/j.jcrimjus.2020.101756>
- Gächter, M., Savage, D. A., & Torgler, B. (2011a). Gender variations of physiological and psychological strain amongst police officers. *Gender Issues*, 28(1), 66-93.  
<https://doi.org/10.1007/s12147-011-9100-9>
- Gächter, M., Savage, D. A., & Torgler, B. (2011b). The relationship between stress, strain and social capital. *Policing: an international journal of police strategies & management*, 34(3), 515-540. <https://doi.org/10.1108/13639511111157546>
- Galanis, P., Fragkou, D., & Katsoulas, T. A. (2021). Risk factors for stress among police officers: A systematic literature review. *Work (Reading, Mass.)*, 68(4), 1255-1272.  
<https://doi.org/10.3233/WOR-213455>
- Galanis, P., Fragkou, D., Kaitelidou, D., Kalokairinou, A., & Katsoulas, T. A. (2019). Risk factors for occupational stress among Greek police officers. *Policing: an international*

*journal of police strategies & management*, 42(4), 506-519.

<https://doi.org/10.1108/PIJPSM-09-2018-0131>

George, D., & Mallery, P. (2019). *IBM SPSS statistics 25 step by step: A simple guide and reference* (15th ed.). Routledge.

GOVHK. (2023). *Family-friendly employment practices*.

<https://www.gov.hk/en/residents/employment/recruitment/familyfriendly.htm>

Gramling, L. F., & Carr, R. L. (2004). Lifelines: A life history methodology. *Nursing Research*, 53(3), 207-210. <https://doi.org/10.1097/00006199-200405000-00008>

Grandey, A. A., & Cropanzano, R. (1999). The conservation of resources model applied to work–family conflict and strain. *Journal of Vocational Behavior*, 54(2), 350-370. <https://doi.org/10.1006/jvbe.1998.1666>

Greenberg, J. (1990). Organizational justice: Yesterday, today, and tomorrow. *Journal of management*, 16(2), 399-432. <https://doi.org/10.1177/014920639001600208>

Greene, H. T., & Del Carmen, A. (2002). Female police officers in Texas: Perceptions of colleagues and stress. *Policing: an International Journal of Police Strategies & Management*, 25(2), 385-398. <https://doi.org/10.1108/13639510210429428>

Greene, J. C., Caracelli, V. J., & Graham, W. F. (1989). Toward a conceptual framework for mixed-method evaluation designs. *Educational evaluation and policy analysis*, 11(3), 255-274. <https://doi.org/10.2307/1163620>

Griffin, J. D., & Sun, I. Y. (2018). Do work-family conflict and resiliency mediate police stress and surnout: A study of state police officers. *American Journal of Criminal Justice*, 43(2), 354-370. <https://doi.org/10.1007/s12103-017-9401-y>

Guba, E. G., & Lincoln, Y. S. (1989). *Fourth generation evaluation*. Sage Publications.

Gubrium, J. F. (2012). *The Sage handbook of interview research: The complexity of the craft* (2nd ed.). Sage.

- Guidetti, G., Converso, D., Sanseverino, D., & Ghislieri, C. (2022). Return to work during the COVID-19 outbreak: A study on the role of job demands, job resources, and personal resources upon the administrative staff of Italian public universities. *International Journal of Environmental Research and Public Health*, *19*(1995), 1-17. <https://doi.org/10.3390/ijerph19041995>
- Gutschmidt, D., & Vera, A. (2020). Stress and health in the police: A conceptual framework. *Policing: A Journal of Policy and Practice*, *15*(2), 1306-1315. <https://doi.org/10.1093/police/paaa070>
- Haenlein, M., & Kaplan, A. M. (2004). A beginner's guide to partial least squares analysis. *Understanding Statistics*, *3*(4), 283-297. [https://doi.org/10.1207/s15328031us0304\\_4](https://doi.org/10.1207/s15328031us0304_4)
- Hair Jr, J. F., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. (2014). Partial least squares structural equation modeling (PLS-SEM): An emerging tool in business research. *European Business Review*, *26*(2), 106-121. <https://doi.org/10.1108/EBR-10-2013-0128>
- Halbesleben, J. R., Neveu, J.-P., Paustian-Underdahl, S. C., & Westman, M. (2014). Getting to the “COR” understanding the role of resources in conservation of resources theory. *Journal of management*, *40*(5), 1334-1364. <https://doi.org/10.1177/0149206314527130>
- Hamilton, M. (2017). Path analysis. In M. Allen (Ed.), *The SAGE encyclopedia of communication research methods* (pp. 1194-1197). Sage Publications.
- Hara, Y., Asakura, K., Sugiyama, S., Takada, N., Ito, Y., & Nihei, Y. (2021). Nurses working in nursing homes: A mediation model for work engagement based on job demands-resources theory. *Healthcare*, *9*(316), 1-11. <https://doi.org/10.3390/healthcare9030316>

- Hartwig, M., Wirth, M., & Bonin, D. (2020). Insights about mental health aspects at intralogistics workplaces – A field study. *International Journal of Industrial Ergonomics*, 76, 102944-102951. <https://doi.org/10.1016/j.ergon.2020.102944>
- Häusser, J. A., Mojzisch, A., Niesel, M., & Schulz-Hardt, S. (2010). Ten years on: A review of recent research on the job demand–control (-support) model and psychological well-being. *Work & Stress*, 24(1), 1-35. <https://doi.org/10.1080/02678371003683747>
- Hawkins, H. C. (2001). Police officer burnout: A partial replication of Maslach’s burnout inventory. *Police Quarterly*, 4(3), 343-360.  
<https://doi.org/10.1177/109861101129197888>
- He, N., Zhao, J., & Archbold, C. A. (2002). Gender and police stress. *Policing: an International Journal of Police Strategies & Management*, 25(4), 687-708.  
<https://doi.org/10.1108/13639510210450631>
- Helfers, R. C., & Nhan, J. (2022). A qualitative study: An examination of police officers’ lived experiences during the COVID-19 pandemic. *International Criminal Justice Review*, 32(3), 308-327. <https://doi.org/10.1177/10575677211050427>
- Henn, M., Weinstein, M., & Foard, N. (2005). *A short introduction to social research*. Sage.
- Henseler, J., Hubona, G., & Ray, P. A. (2016). Using PLS path modeling in new technology research: Updated guidelines. *Industrial Management & Data Systems*, 116(1), 2-20.  
<https://doi.org/10.1108/IMDS-09-2015-0382>
- Her Majesty’s Inspectorate of Probation. (2021). *Procedural justice*.  
<https://www.justiceinspectors.gov.uk/hmiprobation/research/the-evidence-base-probation/models-and-principles/procedural-justice/>
- Hesse-Biber, S. N., & Leavy, P. (2010). *The practice of qualitative research*. Sage.
- Hobfoll, S. E. (1988). *The ecology of stress*. Taylor & Francis.

- Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *The American psychologist*, 44(3), 513-524. <https://doi.org/10.1037/0003-066X.44.3.513>
- Hobfoll, S. E. (2001). The influence of culture, community, and the nested-self in the stress process: Advancing conservation of resources theory. *Applied psychology*, 50(3), 337-421. <https://doi.org/10.1111/1464-0597.00062>
- Hobfoll, S. E. (2002). Social and psychological resources and adaptation. *Review of general psychology*, 6(4), 307-324. <https://doi.org/10.1037//1089-2680.6.4.307>
- Hobfoll, S. E., Johnson, R. J., Ennis, N., & Jackson, A. P. (2003). Resource loss, resource gain, and emotional outcomes among inner city women. *Journal of Personality and Social Psychology*, 84(3), 632-643. <https://doi.org/10.1037/0022-3514.84.3.632>
- Hobfoll, S. E., Lilly, R. S., & Jackson, A. P. (1992). Conservation of social resources and the self. In H. O. F. Veiel & U. Baumann (Eds.), *The meaning and measurement of social support* (pp. 125-141). Hemisphere Publishing Corp.
- Hockey, G. R. J. (1997). Compensatory control in the regulation of human performance under stress and high workload: A cognitive-energetical framework. *Biological psychology*, 45(1-3), 73-93. [https://doi.org/10.1016/S0301-0511\(96\)05223-4](https://doi.org/10.1016/S0301-0511(96)05223-4)
- Hoggan, B. L., & Dollard, M. F. (2007). Effort–reward imbalance at work and driving anger in an Australian community sample: Is there a link between work stress and road rage? *Accid Anal Prev*, 39(6), 1286-1295. <https://doi.org/10.1016/j.aap.2007.03.014>
- Hong Kong Census and Statistics Department. (2005). *Hong Kong annual digest of statistics (2005 edition)*. [https://www.censtatd.gov.hk/en/data/stat\\_report/product/B1010003/att/B10100032005AN05B0600.pdf](https://www.censtatd.gov.hk/en/data/stat_report/product/B1010003/att/B10100032005AN05B0600.pdf)

Hong Kong Census and Statistics Department. (2011). *Hong Kong annual digest of statistics (2011 edition)*. <https://www.statistics.gov.hk/pub/B10100032011AN11B0100.pdf>

Hong Kong Census and Statistics Department. (2012). *Hong Kong annual digest of statistics (2012 edition)*.

[https://www.censtatd.gov.hk/en/data/stat\\_report/product/B1010003/att/B10100032012AN12B0100.pdf](https://www.censtatd.gov.hk/en/data/stat_report/product/B1010003/att/B10100032012AN12B0100.pdf)

Hong Kong Census and Statistics Department. (2015). *Hong Kong annual digest of statistics (2015 edition)*. <https://www.statistics.gov.hk/pub/B10100032015AN15B0100.pdf>

Hong Kong Census and Statistics Department. (2022). *Hong Kong annual digest of statistics (2022 edition)*.

[https://www.censtatd.gov.hk/en/data/stat\\_report/product/B1010003/att/B10100032022AN22B0100.pdf](https://www.censtatd.gov.hk/en/data/stat_report/product/B1010003/att/B10100032022AN22B0100.pdf)

Hong Kong e-Legislation. (2022a). *Cap. 480 Sex Discrimination Ordinance*.

<https://www.elegislation.gov.hk/hk/cap480>

Hong Kong e-Legislation. (2022b). *Cap. 599 Prevention and Control of Disease Ordinance*.

<https://www.elegislation.gov.hk/hk/cap599>

Hong Kong Police Force. (2021a). *Police Children's Education Trust and Police Education & Welfare Trust*. [https://www.police.gov.hk/ppp\\_en/10\\_retired\\_corner/pcet.html](https://www.police.gov.hk/ppp_en/10_retired_corner/pcet.html)

Hong Kong Police Force. (2021b). *Salary*.

[https://www.police.gov.hk/ppp\\_en/15\\_recruit/salary.html#in](https://www.police.gov.hk/ppp_en/15_recruit/salary.html#in)

Hong Kong Police Force. (2021c). *Welfare*.

[https://www.police.gov.hk/ppp\\_en/15\\_recruit/welfare.html](https://www.police.gov.hk/ppp_en/15_recruit/welfare.html)

Hong Kong Police Force. (2022a). *Public order event statistics*.

[https://www.police.gov.hk/ppp\\_en/09\\_statistics/poes.html](https://www.police.gov.hk/ppp_en/09_statistics/poes.html)

Hong Kong Police Force. (2022b). *Selection process*.

[https://www.police.gov.hk/ppp\\_en/15\\_recruit/sp.html](https://www.police.gov.hk/ppp_en/15_recruit/sp.html)

Hong Kong Police Review. (2019). *Serving Hong Kong with honour, duty and loyalty*.

[https://www.police.gov.hk/info/review/2019/en/hkpf\\_eng06.html](https://www.police.gov.hk/info/review/2019/en/hkpf_eng06.html)

Hooper, D., Coughlan, J., & Mullen, M. (2008). Structural equation modelling: Guidelines for determining model fit. *Electronic Journal of Business Research Methods*, 6(1), 53-60.

Houdmont, J., Jachens, L., Randall, R., & Colwell, J. (2020). English rural policing: Job stress and psychological distress. *Policing: an international journal of police strategies & management*, 44(1), 49-62. <https://doi.org/10.1108/PIJPSM-03-2020-0037>

Howard, A. L., & Curran, P. J. (2014). Latent growth curve modeling. In A. C. Michalos (Ed.), *Encyclopedia of quality of life and well-being research* (pp. 3515-3517). Springer.

Hox, J. J., & Boeije, H. (2005). Data collection, primary versus secondary. In K. Kempf-Leonard (Eds.), *Encyclopedia of social measurement* (pp. 593-599). Elsevier Ltd.

Huong, L., Zheng, C., & Fujimoto, Y. (2016). Inclusion, organisational justice and employee well-being. *International Journal of Manpower*, 37(6), 945-964.

<https://doi.org/10.1108/IJM-12-2015-0212>

Indranarain, R. (2017). *Applied structural equation modelling for researchers and practitioners: Using R and Stata for behavioural research*. Emerald Group Publishing Limited.

info.gov.hk. (2019). *Police officers injured during operations between June and November*.

<https://www.info.gov.hk/gia/general/201912/04/P2019120400491.htm?fontSize=1>

- Ivie, D., & Garland, B. (2011). Stress and burnout in policing: Does military experience matter? *Policing: an international journal of police strategies & management*, 34(1), 49-66. <https://doi.org/10.1108/13639511111106605>
- Jaccard, J. (1996). *LISREL approaches to interaction effects in multiple regression*. Sage Publications.
- Jachens, L., Houdmont, J., & Thomas, R. (2016). Effort–reward imbalance and heavy alcohol consumption among humanitarian aid workers. *J Stud Alcohol Drugs*, 77(6), 904-913. <https://doi.org/10.15288/jsad.2016.77.904>
- Janssen, P. P., Schaufelie, W. B., & Houkes, I. (1999). Work-related and individual determinants of the three burnout dimensions. *Work & Stress*, 13(1), 74-86. <https://doi.org/10.1080/026783799296200>
- Jasiński, A. M. (2021). Perinatal stress events and burnout among midwives in Poland. The mediating role of self-efficacy. *Central European Journal of Nursing and Midwifery*, 12(1), 267-278. <https://doi.org/10.15452/cejnm.2021.12.0002>
- Jetelina, K. K., Molsberry, R. J., Gonzalez, J. R., Beauchamp, A. M., & Hall, T. (2020). Prevalence of mental illness and mental health care use among police officers. *JAMA Network Open*, 3(10), 1-12. <https://doi.org/10.1001/jamanetworkopen.2020.19658>
- Jeter, P., Cronin, S., & Khalsa, S. B. (2013). Evaluation of the benefits of a kripalu yoga program for police academy trainees: A pilot study. *International journal of yoga therapy*, 23(1), 24-30.
- Jiang, L., & Probst, T. M. (2019). Societal income inequality and coping with work-related economic stressors: A resource perspective. In J. Jetten & K. Peters (Eds.), *The social psychology of inequality* (pp. 53-65). Springer.
- Jick, T. D. (1979). Mixing qualitative and quantitative methods: Triangulation in action. *Administrative science quarterly*, 24(4), 602-611. <https://doi.org/10.2307/2392366>



Joanna Briggs Institute (2017a). *Checklist for analytical cross sectional studies*.

<https://jbi.global/critical-appraisal-tools>

Joanna Briggs Institute (2017b). *Checklist for qualitative research*. [https://jbi.global/critical-](https://jbi.global/critical-appraisal-tools)

[appraisal-tools](https://jbi.global/critical-appraisal-tools)

Johnson, J. V. (1989). Control, collectivity and psychological work environment. *Job control and worker health*, 55-74.

Johnson, J. V., & Hall, E. M. (1988). Job strain, work place social support, and cardiovascular disease: A cross-sectional study of a random sample of the Swedish working population. *American journal of public health*, 78(10), 1336-1342.

<https://doi.org/10.2105/AJPH.78.10.1336>

Johnson, J. V., Hall, E. M., & Theorell, T. (1989). Combined effects of job strain and social isolation on cardiovascular disease morbidity and mortality in a random sample of the Swedish male working population. *Scandinavian journal of work, environment & health*, 271-279. <https://doi.org/10.5271/sjweh.1852>

Johnson, L. M., Watson, D., & Pino, N. W. (2020). Policing in Trinidad & Tobago: Officers' experiences with stress. *The Social Science Journal*, 1-15.

<https://doi.org/10.1080/03623319.2020.1744952>

Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a definition of mixed methods research. *Journal of mixed methods research*, 1(2), 112-133.

<https://doi.org/10.1177/1558689806298224>

Joksimovic, L., Starke, D., vd Knesebeck, O., & Siegrist, J. (2002). Perceived work stress, overcommitment, and self-reported musculoskeletal pain: Across-sectional investigation. *International journal of behavioral medicine*, 9(2), 122-138.

[https://doi.org/10.1207/S15327558IJBM0902\\_04](https://doi.org/10.1207/S15327558IJBM0902_04)

- Jones, F., Bright, J. E., Searle, B., & Cooper, L. (1998). Modelling occupational stress and health: the impact of the demand–control model on academic research and on workplace practice. *Stress medicine, 14*(4), 231-236.  
[https://doi.org/10.1002/\(SICI\)1099-1700\(1998100\)14:4<231::AID-SMI802>3.0.CO;2-X](https://doi.org/10.1002/(SICI)1099-1700(1998100)14:4<231::AID-SMI802>3.0.CO;2-X)
- Kaiser, S., Patras, J., Adolfsen, F., Richardsen, A. M., & Martinussen, M. (2020). Using the job demands–resources model to evaluate work-related outcomes among Norwegian health care workers. *SAGE open, 10*(3), 1-11.  
<https://doi.org/10.1177/2158244020947436>
- Kale, A., & Gedik, Z. (2018). Quality of life in riot police: Links to anger, emotion regulation, depression, and anxiety. *Applied Research in Quality of Life, 15*(1), 107-125. <https://doi.org/10.1007/s11482-018-9667-3>
- Karasek, R. A. (1979). Job demands, job decision latitude, and mental strain: Implications for job redesign. *Administrative science quarterly, 28*5-308.  
<https://doi.org/10.2307/2392498>
- Karasek, R., & Theorell, T. (1990). *Healthy work : Stress, productivity, and the reconstruction of working life*. Basic Books.
- Karasek, R., Baker, D., Marxer, F., Ahlbom, A., & Theorell, T. (1981). Job decision latitude, job demands, and cardiovascular disease: A prospective study of Swedish men. *American journal of public health, 71*(7), 694-705.  
<https://doi.org/10.2105/AJPH.71.7.694>
- Karatepe, O. M., & Choubtarash, H. (2014). The effects of perceived crowding, emotional dissonance, and emotional exhaustion on critical job outcomes: A study of ground staff in the airline industry. *Journal of Air Transport Management, 40*, 182-191.  
<https://doi.org/10.1016/j.jairtraman.2014.07.006>

- Kaya, M. (2013). *The effects of perceived organizational justice on police job satisfaction, job involvement and job stress: A case of a Turkish National Police* [Doctoral thesis, Spalding University].  
<http://ezproxy.lb.polyu.edu.hk/login?url=https://www.proquest.com/dissertations-theses/effects-perceived-organizational-justice-on/docview/1650701640/se-2?accountid=16210>
- Kaygusuz, I., & Beduk, A. (2015). The relationship between organizational justice and burnout in professional life: A research on police officers. *International Journal of Management and Marketing Research*, 8(1), 79-92.
- Kendellen, K., & Camiré, M. (2019). Going beyond the interview: Methodological considerations for “getting at” life skills transfer using a longitudinal integrated qualitative approach. *Qualitative Research in Sport, Exercise and Health*, 12(1), 91-107. <https://doi.org/10.1080/2159676X.2019.1593231>
- Kim, W., Kim, J., Woo, H., Park, J., Jo, J., Park, S.-H., & Lim, S. Y. (2017). The relationship between work engagement and organizational commitment: Proposing research agendas through a review of empirical literature. *Human Resource Development Review*, 16(4), 350-376. <https://doi.org/10.1177/1534484317725967>
- King, N. (2004). Using templates in a thematic analysis of text. In C. Cassell. & G. Symon (Eds.), *Essential guide to qualitative methods in organizational research* (pp. 256-270). Sage.
- King, N. (2012). Doing template analysis. In C. Cassell. & G. Symon (Eds.), *Qualitative organizational research: Core methods and current challenges* (pp. 426-450). Sage.
- Kinman, G., Kinman, G., Clements, A. J., Clements, A. J., Hart, J., & Hart, J. (2017). Job demands, resources and mental health in UK prison officers. *Occup Med (Lond)*, 67(6), 456-460. <https://doi.org/10.1093/occmed/kqx091>

- Kline, R. B. (2015). *Principles and practice of structural equation modelling* (4th ed.). Guilford Publications.
- Koch, P., Kersten, J. F., Stranzinger, J., & Nienhaus, A. (2017). The effect of effort-reward imbalance on the health of childcare workers in Hamburg: A longitudinal study. *Journal of Occupational Medicine and Toxicology, 12*(1), 1-9.  
<https://doi.org/10.1186/s12995-017-0163-8>
- Kolar, K., Ahmad, F., Chan, L., & Erickson, P. G. (2015). Timeline mapping in qualitative interviews: A study of resilience with marginalized groups. *International Journal of Qualitative Methods, 14*(3), 13-32. <https://doi.org/10.1177/160940691501400302>
- Korre, M., Farioli, A., Varvarigou, V., Sato, S., & Kales, S. N. (2014). A survey of stress levels and time spent across law enforcement duties: Police chief and officer agreement. *Policing: a Journal of Policy and Practice, 8*(2), 109-122.  
<https://doi.org/10.1093/police/pau001>
- Kula, S. (2017). Occupational stress, supervisor support, job satisfaction, and work-related burnout: Perceptions of Turkish National Police (TNP) members. *Police practice and research, 18*(2), 146-159. <https://doi.org/10.1080/15614263.2016.1250630>
- Kumar, V., & Kamalanabhan, T. (2017). Moderating role of work support in stressor–burnout relationship: An empirical investigation among police personnel in India. *Psychological Studies, 62*(1), 85-97. <https://doi.org/10.1007/s12646-017-0383-0>
- Kurtz, D. L. (2008). Controlled burn: The gendering of stress and burnout in modern policing. *Feminist Criminology, 3*(3), 216-238.  
<https://doi.org/10.1177/1557085108321672>
- Kurtz, D. L., Zavala, E., & Melander, L. A. (2015). The influence of early strain on later strain, stress responses, and aggression by police officers. *Criminal Justice Review, 40*(2), 190-208. <https://doi.org/10.1177/0734016814564696>

- Lambert, E. G., Hogan, N. L., Cheeseman, K., & Barton-Bellessa, S. M. (2013). The relationship between job stressors and job involvement among correctional staff: A test of the job strain model. *Howard Journal of Criminal Justice*, *52*, 19-38. <https://doi.org/10.1111/hojo.12002>
- Lambert, E. G., Qureshi, H., Frank, J., Keena, L. D., & Hogan, N. L. (2017). The relationship of work-family conflict with job stress among Indian police officers: A research note. *Police practice and research*, *18*(1), 37-48. <https://doi.org/10.1080/15614263.2016.1210010>
- Lambert, E. G., Qureshi, H., Frank, J., Klahm, C., & Smith, B. (2018). Job stress, job involvement, job satisfaction, and organizational commitment and their associations with job burnout among Indian police officers: A research note. *Journal of police and Criminal Psychology*, *33*(2), 85-99. <https://doi.org/10.1007/s11896-017-9236-y>
- Lambert, E. G., Qureshi, H., Keena, L. D., Frank, J., & Hogan, N. L. (2019). Exploring the link between work-family conflict and job burnout among Indian police officers. *The Police Journal*, *92*(1), 35-55. <https://doi.org/10.1177/0032258X18761285>
- Lambert, E. G., Qureshi, H., Nalla, M. K., Holbrook, M. A., & Frank, J. (2022). Organizational trust and job stress: A preliminary study among police officers. *Asian Journal of Criminology*, *17*(1), 81-103. <https://doi.org/10.1007/s11417-021-09355-2>
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer Pub. Co.
- Lazarus, R. S., & Lazarus, R. S. (1991). *Emotion and adaptation*. Oxford University Press on Demand.
- Lee, A., Kim, H., Faulkner, M., Gerstenblatt, P., & Travis, D. J. (2019). Work engagement among child-care providers: An application of the job demands–resources model. *Child & Youth Care Forum*, *48*(1), 77-91. <https://doi.org/10.1007/s10566-018-9473-y>

- Legard, R., Keegan, J., & Ward, K. (2003). In-depth interviews. In J. Ritchie & J. Lewis (Eds.), *Qualitative research practice: A guide for social science students and researchers* (pp. 138-169). Sage.
- Li, A. C.-M. (2020). Living through COVID-19: A perspective from Hong Kong. *The Journal of Humanistic Psychology, 60*(5), 672-681.  
<https://doi.org/10.1177/0022167820938487>
- Li, J. C. M., Cheung, C.-K., Sun, I. Y., & Cheung, Y.-K. (2021a). Perceived work engagement and performance amongst police officers during the COVID-19 pandemic in Hong Kong. *Policing: a Journal of Policy and Practice, 16*(1), 135-151.  
<https://doi.org/10.1093/police/paab064>
- Li, J. C. M., Cheung, C.-K., Sun, I. Y., Cheung, Y.-K., & Zhu, S. (2021b). Work–family conflicts, stress, and turnover intention among Hong Kong police officers amid the COVID-19 pandemic. *Police Quarterly, 25*(3), 281-309.  
<https://doi.org/10.1177/10986111211034777>
- Li, J. C., Cheung, J. C., & Sun, I. Y. (2018). The impact of job and family factors on work stress and engagement among Hong Kong police officers. *Policing: An International Journal, 42*(2), 284-300. <https://doi.org/10.1108/PIJPSM-01-2018-0015>
- Lieberman, A. M., Best, S. R., Metzler, T. J., Fagan, J. A., Weiss, D. S., & Marmar, C. R. (2002). Routine occupational stress and psychological distress in police. *Policing: An International Journal of Police Strategies & Management, 25*(2), 421-441. <https://doi.org/10.1108/13639510210429446>
- Lim, H., & Kim, J. L. (2016). Organizational stressors associated with six aspects of police officer stress in South Korea. *Health Science Journal, 16*(1), 105-142.

- Lin, H.-F. (2006). Impact of organizational support on organizational intention to facilitate knowledge sharing. *Knowledge Management Research & Practice*, 4(1), 26-35.  
<https://doi.org/10.1057/palgrave.kmrp.8500083>
- Lin, N., Ensel, W. M., Simeone, R. S., & Kuo, W. (1979). Social support, stressful life events, and illness: A model and an empirical test. *Journal of Health and Social Behavior*, 20(2), 108-119. <https://doi.org/10.2307/2136433>
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Sage Publications.
- Long, A. (2005). *Evaluation tool for 'Mixed Methods' study design*.  
[https://usir.salford.ac.uk/id/eprint/13070/1/Evaluative\\_Tool\\_for\\_Mixed\\_Method\\_Studies.pdf](https://usir.salford.ac.uk/id/eprint/13070/1/Evaluative_Tool_for_Mixed_Method_Studies.pdf)
- Lucchetti, G., Koenig, H. G., & Lucchetti, A. L. G. (2021). Spirituality, religiousness, and mental health: A review of the current scientific evidence. *World Journal of Clinical Cases*, 9(26), 7620-7631. <https://doi.org/10.12998/wjcc.v9.i26.7620>
- Magnavita, N., & Garbarino, S. (2013). Is absence related to work stress? A repeated cross-sectional study on a special police force. *American Journal of Industrial Medicine*, 56(7), 765-775. <https://doi.org/10.1002/ajim.22155>
- Maher, C., Hadfield, M., Hutchings, M., & de Eyto, A. (2018). Ensuring rigor in qualitative data analysis: A design research approach to coding combining NVivo with traditional material methods. *International Journal of Qualitative Methods*, 17(1), 1-13. <https://doi.org/10.1177/1609406918786362>
- Mahmood, A., Zamir, S., Nudrat, S., & Zahoor, F. (2013). Impact of age and level of experience on occupational stress of academic managers at higher educational level. *Mediterranean Journal of Social Sciences*, 4(1), 535-535.
- Marchand, A., & Durand, P. (2011). Psychological distress, depression, and burnout: Similar contribution of the job demand-control and job demand-control-support models?

*Journal of Occupational and Environmental Medicine*, 53(2), 185-189.

<https://doi.org/10.1097/JOM.0b013e318206f0e9>

- Marcos, A., del Carmen Perez-Llantada, M., & Topa, G. (2019). Integration in the organizational environment of the Spanish national police. *Sustainability (Basel, Switzerland)*, 11(17), 4706. <https://doi.org/10.3390/su11174706>
- Marmar, C. R., McCaslin, S. E., Metzler, T. J., Best, S., Weiss, D. S., Fagan, J., Liberman, A., Pole, N., Otte, C., Yehuda, R., Mohr, D., & Neylan, T. (2006). Predictors of posttraumatic stress in police and other first responders. *Annals of the New York Academy of Sciences*, 1071(1), 1-18. <https://doi.org/10.1196/annals.1364.001>
- Marshall, E. A. (2019). Timeline drawing methods. In P. Liamputtong (Ed.), *Handbook of research methods in health social sciences* (pp. 1183-1199). Springer.
- Martinussen, M., Richardsen, A. M., & Burke, R. J. (2007). Job demands, job resources, and burnout among police officers. *Journal of Criminal Justice*, 35(3), 239-249. <https://doi.org/10.1016/j.jcrimjus.2007.03.001>
- Maslach, C., & Jackson, S. E. (1981). The measurement of experienced burnout. *Journal of Occupational Behaviour*, 2(2), 99-113. <https://doi.org/10.1002/job.4030020205>
- Maslach, C., Jackson, S. E., Leiter, M. P., & Schaufeli, W. B. (2023). *MBI: General survey for students*. <https://www.mindgarden.com/313-mbi-general-survey-for-students>
- Mastenbroek, N. J. (2017). The art of staying engaged: The role of personal resources in the mental well-being of young veterinary professionals. *Journal of veterinary medical education*, 44(1), 84-94.
- McCarty, W. P. (2013). Gender differences in burnout among municipal police sergeants. *Policing: an international journal of police strategies & management*, 36(4), 803-818. <https://doi.org/10.1108/PIJPSM-03-2013-0026>



- McCarty, W. P., & Skogan, W. G. (2013). Job-related burnout among civilian and sworn police personnel. *Police Quarterly, 16*(1), 66-84.  
<https://doi.org/10.1177/1098611112457357>
- McCarty, W. P., Aldirawi, H., Dewald, S., & Palacios, M. (2019). Burnout in blue: An analysis of the extent and primary predictors of burnout among law enforcement officers in the United States. *Police Quarterly, 22*(3), 278-304.  
<https://doi.org/10.1177/1098611119828038>
- McCarty, W. P., Zhao, J. S., & Garland, B. E. (2007). Occupational stress and burnout between male and female police officers: Are there any gender differences? *Policing: an International Journal of Police Strategies & Management, 30*(4), 672-691.  
<https://doi.org/10.1108/13639510710833938>
- McCreary, D. R., & Thompson, M. M. (2006). Development of two reliable and valid measures of stressors in policing: The operational and organizational police stress questionnaires. *International Journal of Stress Management, 13*(4), 494-518.  
<https://doi.org/10.1037/1072-5245.13.4.494>
- Meijman, T. F., & Mulder, G. (1998). Psychological aspects of workload. In P. J. Drenth, H. Thierry, & C. J. de Wolff (Eds.), *Handbook of work and organizational psychology* (pp. 5-33). Psychology Press.
- Mercurio, Z. A. (2015). Affective commitment as a core essence of organizational commitment: An integrative literature review. *Human Resource Development Review, 14*(4), 389-414. <https://doi.org/10.1177/1534484315603612>
- Mette, J., Robelski, S., Wirth, T., Nienhaus, A., Harth, V., & Mache, S. (2020). "Engaged, burned out, or both?" A structural equation model testing risk and protective factors for social workers in refugee and homeless aid. *International Journal of*

*Environmental Research and Public Health*, 17(583), 1-14.

<https://doi.org/10.3390/ijerph17020583>

Mirela, B., & Mirela Madalina – Adriana, C. (2011). Organizational stress and its impact on work performance. *Analele Universității din Oradea. Științe economice*, 20(special), 333-337.

Möckli, N., Denhaerynck, K., De Geest, S., Leppla, L., Beckmann, S., Hediger, H., & Zúñiga, F. (2020). The home care work environment's relationships with work engagement and burnout: A cross-sectional multi-centre study in Switzerland. *Health & Social Care in the Community*, 28(6), 1989-2003.

<https://doi.org/10.1111/hsc.13010>

Montero-Marín, J., & García-Campayo, J. (2010). A newer and broader definition of burnout: Validation of the “burnout clinical subtype questionnaire (BCSQ-36).” *BMC Public Health*, 10(1), 302-302. <https://doi.org/10.1186/1471-2458-10-302>

Morash, M., & Haarr, R. N. (1995). Gender, workplace problems, and stress in policing. *Justice Quarterly*, 12(1), 113-140.

<https://doi.org/10.1080/07418829500092591>

Morelli, S. A., Lee, I. A., Arnn, M. E., & Zaki, J. (2015). Emotional and instrumental support provision interact to predict well-being. *Emotion*, 15(4), 484-493.

<https://doi.org/10.1037/emo0000084>

Mowday, R. T., Porter, L. W., & Steers, R. M. (1982). *Employee-organization linkages: The psychology of commitment, absenteeism, and turnover*. Academic Press.

Muylaert, J., Bauwens, R., Audenaert, M., & Decramer, A. (2022). Reducing red tape's negative consequences for leaders: The buffering role of autonomous motivation. *Frontiers in Psychology*, 12(806388), 1-14.

<https://doi.org/10.3389/fpsyg.2021.806388>

- Nachtigall, C., Kroehne, U., Funke, F., & Steyer, R. (2003). Pros and cons of structural equation modeling. *Methods Psychological Research Online*, 8(2), 1-22.
- Narvekar, H. N., & D'Cunha, T. (2021). Operational stress levels and adjustment-neuroticism among police personnel in Goa. *Journal of Police and Criminal Psychology*, 36(2), 159-169. <https://doi.org/10.1007/s11896-020-09379-x>
- Netemeyer, R. G., Boles, J. S., & McMurrian, R. (1996). Development and validation of work-family conflict and family-work conflict scales. *Journal of Applied Psychology*, 81(4), 400-410. <https://doi.org/10.1037/0021-9010.81.4.400>
- Neveu, J. P. (2007). Jailed resources: Conservation of resources theory as applied to burnout among prison guards. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior*, 28(1), 21-42. <https://doi.org/10.1002/job.393>
- news.gov.hk. (2022). *Yat Kwai House locked down*.  
[https://www.news.gov.hk/eng/2022/01/20220121/20220121\\_184820\\_251.html](https://www.news.gov.hk/eng/2022/01/20220121/20220121_184820_251.html)
- Ng, K. C., & Mok, D. (2019). *Nine arrested for cybercrimes and death threats against Hong Kong Police Force after officers' data leaked online*.  
<https://www.scmp.com/news/hong-kong/article/3017158/eight-arrested-cybercrimes-and-death-threats-against-hong-kong>
- Ninaus, K., Diehl, S., & Terlutter, R. (2021). Employee perceptions of information and communication technologies in work life, perceived burnout, job satisfaction and the role of work-family balance. *Journal of Business Research*, 136, 652-666.  
<https://doi.org/10.1016/j.jbusres.2021.08.007>
- Noblet, A. J., McWilliams, J. H., & Rodwell, J. J. (2006). Abating the consequences of managerialism on the forgotten employees: The issues of support, control, coping,

and pay. *Intl Journal of Public Administration*, 29(10-11), 911-930.

<https://doi.org/10.1080/01900690600770652>

Noblet, A., Rodwell, J., & Allisey, A. (2009). Job stress in the law enforcement sector:

Comparing the linear, non-linear and interaction effects of working conditions. *Stress and Health: Journal of the International Society for the Investigation of stress*, 25(1), 111-120. <https://doi.org/10.1002/smi.1227>

Nohe, C., & Sonntag, K. (2014). Work–family conflict, social support, and turnover intentions: A longitudinal study. *Journal of Vocational Behavior*, 85(1), 1-12.

<https://doi.org/10.1016/j.jvb.2014.03.007>

Padilla, K. E. (2020). Sources and severity of stress in a Southwestern police department.

*Occupational Medicine (Oxford)*, 70(2), 131-134.

<https://doi.org/10.1093/occmed/kqaa018>

Padyab, M., Backetman-Erlanson, S., & Brulin, C. (2016). Burnout, coping, stress of conscience and psychosocial work environment among patrolling police officers.

*Journal of police and Criminal Psychology*, 31(4), 229-237.

<https://doi.org/10.1007/s11896-015-9189-y>

Page, K. S., & Jacobs, S. C. (2011). Surviving the shift: Rural police stress and counseling services. *Psychological Services*, 8(1), 12-22. <https://doi.org/10.1037/a0021796>

Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K.

(2015). Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Administration and policy in mental health and mental health services research*, 42(5), 533-544. <https://doi.org/10.1007/s10488-013-0528-y>

- Pandey, J. (2018). Deductive approach to content analysis. In M. Gupta, M. Shaheen, & K. P. Reddy (Eds.), *Qualitative techniques for workplace data analysis* (pp. 145-169). IGI Global.
- Paoline, E. A., Myers, S. M., & Worden, R. E. (2000). Police culture, individualism, and community policing: Evidence from two police departments. *Justice Quarterly*, *17*(3), 575-605. <https://doi.org/10.1080/07418820000094671>
- Parker, S. K., & Sprigg, C. A. (1999). Minimizing strain and maximizing learning: The role of job demands, job control, and proactive personality. *Journal of Applied Psychology*, *84*(6), 925-939. <https://doi.org/10.1037/0021-9010.84.6.925>
- Parkes, K. R. (1989). Personal control in an occupational context. In A. Steptoe & A. Appels (Eds.), *Stress, personal control and health* (pp. 21-48). John Wiley & Sons.
- Parkes, K. R., Mendham, C. A., & von Rabenau, C. (1994). Social support and the demand–discretion model of job stress: Tests of additive and interactive effects in two samples. *Journal of Vocational Behavior*, *44*(1), 91-113. <https://doi.org/10.1006/jvbe.1994.1006>
- Patterson, M. L., Markey, M. A., & Somers, J. M. (2012). Multiple paths to just ends: Using narrative interviews and timelines to explore health equity and homelessness. *International Journal of Qualitative Methods*, *11*(2), 132-151. <https://doi.org/10.1177/160940691201100202>
- Piotrowski, A., Rawat, S., & Boe, O. (2021). Effects of organizational support and organizational justice on police officers' work engagement. *Frontiers in Psychology*, *12*(642155), 1-11. <https://doi.org/10.3389/fpsyg.2021.642155>
- PORI. (2022). *Hong Kong Police Force support rating*. <https://www.pori.hk/pop-poll/disciplinary-force-en/x001.html?lang=en>

- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40*(3), 879-891. <https://doi.org/10.3758/BRM.40.3.879>
- Press Releases. (2016). *LCQ5: Safety of police officers during execution of duties*. <https://www.info.gov.hk/gia/general/201603/16/P201603160606.htm>
- Preston, C. C., & Colman, A. M. (2000). Optimal number of response categories in rating scales: reliability, validity, discriminating power, and respondent preferences. *Acta Psychologica, 104*(1), 1-15. [https://doi.org/10.1016/S0001-6918\(99\)00050-5](https://doi.org/10.1016/S0001-6918(99)00050-5)
- Purba, A., & Demou, E. (2019). The relationship between organisational stressors and mental wellbeing within police officers: A systematic review. *BMC Public Health, 19*(1), 1286-1286. <https://doi.org/10.1186/s12889-019-7609-0>
- Qureshi, H., Lambert, E. G., Keena, L. D., & Frank, J. (2016). Exploring the association between organizational structure variables and work on family strain among Indian police officers. *Criminal Justice Studies, 29*(3), 253-271. <https://doi.org/10.1080/1478601X.2016.1167054>
- Rai, N., & Thapa, B. (2015). *A study on purposive sampling method in research*. [https://d1wqtxts1xzle7.cloudfront.net/48403395/A\\_Study\\_on\\_Purposive\\_Sampling\\_Method\\_in\\_Research-with-cover-page-v2.pdf?Expires=1637910919&Signature=KcrrkK6KNG-RnSO7mwYxJBjC4ak35xReetLohyYanbi4Tv8CtPUZzyOF3sH4L39wjXlAdyU3Yj~17BN~7QHrAJZgMV38tcm~2jdT~YogrFGvtbGpnNBD1zE2IR~NDqyN6QKcMxQfphBSsA2QJAVvo0KHGYaj5iioprnhWVDYTYuWaY88EpxBCt0BFo-7jTyNEL6NKEZuqwsAjf9bV2-bnmdthn~mNR-zNb6wnQyNn-VWS~vmILXtQoJxn6q3Wd0o1ZvLGDz~BiPrYci5ZAKIq92DiMGhyWBxbhvvyVE8r](https://d1wqtxts1xzle7.cloudfront.net/48403395/A_Study_on_Purposive_Sampling_Method_in_Research-with-cover-page-v2.pdf?Expires=1637910919&Signature=KcrrkK6KNG-RnSO7mwYxJBjC4ak35xReetLohyYanbi4Tv8CtPUZzyOF3sH4L39wjXlAdyU3Yj~17BN~7QHrAJZgMV38tcm~2jdT~YogrFGvtbGpnNBD1zE2IR~NDqyN6QKcMxQfphBSsA2QJAVvo0KHGYaj5iioprnhWVDYTYuWaY88EpxBCt0BFo-7jTyNEL6NKEZuqwsAjf9bV2-bnmdthn~mNR-zNb6wnQyNn-VWS~vmILXtQoJxn6q3Wd0o1ZvLGDz~BiPrYci5ZAKIq92DiMGhyWBxbhvvyVE8r)

GT9HgFMVqhN2YwIgo-ZfK8p0GxQujZFGctPdP-pf2~nAw\_\_&Key-Pair-Id=APKAJLOHF5GGSLRBV4ZA

- Ramaci, T., Pagliaro, S., Teresi, M., & Barattucci, M. (2021). Job demands and negative outcomes after the lockdown: The moderating role of stigma towards Italian supermarket workers. *Sustainability (Basel, Switzerland)*, *13*(7507), 1-14.  
<https://doi.org/10.3390/su13137507>
- Rattray, J., McCallum, L., Hull, A., Ramsay, P., Salisbury, L., Scott, T., Cole, S., Miller, J., & Dixon, D. (2021). Work-related stress: The impact of COVID-19 on critical care and redeployed nurses: A mixed-methods study. *BMJ Open*, *11*(7), 1-7.  
<https://doi.org/10.1136/bmjopen-2021-051326>
- Redman, T., Hamilton, P., Malloch, H., & Kleymann, B. (2011). Working here makes me sick! The consequences of sick building syndrome. *Human Resource Management Journal*, *21*(1), 14-27. <https://doi.org/10.1111/j.1748-8583.2010.00155.x>
- Remington, F. J. (1965). The role of police in a democratic society. *The Journal of Criminal Law, Criminology, and Police Science*, *56*(3), 361-365.  
<https://doi.org/10.2307/1141253>
- Richards, E. P., Rathbun, K. C., Brito, C. S., & Luna, A. (2006). *Role of law enforcement in public health emergencies: Special considerations for an all-hazards approach*. U.S. Department of Justice Office of Justice Programs: Bureau of Justice Assistance.
- Roberts, K., & Herrington, V. (2013). Organisational and procedural justice: A review of the literature and its implications for policing. *Journal of Policing, Intelligence and Counter Terrorism*, *8*(2), 115-130. <https://doi.org/10.1080/18335330.2013.821737>
- Roberts, P., & Priest, H. (2006). Reliability and validity in research. *Nursing Standard*, *20*(44), 41-45. <https://doi.org/10.7748/ns2006.07.20.44.41.c6560>

- Robinson, L. R. (2019). *Police officers' perceptions of spirituality for managing occupational stress and job performance* [Doctoral thesis, Walden University].  
<https://scholarworks.waldenu.edu/cgi/viewcontent.cgi?article=8138&context=dissertations>
- Rose, T., & Unnithan, P. (2015). In or out of the group? Police subculture and occupational stress. *Policing: an international journal of police strategies & management*, 38(2), 279-294. <https://doi.org/10.1108/PIJPSM-10-2014-0111>
- Rosen, C. C., Chang, C.-H., Djurdjevic, E., & Eatough, E. (2010). Occupational stressors and job performance: An updated review and recommendations. In P. L. Perrewé & D. C. Ganster (Eds.), *New developments in theoretical and conceptual approaches to job stress* (Vol. 8, pp. 1-60). Emerald Group Publishing Limited, Bingley.
- Rosenberg, M. (1986). *Conceiving the self*. RE Krieger.
- Rosenthal, S. (2017). Structural equation modeling. In M. Allen (Ed.), *The SAGE encyclopedia of communication research methods* (pp. 1683-1687). Sage Publications.
- Rotenberg, K. J., Harrison, A., & Reeves, C. (2016). Police officers' trust beliefs in the police and their psychological adjustment. *Policing & Society*, 26(6), 627-641.  
<https://doi.org/10.1080/10439463.2014.1000324>
- Rothwell, S., McFadzien, K., Strang, H., Hooper, G., & Pughsley, A. (2022). Rapid video responses (RVR) vs. face-to-face responses by police officers to domestic abuse victims: A randomised controlled trial. *Cambridge Journal of Evidence-Based Policing*, 6(1-2), 1-24.
- Sadiq, M. (2022). Policing in pandemic: Is perception of workload causing work–family conflict, job dissatisfaction and job stress? *Journal of Public Affairs*, 22(2), 2486.  
<https://doi.org/10.1002/pa.2486>



- Sahai, A., & Singh, A. (2016). Organizational justice enhances subjective well-being. *The International Journal of Indian Psychology*, 3(6), 21-33.
- Salazar, M. K., & Beaton, R. (2000). Ecological model of occupational stress: Application to urban firefighters. *AAOHN Journal*, 48(10), 470-479.  
<https://doi.org/10.1177/216507990004801005>
- Sandilands, D. (2014). Bivariate analysis. In A. C. Michalos (Ed.), *Encyclopedia of quality of life and well-being research* (pp. 416-418). Springer.
- Santa Maria, A., Wolter, C., Gusy, B., Kleiber, D., & Renneberg, B. (2021). Reducing work-related burnout among police officers: The impact of job rewards and health-oriented leadership. *The Police Journal: Theory, Practice and Principles*, 94(3), 406-421.  
<https://doi.org/10.1177/0032258X20946805>
- Santa Maria, A., Wörfel, F., Wolter, C., Gusy, B., Rotter, M., Stark, S., Kleiber, D., & Renneberg, B. (2018). The role of job demands and job resources in the development of emotional exhaustion, depression, and anxiety among police officers. *Police Quarterly*, 21(1), 109-134. <https://doi.org/10.1177/1098611117743957>
- Sarwar, F., Panatik, S. A., Sukor, M. S. M., & Rusbadrol, N. (2021). A job demand–resource model of satisfaction with work–family balance among academic faculty: Mediating roles of psychological capital, work-to-family conflict, and enrichment. *SAGE Open*, 11(2), 1-19. <https://doi.org/10.1177/21582440211006142>
- Sayed, S. A., Sanford, S. M., & Kerley, K. R. (2019). Understanding workplace stress among federal law enforcement officers. *American Journal of Criminal Justice*, 44(3), 409-429. <https://doi.org/10.1007/s12103-019-09474-8>
- Schantz, A. D., Coxe, S., & Bruk-Lee, V. (2020). From where does my support come? Unpacking the contribution of support for police. *Policing: An International Journal*

*of Police Strategies & Management*, 44(2), 343-360. <https://doi.org/10.1108/PIJPSM-07-2020-0130>

Schaufeli, W. B., & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *Journal of Organizational Behavior*, 25(3), 293-315. <https://doi.org/10.1002/job.248>

Schaufeli, W. B., & Taris, T. W. (2014). A critical review of the job demands-resources model: Implications for improving work and health. *Bridging occupational, organizational and public health*, 43-68. [https://doi.org/10.1007/978-94-007-5640-3\\_4](https://doi.org/10.1007/978-94-007-5640-3_4)

Schaufeli, W. B., Bakker, A. B., & Salanova, M. (2006). The measurement of work engagement with a short questionnaire: A cross-national study. *Educational and Psychological Measurement*, 66(4), 701-716.  
<https://doi.org/10.1177/0013164405282471>

Schaufeli, W. B., Salanova, M., González-romá, V., & Bakker, A. B. (2002). The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *Journal of Happiness Studies*, 3(1), 71-92.  
<https://doi.org/10.1023/A:1015630930326>

Schermelleh-Engel, K., Moosbrugger, H., & Müller, H. (2003). Evaluating the fit of structural equation models: Tests of significance and descriptive goodness-of-fit measures. *Methods of Psychological Research Online*, 8(2), 23-74.

Schmid, R. F., & Thomas, J. (2020). Teachers' ambulatory heart rate variability as an outcome and moderating variable in the job demands-resources model. *Anxiety, Stress, & Coping*, 33(4), 387-402. <https://doi.org/10.1080/10615806.2020.1746286>

Schumacker, R. E., & Lomax, R. G. (2004). *A beginner's guide to structural equation modeling*. Taylor and Francis.

- Schwandt, T. A., & Halpern, E. S. (1988). *Linking auditing and metaevaluation: Enhancing quality in applied research*. Sage Publications.
- SCMP. (2021). 'Lone wolf terrorist' attack on busy Hong Kong street leaves assailant dead, police officer in serious condition. <https://www.scmp.com/news/hong-kong/politics/article/3139407/hong-kong-police-impose-victoria-park-lockdown-stop-july-1>
- Selenko, E., Mäkikangas, A., Mauno, S., & Kinnunen, U. (2013). How does job insecurity relate to self-reported job performance? Analysing curvilinear associations in a longitudinal sample. *Journal of Occupational and Organizational Psychology*, 86(4), 522-542. <https://doi.org/10.1111/joop.12020>
- Selye, H. (1978). *The stress of life* (Rev ed.). McGraw-Hill.
- Shane, J. M. (2010). Organizational stressors and police performance. *Journal of Criminal Justice*, 38(4), 807-818. <https://doi.org/10.1016/j.jcrimjus.2010.05.008>
- Sheridan, J., Chamberlain, K., & Dupuis, A. (2011). Timelining: Visualizing experience. *Qualitative Research*, 11(5), 552-569. <https://doi.org/10.1177/1468794111413235>
- Sherwood, L., Hegarty, S., Vallières, F., Hyland, P., Murphy, J., Fitzgerald, G., & Reid, T. (2019). Identifying the key risk factors for adverse psychological outcomes among police officers: A systematic literature review. *Journal of Traumatic Stress*, 32(5), 688-700. <https://doi.org/10.1002/jts.22431>
- Siegrist, J. (1996). Adverse health effects of high-effort/low-reward conditions. *Journal of occupational health psychology*, 1(1), 27. <https://doi.org/10.1037/1076-8998.1.1.27>
- Silva, F. C. da., Arancibia, B. A. V., Ferreira, E. G., Lima, R. M., Gutierrez Filho, P. J. B., & da Silva, R. (2017). Effects of swimming and walking on aspects related to the health

- of police officers. *Revista Brasileira de Educação Física e Esporte*, 31(2), 333-343.  
<https://doi.org/10.11606/1807-5509201700020333>
- Sindin, X. P. (2017). Secondary data. In M. Allen (Ed.), *The SAGE encyclopedia of communication research methods* (pp. 1578-1579). Sage Publications.
- Singh, R., & Nayak, J. K. (2015). Mediating role of stress between work-family conflict and job satisfaction among the police officials: Moderating role of social support. *Policing: an international journal of police strategies & management*, 38(4), 738-753. <https://doi.org/10.1108/PIJPSM-03-2015-0040>
- Singh, S., & Kar, S. K. (2015). Sources of occupational stress in the police personnel of North India: An exploratory study. *Indian Journal of Occupational and Environmental Medicine*, 19(1), 56-60. <https://doi.org/10.4103/0019-5278.157012>
- Sisley, R., Henning, M. A., Hawken, S. J., & Moir, F. (2010). A conceptual model of workplace stress: The issue of accumulation and recovery and the health professional. *New Zealand Journal of Employment Relations*, 35(2), 3-15.  
<https://doi/10.3316/informit.824267730697353>
- Smith, J. A. (1995). Semi-structured interviewing and qualitative analysis. In J. A. Smith, R. Harré, & L. V. Langenhove (Eds.), *Rethinking methods in psychology* (pp. 10-26). Sage.
- Smoktunowicz, E., Baka, L., Cieslak, R., Nichols, C. F., Benight, C. C., & Luszczynska, A. (2015). Explaining counterproductive work behaviors among police officers: The indirect effects of job demands are mediated by job burnout and moderated by job control and social support. *Human Performance*, 28(4), 332-350.  
<https://doi.org/10.1080/08959285.2015.1021045>

- Sørengaard, T. A., & Langvik, E. (2022). The protective effect of fair and supportive leadership against burnout in police employees. *Safety and Health at Work, 13*(4), 475-481. <https://doi.org/10.1016/j.shaw.2022.09.002>
- Southwick, S. M., Bonanno, G. A., Masten, A. S., Panter-Brick, C., & Yehuda, R. (2014). Resilience definitions, theory, and challenges: Interdisciplinary perspectives. *European Journal of Psychotraumatology, 5*(1), 1-14. <https://doi.org/10.3402/ejpt.v5.25338>
- Spicer, N. (2018). Combining qualitative and quantitative methods. In C. Seale (Eds.), *Researching society and culture* (pp. 306-318). Thousand Oaks.
- Spielberger, C. D. (1972). *Anxiety as an emotional state*. Academic Press.
- Spielberger, C. D., Vagg, P. R., & Wasala, C. F. (2003). Occupational stress: Job pressures and lack of support. In J. C. Quick & L. E. Tetrick (Eds.), *Handbook of occupational health psychology* (pp. 185-200). American Psychological Association.
- Stevens, J. (2002). *Applied multivariate statistics for the social sciences* (4th ed.). L. Erlbaum.
- Stogner, J., Miller, B. L., & McLean, K. (2020). Police stress, mental health, and resiliency during the COVID-19 pandemic. *American journal of criminal justice, 45*(4), 718-730. <https://doi.org/10.1007/s12103-020-09548-y>
- Subhashini, R. (2018). Spiritual interventions for managing stress in police. *Sardar Vallabhbhai Patel National Police Academy, LXVI*(2), 114-124.
- Suh, E., Diener, E., & Fujita, F. (1996). Events and subjective well-being: Only recent events matter. *Journal of personality and social psychology, 70*(5), 1091. <https://doi.org/10.1037/0022-3514.70.5.1091>
- Sulsky, L., & Smith, C. S. (2005). *Work stress*. Wadsworth Publishing Company.

- Sun, F. (2022). *Hong Kong police to deploy technology to combat misinformation, new PR chief says*. <https://www.scmp.com/news/hong-kong/law-and-crime/article/3188975/hong-kong-police-deploy-technology-combat>
- Tancred, P., & Campbell, J. (1992). Room for women: A case study in the sociology of organizations. In A. J. Mills & P. Tancred (Eds.), *Gendering organizational analysis* (pp. 31-45). Sage Publications.
- Taris, T. W., Kompier, M. A., Geurts, S. A., Houtman, I. L., & Van Den Heuvel, F. F. (2010). Professional efficacy, exhaustion, and work characteristics among police officers: A longitudinal test of the learning-related predictions of the demand—control model. *Journal of Occupational and Organizational Psychology*, 83(2), 455-474. <https://doi.org/10.1348/096317909X424583>
- Taris, T. W., Ybema, J. F., & van Beek, I. (2017). Burnout and engagement: Identical twins or just close relatives? *Burnout research*, 5, 3-11. <https://doi.org/10.1016/j.burn.2017.05.002>
- Tesi, A. (2021). A dual path model of work-related well-being in healthcare and social work settings: The interweaving between trait emotional intelligence, end-user job demands, coworkers related job resources, burnout, and work engagement. *Frontiers in Psychology*, 12(660035), 1-8. <https://doi.org/10.3389/fpsyg.2021.660035>
- The Government of the Hong Kong Special Administrative Region Press Releases. (2020). *LCQ6: Anti-epidemic gears of police*. <https://www.info.gov.hk/gia/general/202004/22/P2020042200310.htm?fontSize=1>
- The Government of the Hong Kong Special Administrative Region Press Releases. (2021a). *COVID-19 vaccination programme officially launched (with photos/videos)*. <https://www.info.gov.hk/gia/general/202102/26/P2021022600815.htm?fontSize=1>

- The Government of the Hong Kong Special Administrative Region Press Releases. (2021b). *Police appeal to the public not to take part in, advertise or publicise any unauthorised assemblies*. <https://www.info.gov.hk/gia/general/202106/03/P2021060300823.htm>
- The Government of the Hong Kong Special Administrative Region Press Releases. (2023). *LCQ19: Manpower of Police*. <https://www.info.gov.hk/gia/general/202302/08/P2023020800447.htm?fontSize=1>
- The Government of the Hong Kong Special Administrative Region. (2022a). *COVID-19 vaccination programme*. <https://www.covidvaccine.gov.hk/en/>
- The Government of the Hong Kong Special Administrative Region. (2022b). *School arrangements*. <https://www.coronavirus.gov.hk/eng/school-arrangements.html>
- The Hong Kong Police Force Offbeat. (2022). *Establishment of public relations wing*. <https://www.police.gov.hk/offbeat/1215/eng/9027.html>
- Tracy, S. J. (2013). *Qualitative research methods: Collecting evidence, crafting analysis, communicating impact*. Wiley-Blackwell.
- Tsai, L. C.-F., Nolasco, C. A. R. I., & Vaughn, M. S. (2018). Modeling job stress among police officers: interplay of work environment, counseling support, and family discussion with co-workers. *Police practice & research, 19*(3), 253-269. <https://doi.org/10.1080/15614263.2017.1342091>
- Tsang, D. (2019). *Hong Kong police 'threatened, bullied and snubbed' in public backlash against force's handling of extradition bill protests*. <https://www.scmp.com/news/hong-kong/politics/article/3014734/hong-kong-police-threatened-bullied-and-snubbed-public>
- Tuckey, M. R., Dollard, M. F., Hosking, P. J., & Winefield, A. H. (2009). Workplace bullying: The role of psychosocial work environment factors. *International journal of stress management, 16*(3), 215. <https://doi.org/10.1037/a0016841>

- Tulucu, F., Anasori, E., & Kinali Madanoglu, G. (2022). How does mindfulness boost work engagement and inhibit psychological distress among hospital employees during the COVID-19 pandemic? The mediating and moderating role of psychological resilience. *The Service Industries Journal*, *42*(3-4), 131-147.  
<https://doi.org/10.1080/02642069.2021.2021182>
- Tummers, L. G., & Bakker, A. B. (2021). Leadership and job demands-resources theory: A systematic review. *Frontiers in Psychology*, *12*(722080), 1-13.  
<https://doi.org/10.3389/fpsyg.2021.722080>
- Turek, D. (2021). When does job burnout not hurt employee behaviours? *Journal of Organizational Effectiveness: People and Performance*, *8*(1), 59-79.  
<https://doi.org/10.1108/JOEPP-04-2020-0055>
- Van Craen, M., & Skogan, W. G. (2017a). Achieving fairness in policing: The link between internal and external procedural justice. *Police Quarterly*, *20*(1), 3-23.  
<https://doi.org/10.1177/1098611116657818>
- Van Craen, M., & Skogan, W. G. (2017b). Officer support for use of force policy: The role of fair supervision. *Criminal Justice and Behavior*, *44*(6), 843-861.  
<https://doi.org/10.1177/0093854817696341>
- van de Brake, H. J., Walter, F., Rink, F., Essens, P., & van der Vegt, G. (2020). Benefits and disadvantages of individuals' multiple team membership: The moderating role of organizational tenure. *Journal of Management Studies*, *57*(8), 1502-1530.  
<https://doi.org/10.1111/joms.12539>
- Van der Doef, M., & Maes, S. (1998). The job demand-control (-support) model and physical health outcomes: A review of the strain and buffer hypotheses. *Psychology and health*, *13*(5), 909-936. <https://doi.org/10.1080/08870449808407440>



- Van der Doef, M., & Maes, S. (1999). The job demand-control (-support) model and psychological well-being: A review of 20 years of empirical research. *Work & Stress, 13*(2), 87-114. <https://doi.org/10.1080/026783799296084>
- van der Doef, M., Maes, S., & Diekstra, R. (2000). An examination of the job demand-control-support model with various occupational strain indicators. *Anxiety, Stress and Coping, 13*(2), 165-185. <https://doi.org/10.1080/10615800008248338>
- Van Gelderen, B. R., Konijn, E. A., & Bakker, A. B. (2017). Emotional labor among police officers: A diary study relating strain, emotional labor, and service performance. *The International Journal of Human Resource Management, 28*(6), 852-879. <https://doi.org/10.1080/09585192.2016.1138500>
- Van Vegchel, N., de Jonge, J., Bosma, H., & Schaufeli, W. (2005). Reviewing the effort-reward imbalance model: Drawing up the balance of 45 empirical studies. *Social science & medicine, 60*(5), 1117-1131. <https://doi.org/10.1016/j.socscimed.2004.06.043>
- Van Vegchel, N., de Jonge, J., Söderfeldt, M., Dormann, C., & Schaufeli, W. (2004). Quantitative versus emotional demands among Swedish human service employees. *International Journal of Stress Management, 11*(1), 21-40. <https://doi.org/10.1037/1072-5245.11.1.21>
- Violanti, J. M., Charles, L. E., McCanlies, E., Hartley, T. A., Baughman, P., Andrew, M. E., Fekedulegn, D., Ma, C. C., Mnatsakanova, A., & Burchfiel, C. M. (2017). Police stressors and health: A state-of-the-art review. *Policing: an International Journal of Police Strategies & Management, 40*(4), 642-656. <https://doi.org/10.1108/PIJPSM-06-2016-0097>
- Violanti, J. M., Fekedulegn, D., Andrew, M. E., Charles, L. E., Hartley, T. A., Vila, B., & Burchfiel, C. M. (2012). Shift work and the incidence of injury among police

officers. *American Journal of Industrial Medicine*, 55(3), 217-227.

<https://doi.org/10.1002/ajim.22007>

Violanti, J. M., Mnatsakanova, A., Andrew, M. E., Allison, P., Gu, J. K., & Fekedulegn, D.

(2018). Effort–reward imbalance and overcommitment at work: Associations with police burnout. *Police quarterly*, 21(4), 440-460.

<https://doi.org/10.1177/1098611118774764>

Vuorensyrja, M., & Malkia, M. (2011). Nonlinearity of the effects of police stressors on

police officer burnout. *Policing: an international journal of police strategies & management*, 34(3), 382-402. <https://doi.org/10.1108/1363951111157474>

Wagner, S., White, N., Matthews, L. R., Randall, C., Regehr, C., White, M., Alden, L. E.,

Buys, N., Carey, M. G., Corneil, W., Fyfe, T., Krutop, E., Fraess-Phillips, A., & Fleischmann, M. H. (2019). Depression and anxiety in policework: A systematic

review. *Policing: an International Journal of Police Strategies & Management*, 43(3), 417-434. <https://doi.org/10.1108/PIJPSM-03-2019-0040>

Wang, P., Chu, P., Wang, J., Pan, R., Sun, Y., Yan, M., Jiao, L., Zhan, X., & Zhang, D.

(2020a). Association between job stress and organizational commitment in three types of Chinese university teachers: Mediating effects of job burnout and job satisfaction.

*Frontiers in Psychology*, 11(576768), 1-12.

<https://doi.org/10.3389/fpsyg.2020.576768>

Wang, S.-Y. K., Sun, I. Y., Wu, Y., Craen, M. V., & Kuen-Lung Hsu, K. (2020b). Does trust

in supervisors translate to compliance and cooperation? A test of internal procedural justice among Taiwanese police officers. *Australian & New Zealand Journal of*

*Criminology*, 53(3), 433-453. <https://doi.org/10.1177/0004865820917996>

- Wang, Y., Zheng, L., Hu, T., & Zheng, Q. (2014). Stress, burnout, and job satisfaction: Case of police force in China. *Public Personnel Management*, 43(3), 325-339.  
<https://doi.org/10.1177/0091026014535179>
- Wickramasinghe, N. D., & Wijesinghe, P. R. (2018). Burnout subtypes and associated factors among police officers in Sri Lanka: A cross-sectional study. *Journal of forensic and legal medicine*, 58, 192-198. <https://doi.org/10.1016/j.jflm.2018.07.006>
- Willis, T. A., O'Connor, D. B., & Smith, L. (2008). Investigating effort–reward imbalance and work–family conflict in relation to morningness–eveningness and shift work. *Work & Stress*, 22(2), 125-137. <https://doi.org/10.1080/02678370802180558>
- Wills, T. A., & Shinar, O. (2000). Measuring perceived and received social support. In S. Cohen, L. G. Underwood & B. H. Gottlieb (Eds.), *Social support measurement and intervention: A guide for health and social scientists* (pp. 86-135). Oxford University Press.
- Wodociag, S., Dolce, V., & Molino, M. (2021). Cross-border and sedentary workers' job satisfaction. *Personnel Review*, 51(4), 1314-1335. <https://doi.org/10.1108/PR-04-2020-0303>
- Wolter, C., Santa Maria, A., Wörfel, F., Gusy, B., Lesener, T., Kleiber, D., & Renneberg, B. (2019). Job demands, job resources, and well-being in police officers—a resource-oriented approach. *Journal of Police and Criminal Psychology*, 34(1), 45-54.  
<https://doi.org/10.1007/s11896-018-9265-1>
- Wong, R. (2020). *Covid-19: Hong Kong police issue domestic workers with HK\$2k gathering ban penalties*. <https://hongkongfp.com/2020/08/10/covid-19-hong-kong-police-issue-domestic-workers-with-hk2k-gathering-ban-penalties/>

- World Health Organization. (2021a). *Burn-out an "occupational phenomenon": International classification of diseases*. <https://www.who.int/news/item/28-05-2019-burn-out-an-occupational-phenomenon-international-classification-of-diseases>
- World Health Organization. (2021b). *Occupational health: Stress at the workplace*. <https://www.who.int/news-room/q-a-detail/ccupational-health-stress-at-the-workplace>
- Wu, C. H. (2009). Role conflicts, emotional exhaustion and health problems: A study of police officers in Taiwan. *Stress and health, 25*(3), 259-265.  
<https://doi.org/10.1002/smi.1245>
- Wu, Y., Sun, I. Y., Chang, C. K.-M., & Hsu, K. K.-L. (2017). Procedural justice received and given: Supervisory treatment, emotional states, and behavioral compliance among Taiwanese police officers. *Criminal justice and behavior, 44*(7), 963-982.  
<https://doi.org/10.1177/0093854817702407>
- Wu, Y., Sun, I. Y., Van Craen, M., & Liu, J. (2019). Linking supervisory procedural accountability to officer procedural accountability in Chinese policing. *Policing and Society, 29*(7), 749-764. <https://doi.org/10.1080/10439463.2017.1391809>
- Xanthopoulou, D., Bakker, A. B., Demerouti, E., & Schaufeli, W. B. (2007). The role of personal resources in the job demands-resources model. *International journal of stress management, 14*(2), 121-141. <https://doi.org/10.1037/1072-5245.14.2.12>
- Xie, J., Ifie, K., & Gruber, T. (2022). The dual threat of COVID-19 to health and job security – Exploring the role of mindfulness in sustaining frontline employee-related outcomes. *Journal of Business Research, 146*, 216-227.  
<https://doi.org/10.1016/j.jbusres.2022.03.030>
- Yao, J., Qiu, X., Yang, L., Han, X., & Li, Y. (2022). The relationship between work engagement and job performance: Psychological capital as a moderating

factor. *Frontiers in Psychology*, *13*(729131), 1-8.

<https://doi.org/10.3389/fpsyg.2022.729131>

- Yu, H., Huang, C., Chin, Y., Shen, Y., Chiang, Y., Chang, C., & Lou, J. (2021). The mediating effects of nursing professional commitment on the relationship between social support, resilience, and intention to stay among newly graduated male nurses: A cross-sectional questionnaire survey. *International Journal of Environmental Research and Public Health*, *18*(7546), 1-13. <https://doi.org/10.3390/ijerph18147546>
- Yulianti, P., & Rohmawati, I. M. (2020). The effects of job demands on burnout, and engagement with teamwork effectiveness as the moderation variable on a police resort at Tanjung Perak, port Surabaya. *International Journal of Innovation Creativity and Change*, *11*(9), 582-599.
- Yun, I., Hwang, E., & Lynch, J. (2015). Police stressors, job satisfaction, burnout, and turnover intention among South Korean police officers. *Asian Journal of Criminology*, *10*(1), 23-41. <https://doi.org/10.1007/s11417-015-9203-4>
- Zhang, H., Zhao, Y., Zou, P., Lin, S., Mu, S., Deng, Q., Du, C., Zhou, G., Wu, J., & Gan, L. (2021a). Explaining organizational citizenship behavior among Chinese nurses combating COVID-19. *Risk Management and Healthcare Policy*, *14*, 979-986. <https://doi.org/10.2147/RMHP.S292436>
- Zhang, H., Zhao, Y., Zou, P., Liu, Y., & Gan, L. (2021b). Engagement among physicians fighting COVID-19: The mediating role of autonomy. *Occupational Medicine*, *71*(1), 9-11. <https://doi.org/10.1093/occmed/kqaa203>
- Zhou, T., Xu, C., Wang, C., Sha, S., Wang, Z., Zhou, Y., Zhang, X., Hu, D., Liu, Y., Tian, T., Liang, S., Zhou, L., & Wang, Q. (2022). Burnout and well-being of healthcare workers in the post-pandemic period of COVID-19: A perspective from the job

demands-resources model. *BMC Health Services Research*, 22(1), 284-284.

<https://doi.org/10.1186/s12913-022-07608-z>