

**Dare to Laugh? Examining Mechanisms of Resilience through a Self-Determination
Perspective**

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Abstract

Is resilience effortlessly innate or is it an acquired skill developed through the endless battle between thriving and self-destruction? The first goal of the present research is to identify mechanisms of resilience. The second goal of the research is to identify mechanisms of resilience, solidifying and expanding upon previously identified mechanisms and examining novel mechanisms. The third goal is to clarify the resilience process as a whole by examining the order of mechanisms that individuals use to foster their resilience within the workplace. It is hypothesized that (1) Autonomous motivation will be the primary foundational mechanism of resilience; (2) Emotional intelligence, challenge appraisals, positive humour and risk-taking will be important mechanisms of resilience and mediate the relationship between autonomous motivation and resilience; (3) The order of mediators will be important in the process of developing resilience; (4) Emotional intelligence will precede challenge appraisals, and risk-taking will precede positive humour. This research project is comprised of 5 studies. Studies 1-4 use linear and multiple regressions to conduct multiple mediation models to evaluate and examine mechanisms of resilience. Study 5 uses a deductive content-analysis approach to analyze qualitative data, to help better understand the nuances of resilience that quantitative data cannot illustrate. Resilience research has many discrepancies relating to its process and mechanisms thus, this research project offers important potential fundamental contributions. By identifying and solidifying mechanisms of resilience, training, counseling, and education will be better informed to have greater success in fostering resilience within individuals and across contexts.

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Preface

During the planning, data collection, and writing of this thesis, a global pandemic took place, both altering and informing the overall research studies. Adaptations were required to adhere to government regulations and the state of the world.

The decision to research resilience stemmed from a passionate curiosity about what helps people get through tough times and what specific mechanisms facilitate thriving in the face of adversity. Additionally, a desire to investigate a topic that could resonate with as many people as possible. Motivation is considered to be the driving force behind our thoughts, feelings, and actions, thus using the theoretical lens of Self-Determination Theory seemed particularly fitting to provide insight into what contributes to resilient individuals within the workforce. Conveniently, my research findings helped me throughout my journey of obtaining a PhD; laughing is much more fun than crying.

A variety of samples were chosen with the goal of testing the same model across various populations. A student sample was used because they were students who had the unique challenge of also holding employment while pursuing postsecondary education. Building upon the first study, various workers were chosen in order to test the proposed model with a diverse set of employees, ideally indicating broad applicability. Teachers were chosen to test the proposed models with a specific occupation who experiences frequent changes in job demands (i.e., new curriculum requirements or diverse student needs) illustrating the applicability of the models to both diverse and specific occupations. Lastly, infantry soldiers were chosen to be interviewed to better understand and expand upon the nuances of resilience, as they are employed in a high stress occupation and are an expected highly resilient population. Thus, being able to learn from some of the best.

Contributions

The dissertation outlined in this document consists of three manuscripts:

Study 1 & 2: Seidel, L., Cawley, E.I., & Blanchard, C. (Submitted). Enduring Education & Employment: Examining Motivation and Mechanisms of Psychological Resilience. *Scandinavian Journal of Psychology*.

Study 3 & 4: Seidel, L., Cawley, E.I., & Blanchard, C. (Submitted). Roaring with Risk: Investigating Motivation and Mechanisms of Psychological Resilience in Diverse Occupations. *Cambridge Prisms: Global Mental Health*

Study 5: Seidel, L., Cawley, E.I., & Blanchard, C. (Submitted). Psychological Resilience: Insights of Infantry Soldiers. *Military Behavioural Health*.

Overall, I was responsible for developing the topic of this thesis, the research design and methodology, under the supervision and guidance of my supervisor Dr. Céline Blanchard. Dr. Elizabeth Irene Cawley provided subject matter expertise. My thesis committee contributed to the research methodology through their feedback on my research proposal. For all studies. I was responsible for the ethics submission, participant recruitment, data management and analysis, data interpretation, and the writing of all manuscripts and the larger thesis document. I was in consultation with my supervisor through the entire dissertation process.

Table of Contents

| | |
|---|------|
| Abstract | ii |
| Acknowledgements | iii |
| Preface | iv |
| Contribution of Authors | v |
| Table of Contents | vi |
| List of Tables | viii |
| List of Figures | ix |
| General Introduction | 1 |
| Goals and Hypotheses | 38 |
| Manuscript 1: Enduring Education & Employment: Examining Motivation and Mechanisms of Psychological Resilience | 43 |
| Abstract | 44 |
| Introduction | 45 |
| Method | 55 |
| Results | 57 |
| Discussion | 64 |
| References | 69 |
| Manuscript 2: Roaring with Risk: Investigating Motivation and Mechanisms of Psychological Resilience in Diverse Occupations | 82 |
| Abstract | 83 |
| Introduction | 84 |
| Methods | 93 |
| Results | 96 |

| | |
|---|-----|
| Discussion | 104 |
| References | 110 |
| Manuscript 3: Psychological Resilience: Insights of Infantry Soldiers | 124 |
| Abstract | 125 |
| Introduction | 126 |
| Methods | 129 |
| Results | 133 |
| Discussion | 147 |
| References | 154 |
| General Discussion | 162 |
| References (General Introduction and Discussion) | 177 |
| Appendix A: Consent Forms | 219 |
| Appendix B: Recruitment Texts | 225 |
| Appendix C: Questionnaires included in Studies | 228 |
| Appendix D: Interview Questions | 235 |

List of Tables

Manuscript 1

| | |
|--|----|
| Table 1: Bivariate Relations and Descriptive Statistics (Non-Pandemic Sample) | 58 |
| Table 2: Indirect Effects of Autonomous Motivation on Resilience through Emotional Intelligence and Challenge Appraisals (Non-Pandemic Sample) | 59 |
| Table 3: Bivariate Relations and Descriptive Statistics (Pandemic Sample) | 61 |
| Table 4: Indirect Effects of Autonomous Motivation on Resilience through Emotional Intelligence and Challenge Appraisals (Pandemic Sample) | 62 |
| Table 5: T-test Results of Scores of all Measures of (Non-Pandemic Sample and Pandemic Sample) | 63 |

Manuscript 2

| | |
|--|-----|
| Table 1: Bivariate Relations and Descriptive Statistics (Various Occupations)..... | 96 |
| Table 2: Indirect Effects of Autonomous Motivation on Resilience through Emotional Intelligence and Challenge Appraisals (Various Occupations) | 97 |
| Table 3: Indirect Effects of Autonomous Motivation on Resilience through Risk-Taking and Positive Humour (Various Occupations) | 99 |
| Table 4: Bivariate Relations and Descriptive Statistics (Teachers) | 101 |
| Table 5: Indirect Effects of Autonomous Motivation on Resilience through Emotional Intelligence and Challenge Appraisals (Teachers) | 102 |
| Table 6: Indirect Effects of Autonomous Motivation on Resilience through Risk-Taking and Positive Humour (Teachers) | 103 |

Manuscript 3

| | |
|---|-----|
| Table 1: Number and Percentage of Interviews which Explored Subthemes | 132 |
| Table 2: Quotes representing the subthemes of the theme challenge of the profession..... | 138 |
| Table 3: Quotes representing the subthemes of the theme resilience strategies (protective practices)..... | 145 |

List of Figures

General Introduction

Figure 1: Four Waves of Resilience Research3

Figure 2: Self-Determination Continuum21

Manuscript 1

Figure 1: Serial Multiple Mediations Model of the Effect of Autonomous Motivation on Resilience Directly and Indirectly through Emotional Intelligence and Challenge Appraisals (Non-Pandemic Sample)59

Figure 2: Serial Multiple Mediations Model of the Effect of Autonomous Motivation on Resilience Directly and Indirectly through Emotional Intelligence and Challenge Appraisals (Pandemic Sample)62

Manuscript 2

Figure 1: Serial Multiple Mediations Model of the Effect of Autonomous Motivation on Resilience Directly and Indirectly through Emotional Intelligence and Challenge Appraisals (Various Occupations)98

Figure 2: Serial Multiple Mediations Model of the Effect of Autonomous Motivation on Resilience Directly and Indirectly through Risk-Taking and Positive Humour (Various Occupations)99

Figure 3: Serial Multiple Mediations Model of the Effect of Autonomous Motivation on Resilience Directly and Indirectly through Emotional Intelligence and Challenge Appraisals (Teachers)102

Figure 4: Serial Multiple Mediations Model of the Effect of Autonomous Motivation on Resilience Directly and Indirectly through Risk-Taking and Positive Humour (Teachers)104

Manuscript 3

Figure 1: The Nature of Resilience: Subthemes and the Percentage of Interviews in which they were Mentioned135

Figure 2: Challenges of the Profession: Subthemes and the Percentage of Interviews in which they were Mentioned137

Figure 3: Resilience Strategies (Attitudes): Subthemes and the Percentage of Interviews in which they were Mentioned142

Figure 4: Resilience Strategies (Protective Practices): Subthemes and the Percentage of Interviews in which they were Mentioned144

General Introduction

What does it truly mean to be resilient? Is resilience effortlessly innate or is it an acquired skill developed through the endless battle between thriving and self-destruction? Life poses a variety of difficulties, challenges, and potentially traumatic events, in the face of which some individuals may be overcome by daily stressors or inconveniences while others exhibit positive reactions to the most trying of experiences (Fletcher & Sarkar, 2013). While resilience is believed to involve difficult struggles, my studies demonstrate that self-determination and positive emotions play a crucial role in the process of resilience. To examine and develop resilience across diverse workplaces, it is essential to understand how positive aspects of human psychology can serve as mechanisms of resilience.

A particular area of daily life challenges stems from an individual's employment, which has continued to garner attention. *The National Standard for Psychological Health and Safety in the Workplace* was developed in 2013 by the Mental Health Commission of Canada (MHCC). Within the document, 13 resilience and risk factors in the workplace, previously identified in academic literature, were listed as promoting the psychological health of employees. While the initiative of the MHCC is valiant, the evidence suggests that employers across the globe are still struggling with promoting and fostering resilience within the workplace. This is evidenced by statistics such as the annual cost of burnout exceeding \$300 billion globally (Bretland & Thorsteinsson, 2015). In Canada alone, lost productivity due to absenteeism, presenteeism (attending work while sick), and turnover costs businesses more than \$6 billion in 2011, with a projected cost of \$2.5 trillion over the next 30 years (Mental Health Commission of Canada, 2023). In a 2017 study by Morneau Shepell, a human-resources services provider (www.morneaushepell.com/ca-en/about-us), Canadian employees identified workplace stress as

the primary cause of their mental health problems or illness and a 2019 study revealed one third of Canadian employees reported they were more stressed from work compared to five years ago.

Employment is evolving, and the way people relate to work is ever-changing, involving alternative work arrangements, home-based working, deployments, temporary positions, on-call, freelance, app-based and on-demand work, all of which are increasing (Employment and Social Development Canada, 2016). These changes have altered the standard work arrangement, thereby creating more precarious work arrangements (Benach et al., 2016) which, in turn, can foster stressful situations affecting employee health and well-being not experienced previously by traditional “nine-to-fivers.” Resilience can aid in addressing the variety of issues that emerge from a rapidly evolving workplace (Gerwig, 2018).

Definition

The definition of resilience is a subject of considerable debate and inconsistency. The term resilience has been around since the 1970’s, but it is only within the past several decades that resilience has gained its position as a psychological construct (Bonanno & Diminich, 2013). Despite this, three main factors persist across recent definitions: the presence of adversity, the influence of protective factors, and a positive outcome not generally expected considering the adversity (Stainton et al., 2019). More specifically, psychological resilience may involve differences amongst responses in psychological functioning, such as the interaction among behaviour, cognition, and affect at specific times within specific contexts (IJntema et al., 2019). To remain consistent with the measures used for this research, we will adhere to the definition of resilience provided by Connor and Davidson (2003) “the personal qualities that enable one to thrive in the face of adversity” (p.76). It is important to note that the present research program shifts from a focus on “defining” to a focus on “understanding;” thus, with this shift the proposed

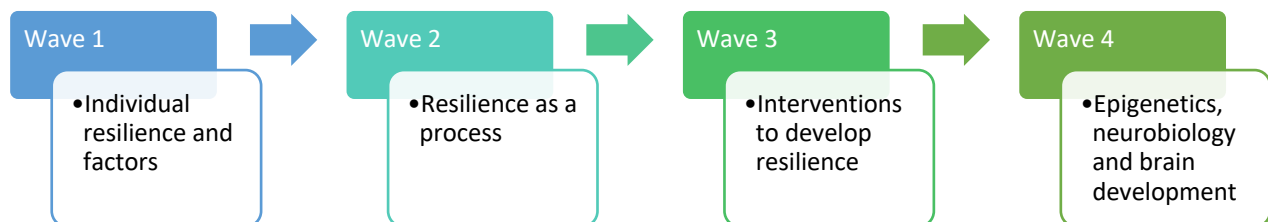
research aims to advance the understanding of the *process* of resilience and its associated mechanisms. As a by-product, the research will aid in the refinement and understanding of how to define resilience.

Richardson (2002) suggested that resilience may be the driving force that controls the universe; while that may be a bit grandiose, the capacity for “ordinary magic” and the opportunity for positive adaptation should be available for everyone (Masten, 2001). The “ordinary magic” premise concludes that resilience is made up of ordinary rather than extraordinary processes. One of the simplest ways to understand resilience is through the longitudinal perspective, asserting that resilience is the ability to bounce back after adversity and go on with life (Netuveli, 2008). Furthermore, resilience can be summed up as the protective factors, processes, and mechanisms that help create a successful outcome despite stressful experiences that carry significant risks for mental health impairments (Hjemdal et al., 2006).

Timeline of Resilience Research: The 4 Waves

Figure 1

Four Waves of Resilience Research



Psychological resilience research has advanced across four major waves (Figure 1). Each wave continues to shape and develop a resilience framework informing research and practice. The first wave focuses on descriptions, basic concepts and methodologies, and the individual. The second wave generated a dynamic view of resilience, with an emphasis on the interactions of individuals and the various contexts in which they develop. The third wave is an essence of intervention, while the fourth wave targets understanding and integrating resilience research across various levels of analysis accompanied by attention to epigenetics, neurobiology, and brain development. Resilience research continues to progress and evolve within each wave denoting that research remains incomplete. The need persists to explore the intricacies of resilience, how to build it within different populations as well as within individuals facing similar adversities (Vella & Pai, 2019).

As mentioned, the first wave of resilience research can be traced back to the 1970's, where it was introduced as a stable personal characteristic (Pines, 1975). Resilience research initially began with the study of maltreated children (Herrman et al., 2011); since then, resilience has been dominated by studies exclusively on children and adolescents, examined through a developmental perspective that often focuses on common adversities like poverty and deprivation (Windle, 2010). Resilience studies on children and adolescents have generally focused on competent functioning after multiple adversities across developmental domains (behavioural, emotional, and educational), as well as functioning into adulthood in areas such as social relationships, job performance, and marriage (Herrman et al., 2011; DiRago & Vaillant, 2007; Bonanno & Diminich, 2013). Furthermore, children who function above the scholastic average and in relationships with peers despite risk(s) are considered to display resilience (Egeland et al., 1993). Additionally, resilience in children is considered to be represented by

accomplishments later in life such as, higher than average career development, greater life satisfaction, healthy relationships, and physical well-being in spite of the presence of risk factors (e.g., low SES) (Baldwin et al., 1993).

Notable contributions of the first wave include the identification of traits (so-called resilient qualities) to indicate the presence of resilience (Atkinson et al., 2009). A “short list” that identified potential assets and protective factors associated with resilience in youth and children was created, including items such as competence, high creativity, effectiveness (Rutter, 1979), autonomy, and belief in oneself (Luthar, 2006). Research that considers resilience to be a personality trait has identified resilient individuals either through clusters of personality characteristics that appear to aid in positive adjustment to loss (Wagnild & Young, 1990) or through the identification of factors that indicate the presence of the proposed personality trait of resilience in different people (Jacelon, 1997; Campbell-Sills et al., 2006; Waugh et al., 2008). Ultimately, the first wave of resilience research produced the identification of protective and promotive factors that were associated with resilience outcomes (Vella & Pai, 2019) and continues to do so across contexts today (Calo et al., 2019; Masuyama et al., 2022).

The second wave of resilience research represents the work that began at the turn of the century. As research on resilience expanded, it became evident that individual and environmental factors were necessary but not sufficient to understand the construct of resilience as a whole. This second wave views resilience as a dynamic process that results from ongoing transactions between an individual and their environment (Fleming & Ledogar, 2008). It is the dynamic processes among individual and environmental factors that explain the interplay between the person, the environment, and the outcome. All models of resilience are consistent with identifying it as a dynamic process that fluctuates across time, developmental stage, and context

(Tusaie & Dyer, 2004). Research and theory aim to understand how factors discovered in the first wave of research contribute and interact to facilitate resilience (Vella & Pai, 2019). The focus on uncovering the processes and regulatory systems associated with the development of resilience, is an ambitious pursuit that is still advancing.

Second wave research has continued to highlight resilience as a dynamic process, an approach with which the present research is aligned. The process of resilience can be considered as the utilization of both assets and resources. Assets refer to protective factors within the individual, such as self-efficacy and/or self-esteem. By contrast, resources such as social supports or programs that allow the opportunity to learn and practice skills are external to the individual (Fergus & Zimmerman, 2005). Furthermore, the process view disputes the notion that resilience is a static state of existence (Ungar, 2008; Waller, 2001). Galli and Vealey (2008) concluded that individuals use a range of coping strategies to gradually experience positive adaptation when dealing with unpleasant emotions and mental struggles. Their findings support the concept that resilience develops over time in the context of person-environment interactions (Egeland et al., 1993).

With the increasing focus on contextual issues and dynamic models of change within resilience research, there has been greater emphasis on the role of developmental systems in causal explanations (Denckla, 2020; Masten, 2011). This has led to a greater emphasis on the role of relationships and systems beyond the family for the development of resilience. It has encouraged research to integrate social and cultural processes into models and research on resilience (Charney, 2004; Cicchetti, 2010; Masten, 2012). Thus, studies on resilience have become more contextualized, including how individuals interact with other systems at levels throughout their life. Furthermore, there has been increased caution with regards to making

generalized conclusions about risk and protective factors across contexts and periods of life (Wright, 2013). It is suggested that the conceptualization of resilience as a process may be the most promising as it is the most holistic perspective (Hartmann et al., 2022), incorporating exposure to adversity and subsequent responses through affective, cognitive, and behavioural mechanisms derived from inherent capabilities to achieve positive outcomes (Hoegl & Hartmann, 2021).

Second wave studies have attempted to explore moderating processes that would explain protective effects as well as mediating processes that help to explain how protective factors work to enhance adaptation (Wright, 2013). Through the increased focus on the processes that might account for resilience, the second wave brought to attention that protective processes might be contextually specific. Such research highlighted the importance of examining the ways in which specific groups exposed to various stressors adapt differently. Additionally, this research explored which factors are protective for which individuals within various contexts (Wright, 2013). Despite this, the underlying mechanisms of resilience and its origins in adversity remain poorly understood.

The type, timing, intensity, and duration of adversity can influence the nature of resilience in addition to how it develops (Bonanno et al., 2015; Hoegl & Hartmann, 2021). Furthermore, there is limited resilience research at the population level, emphasizing the need for more data on the determinants of resilience within specific populations and its effects (Denckla et al., 2020). The limited areas of research leaves great room to examine various taxing life contexts that develop resilience. Hence, the second wave of resilience research is still advancing in order to examine processes and the interplay of protective factors within various contexts, populations, and their impact on the development of resilience.

The third wave of resilience research focuses on interventions and informing practice, prevention, and policy to help create resilience when it is not likely to occur. By examining the mediating and moderating processes, the second wave provided, and continues to provide, a steppingstone for the third wave to inform interventions to promote resilience. The first two waves of research actively aid the third wave in translation of the basic science of resilience to inform and promote resilience (Wright et al., 2013).

Additionally, the third wave consists of theory-driven interventions and experiments that include control and comparison groups to provide clearer models of change. Experiments help demonstrate that there is evidence of change processes. Models of intervention to promote resilience within employee populations continue to evolve and advance as a result of the growing influence of resilience research (Masten, 2011), informed by second wave studies and subsequent findings. Intervention models are considered to be the protective processes that promote the development of resilience (Patterson et al., 2010). Such interventions continue to grow from basic research and experimental data on the processes of resilience, demonstrating that processes can be identified and influenced (Masten, 2011). There is still a lot of work to be done to understand resilience processes (e.g., mediators, moderators, and promoting processes) (Weissberg & Kumpfer, 2003). However, through the evolving work of the second wave, advancement of identifying multifaceted processes leading to resilience interventions will be successfully informed (Wright et al., 2013; Masten, 2019).

The fourth wave of research operates from a lens of biology and neuroscience (Cicchetti, 2010). Research includes the assessment of genes and their expression, brain structure and function, social interaction and advanced statistics that model growth, change and interactions amongst complex systems (Cicchetti & Curtis, 2007; Masten, 2012). Findings from the first three

waves of research continue to inform the fourth, through advances in methodology, theory, and knowledge. The fourth wave emphasizes a multilevel analysis and systems-oriented approach in addition to the integration of knowledge from various fields and levels of analysis (Masten, 2021). Resilience research from different waves and fields that were once independent of each other are coming together to tackle both national and global threats such as natural disasters, terrorism, workplace burnout, and pandemics (Masten & Osofsky, 2010; Norris et al., 2008; Bretland & Thorsteinsson, 2015). The fourth wave is in its infancy but promises to inform and expand the application of resilience by actively advancing research, incorporating previous wave findings, as well as novel neuroscience.

Resilience is not Grit or Hardiness

Resilience, grit, and hardiness are all unique variables demonstrated by statistical models (Ledford et al., 2021). They are distinct constructs that should not be used interchangeably in order to avoid misinformation and misleading work (Georgoulas-Sherry & Kelly, 2019). Grit is considered as the perseverance and passionate pursuit of goals (Duckworth et al., 2007). Hardiness is defined as a collection of attitudes, beliefs and behaviours that are comprised of three components: commitment, control, and challenge (Lambert & Lambert, 1999). While all components of hardiness are considered important for producing resilient outcomes (Maddi & Maddi, 2013), this may vary depending on context and specific components could carry more weight than others. Grit almost solely relies heavily on perseverance while resilience requires more than that, such as adaptability (Caza & Milton, 2012). Unlike grit, resilience may require a different path to be taken toward the goal or a completely new goal. Resilience requires flexibility while grit has been found to be linked to rigidity (Chen & Caza, 2018). Research has demonstrated the importance of using these constructs separately as they exhibit theoretical and

empirical distinctions and through better understanding their differences, trainings and interventions can be made more effective (Georgoulas-Sherry & Kelly, 2019).

Job Demands-Resources (JD-R) Framework

The Job Demands-Resources model is a renowned framework that has been shown to demonstrate how job characteristics and the work environment impact employee well-being and performance (Bakker & Demerouti, 2017). Central to the theory is the assumption that regardless of employment sector, job characteristics are classified as either “Job Demands” or “Job Resources.” Job Demands defined as “the psychological stressors involved in accomplishing the workload, stressors related to unexpected tasks, and stressors of job-related personal conflict” (Karasek, 1979; p. 291), require continued effort and are associated with depleting individuals physiologically and psychologically (e.g., high workload). While resources are considered as the physical, social, or organizational aspects of the job characteristics (Bakker & Xanthopoulou 2013) that promote well-being. Some job demands and resources (e.g., social support) may be found in almost all occupations, while other demands and resources may be occupation specific. For example, the job demands of military members such as danger or mission complexity is different than the job demands of a teacher such as, curriculum mandates or emotional pressures. Globally, the JD-R model examines how demands and resources interact to determine the ultimate impact of these factors on outcomes.

Overall, the JD-R framework studies the processes that lead to employee burnout and well-being (Bakker & Demerouti, 2017). Specifically, the JD-R model consists of two parallel processes, one of which leads to health impairments and the other that is motivational. The health impairment process explains how chronic demands (physical, social, or tasks) will lead to burnout which contributes to decline in health and an increase in absenteeism. The motivational

process describes how resources (i.e. social support) motivate employee engagement resulting in increased well-being at work (Abdurachman et al., 2023; Langseth-Eide, 2022) and lower turnover intentions (Gladfelter & Haggis, 2022).

The JD-R framework is widely supported across various sectors. Situated within the JD-R framework, the following studies highlight personal resources that may help deal with job demands. Individuals at greater risk of stress and adversity are expected to require a larger number of resources to overcome demands (Hobfoll, 2002). Such resources can be considered as protective factors as stated within resilience literature. Strengthening protective factors via resilience building is considered to be a safeguard against stressors and adversity (Vanhove et al., 2015). Thus, proposing that resilience is the ultimate personal resource that will help prevent burnout, turnover intentions, and various other negative outcomes.

Resilience in the Workplace

More than a decade of research has attested to the importance of resilience in the workplace and its implications for employee well-being and job performance (Connor & Davidson, 2003; Hartmann et al., 2020; Robertson et al., 2015). The workplace environment is ever-changing, and resilience is crucial for understanding how employees successfully handle stressors and adversity, yet the factors that lead to its development and how it influences outcomes are still largely under debate (Hartmann et al., 2020). Individuals are dealing with heavier workloads and being asked to perform under greater pressure within the framework of “getting more from less” (Chartered Institute of Personnel and Development, 2009), which has resulted in the increasing interest in examining resilience within the vocational domain. Given the ever changing and unprecedented events of the world, the call to balance physical and mental health while keeping an economy going, the need for personal resilience, especially in the

workplace, has never been so important.

The workplace can provide meaning and purpose, yet being a precarious environment can also cause large amounts of stress. Previous research has shown that having meaning and valued purpose can enhance resilience to stressors (Southwick et al., 2012), such as achievement goals, pressures, and uncertain chances of success (Seery, 2011). Thus, the workplace provides a unique context to both build and exercise resilience. Resilience aids in developing problem-solving skills (Rushton et al., 2015) and minimising distress (Bonanno et al, 2004; Jeamjitvibool et al., 2022), which can be applied to alleviate perceived workplace stress (Guo et al., 2017). Additionally, resilience has been shown to be an important ability that helps prevent job dissatisfaction, burnout, and emotional exhaustion (Guo et al, 2017; Cooke et al., 2013; Harker et al., 2016) as well as increase engagement in organizational citizenship behaviour (Paul et al., 2019). Subsequently, resilience demonstrates its important role for overall organizational success and for providing benefits to employees individually by buffering the demands and/or negative experiences within the workplace.

Resilient workers have been found to perform better, both when self-rating their performance and when rated by their superior (Kašpárková et al., 2018; Luthans et al., 2005; Walpita & Arambepola, 2020), and have a better adaptive capacity (Luthans et al., 2005). Employees who are resilient, actively use their negative experiences in such a way to increase their performance (Sulphey, 2020). Such research views resilience as the capacity that facilitates employees to maintain high levels of motivation thus, putting forth more effort within the workplace (Hartmann et al., 2020). Resilient employees have been found to be more adaptable during uncertainty and create healthier organizations (Hind et al., 1996; Näswell et al., 2019). Recent analyses by organizational researchers suggest resilient people thrive and grow through

setbacks and difficulties (Franken et al., 2021). They bounce back not only to original but even higher levels of performance and find meaning and value within their lives throughout the process (Luthans & Youssef, 2004).

Preliminary research has examined the ability of resilient individuals and their capacity to have reduced harmful influence of job demands or negative work experiences. By drawing on the JD-R theory (Demerouti et al., 2001), resilience can be understood as a personal resource that protects employees from the negative effects of job demands. Resilience has been found to buffer the negative effects of organizational politics (De Clercq & Belausteguigoitia, 2017) and the negative effects of job insecurity (Shoss et al., 2018). Regardless of task accomplishment satisfaction, individuals high in resilience had high positive affect (Gabriel et al., 2011). Furthermore, not only has resilience been established to protect against workplace stressors but has been found to prevent interpersonal work conflict from affecting their non-work domain (Martinez-Corts et al., 2015).

Previous research suggests that resilience may in fact be domain-specific (Harms et al., 2017; Kossek & Perringino, 2016). Thus, there is a greater need to examine resilience and its mechanisms within specific work contexts such as job demands, requirements, and resources change from profession to profession. The present research will not only examine employees across various sectors but also, study specific professions to further resilience literature as a whole.

Mechanisms of Resilience in the Workplace

Mechanisms of individual resilience in the workplace are related to personality traits, personal resources, personal attitudes and mindsets, personal emotions, as well as work demands and resources (Hartmann et al., 2020). Research on the mechanisms of resilience at the

individual level primarily views resilience as a malleable, state-like capacity (Hartmann et al., 2020). The mechanisms of resilience within the workplace are a topic of ongoing research. However, evidence suggests it's a multifaceted phenomenon that is influenced by a variety of factors.

Personality Traits

Specific personality traits have been positively linked to resilience (Förster & Ducheck, 2017). Conscientious individuals (Lyons et al., 2015) were found to have positive relationships with resilience as they were considered to be more organized and hardworking and therefore better able to deal with adversity (Wei & Taormina, 2014). Furthermore, future-oriented individuals (Wei & Taormina, 2014), those high on openness to experience, and emotional stability (Lyons et al., 2015) as well as those who worry (thinking about how to overcome difficulties) were able to thoroughly think through obstacles (Wei & Taormina, 2014) thus resulting in greater resilience. The trait of agreeableness has been found to positively impact resilience specifically within healthcare workers (Coco et al, 2021) and disaster support workers (Sato & Kakeda, 2022). Lastly, openness to experience has been found to be significantly correlated with resilience. Openness to experience coincides with imagination, creativity, and progressiveness (McCrae and Costa, 2012), qualities that contribute to perspective taking and adjustment to changes particularly within the workforce (Lyons et al, 2015).

Personal Resources

Various personal resources have been positively associated with resilience, including expertise related to the job (Cameron & Brownie, 2010), self-efficacy (Guo et al., 2017), business confidence (Yang & Danes, 2015), having an internal locus of control (Stevenson, 2011) and the ability to maintain a work-life balance (Jensen et al., 2008). Establishing work-life

balance and the ability to set boundaries has been found to build resilience, as time off allows individuals to replenish their resources (Meek et al., 2003) better able to encounter future challenges or stressors. It is suggested that self-efficacy enables individuals to feel better able to address work challenges, fostering persistence and perseverance. Researchers have discovered that when one's feelings of control over a situation is positively related to their resilience. Specifically, having an internal locus of control has been found to foster resilience within healthcare professions (McCallister & McKinnon, 2009; Stevenson et al., 2011). It is suspected that having a sense of ownership over circumstances and future events aids in the development of resilience. Förster and Duchek (2017) found that employee's emotional intelligence or empathy was strongly linked to their resilience, demonstrating the importance of social competencies and the significance of connections at work supporting health and well-being. An individual's ability to express both positive and negative emotions within a relationship has been found to be positively related to resilience (Dutton & Heaphy, 2003). Thus, indicating the important role emotional intelligence plays in workplace relationships and subsequent resilience. Aligning with self-determination theory (Deci & Ryan, 2000), employees who have their need for competence satisfied, tend to demonstrate higher levels of resilience (Verleynsen et al., 2015).

The personal resource of self-reflection and reflective communication demonstrated a positive relationship with resilience amongst social workers (Kinman & Grant, 2011). Additionally, self-reflection has been found to be important in contributing to resilience amongst military personnel (Crane et al., 2019; Kho et al., 2023). It is proposed that the encouragement of self-insights for coping contributes to resilience capacities (Crane et al., 2019).

Attitudes and Mindsets

Evidence suggests that when employees find purpose and meaning, and a sense of one's professional mission within the workplace, this will help their resilience in stressful times (Cameron & Brownie, 2010; Zunz, 1998). It is suggested that having a sense of meaning provides direction in times of uncertainty (Hartmann et al., 2020), demonstrated by Saldanha and Barclay (2021) who found that employees who engaged with meaning finding could alter aversive experiences and find opportunities to foster resilience. Furthermore, the attitude of self-compassion has been found to contribute to positive coping strategies (Barnard & Curry, 2011) therefore building emotional intelligence and subsequently contributing to the development of resilience (Lefebvre et al., 2020). Personal attitudes towards one's job have been explored in relation to resilience. For example, being committed to one's job is positively related to resilience (Ablett & Jones, 2007). Additionally, self-directed individuals have been found to have greater resilience (Lyons et al., 2015) demonstrated amongst military personnel (Elbogen et al., 2018; Piertzak et al., 2010). Lastly, growth mindsets have been found to foster resilience across populations (Baldwin et al., 2020; Crane et al., 2019). A growth mindset promotes the ability to view stressors as personal learning and growth opportunities in addition to believing in personal malleability.

Emotions

The study of emotions on resilience has begun and conceptualizes resilience as a state-like capacity that may result from experiencing positive emotions at work (Hartmann, 2020). Positive emotions in the workplace (Sommer et al., 2016) and maintaining a positive attitude through the use of humour has been found to foster resilience (Cameron & Brownie, 2010). Additionally, demonstrations of negative emotions by an employee's partner have been found to

be negatively related to career resilience (Green et al., 2011). It is suggested that the experience of positive emotions expands an individual's thought-action repertoire thus leading to greater positive affect and well-being (Hartmann, 2020).

Outcomes

Outcomes of resilience can be categorized into four categories at the individual level: performance, mental and physical health, work-related attitudes, and change-related attitudes. Research on outcomes of resilience has examined it as both a stable personality trait and a malleable state-like process. Both examine how it contributes to greater performance levels, better ability to deal with workplace stressors, and the ability to facilitate a positive mindset within the workplace.

Performance

Research has demonstrated that an employee's resilience positively relates to their job performance across occupational groups (Chen & Chi-Kin Lee, 2022; Nindl et al., 2018; Walpita et al., 2020). This is consistent when performance was both rated by oneself and when rated by a supervisor (Luthans et al., 2005; Luthans et al., 2007). Resilient employees have also been shown to be more likely to engage in organizational citizenship behaviours (Jung & Yoon, 2015). Furthermore, resilience is positively related to career success within the military (Covington et al., 2023), healthcare (Stoffel & Cain, 2018) and financial sectors (Ahmad et al., 2019).

Mental and Physical Health

Previous research has explored the connections between resilience and measures of mental and physical health. Resilience has been found to be positively connected with mental health (Li et al., 2021; Ungar & Theron, 2020) and has a negative relationship with perceived

stress and burnout (education, military, and healthcare; Richards et al., 2016; Mullen et al., 2021; Coleman et al., 2020; Sellers et al., 2019), psychological distress (Zou et al., 2016), and emotional exhaustion (Shoss et al., 2018; Yang et al., 2018). Furthermore, workplace resilience was found to be negatively correlated with depression symptoms (McLarnon & Rothstein, 2013).

Biopsychosocial strain (sleep problems, low energy, limited concentration) has been found to be related to lack of perceived resilience (Ferris et al., 2005) and biopsychosocial strain has been associated with cardiovascular disease (Power et al., 2020). Additionally, resilience has been found to be associated with a decrease in negative physical health symptoms (Osofsky et al., 2018). Specifically, resilience was found to have significant buffering effects on the relationship between poor sleep and psychological distress, indicating that resilience may protect further negative outcomes in poor sleepers (Hughes et al., 2018). Psychological distress can be manifested as physical health amongst employees with associated symptoms such as chest pain; chronic fatigue, weakness, aches, gastrointestinal issues, weight loss/gain, and or teeth grinding (Fordjour et al., 2020). Resilience has been found to buffer the negative effects of psychological distress (Azzahra & Paramita, 2019) indicating its potential ability to protect against negative physical health symptoms.

Work-Related Attitudes

Resilience is positively related to employee's job satisfaction (Badran & Youssef-Morgan, 2015) and career satisfaction (Lyons et al., 2015), resulting in less change fatigue (Brown et al., 2018) and reduced turnover intentions. Furthermore, resilience has been linked with increased work happiness (Aboalshamat et al., 2018), reduced cynicism at work (Malodia & Vashisht, 2019), organizational commitment (Paul et al., 2016), and work engagement (Ojo et al., 2021). Furthermore, resilience has been found to be positively related to an employee's

perception of their psychological contract with their employer (Cho et al., 2017). Resilience contributes to positive work-related attitudes in turn contributing to overall organizational success.

Change-Related Attitudes

Resilience has been found to be favourably linked with employee's openness to organizational change, a particularly important attitude for retention, organizational evolution, and significant work-life events (i.e., retirement, career changes). Particularly openness has been found to be positively related to an employee's commitment to change via positive affect (Shin et al., 2012). It is suspected that resilience as an employee resource, increases coping abilities to deal with change related stressors (Shin et al., 2012). Interestingly, resilience has been found to play an influential part when individuals go through career changes. Specifically, career-resilient army staff had more positive reactions to the transition to civilian life (Gowan et al., 2000). Resilience facilitating change-related attitudes remains important personally and professionally across employees of all sectors.

Implications

By conceptualizing resilience as a developable capacity, studies continue to advance to determine mechanisms of resilience. The present research examines the relationships between autonomous motivation, emotional intelligence, challenge appraisals, risk-taking, positive humour, and resilience. To further illuminate the process of resilience and establish important mechanisms of resilience within employees, connections between each of the mechanisms are explored. The following sections will introduce each of the concepts, beginning with the theoretical background of Self-Determination theory and then introducing in model sequence each of the mechanisms and elucidating their relationships.

Self-Determination Theory

Self-Determination Theory (SDT; Deci & Ryan, 1985, 2017) is a universal theory of human motivation that examines how biological, social, and cultural conditions support or thwart the inherent capacity for psychological growth, engagement, and wellness. It is an intricate and empirically supported theory comprised of six sub-theories concerning motivations underlying behaviours and personality development (Ryan & Deci, 2017). SDT suggests that motivation is a reflection of the intention to act and is constructed along a continuum of six types of motivation regulation (Deci & Ryan, 2017). Each type of motivation explains the degree to which intentions are started and regulated based on the strength of autonomous versus controlled motivation. Therefore, providing a measurable impact on characteristics of behaviour and cognition. The impact is further defined through intentions from the most to least self-determined behaviour: intrinsic motivation, four forms of extrinsic motivation (integrated regulation, identified regulation, introjected regulation, external regulation), and amotivation.

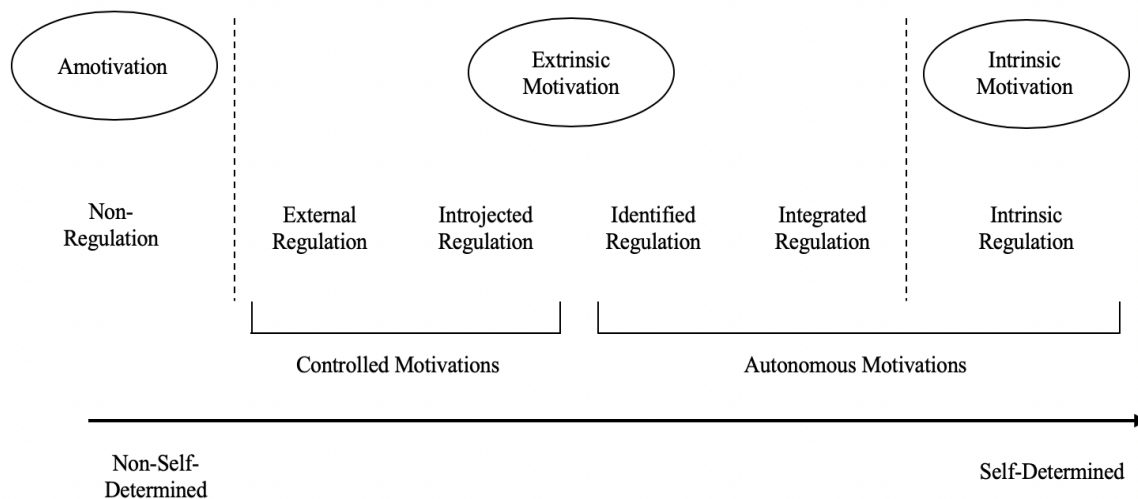
Organismic Integration Theory (OIT)

Through exploring motivation orientation, SDT, more specifically Organismic Integration Theory, differentiates between types of motivation along a continuum (Figure 1) from amotivation to autonomous (Deci & Ryan, 2017). Whether or not a person's motivation for behaviour is externally regulated (controlled) or internally regulated motivated (autonomous) is examined by SDT (Deci & Ryan, 1985). It is through motivation orientation that we can understand the soundness behind effort, pain, and difficulty resulting in worthy and rewarding activity (i.e., when stressors act as a steeling like effect for future stressors; McGee et al., 2018). Deci and Ryan (1985) state that autonomous motivation offers the platform for people to recognize their authentic self, whereas controlled motivations are experienced as sources of

external or internal pressures. Autonomously motivated individuals behave in ways that they have full sense of choice, and their actions are self-initiated. Their behaviour is driven by self-regulated purposes (personal goals, values, connection to others). Furthermore, controlled motivation involves behaviour controlled by external contingencies of reward or punishment, while autonomous motivation involves engagement in behaviours for its' own sake', characterized by enthusiasm, excitement, and joy (Roth et al., 2007). When compared to controlled motivated individuals, autonomously motivated people tend to not let external influences affect them as they are more concerned with how they feel about the circumstance. They are more aware of both external and internal influences and tend to be more inclined to be influenced by internal ones.

Figure 2

Self-Determination Continuum (adapted from Ryan & Deci, 2017)



Motivation Orientation and Resilience

Deci and Ryan (2000) describe motivation as the forces that facilitate people to begin and continue behaviour that leads to desired outcomes and goals. Both motivation and well-being

research suggests that employee motivation may have important implications for their resilience (Crane, 2017).

SDT allows us to consider motivation outside of what is or is not enjoyable through the exploration of potential external influences. SDT provides an understanding of motivation orientation and how certain environments (e.g., the workplace) facilitate or thwart motivation.

Recent research suggests that one's motivation orientation type may play a critical role in resilience (Crane, 2017), as studies consistently demonstrate a strong link between intrinsic motivation and multiple positive mental health outcomes (González Olivares et al., 2020; Hackman & Oldham, 1976; Kasser & Ryan, 1996; Nix et al., 1999; Ntoumanis et al., 2021). Therefore, by further understanding how to foster autonomous forms of motivation in employees, not only will performance increase, but resilience as well (Crane, 2017).

Literature continues to gain traction to support the notion that an autonomous motivation orientation helps to reduce the negative effects of stressors and/or adversity. Weinstein and Ryan (2011) suggest it does so via four mechanisms; aiding in efficiently downregulating perceived stress, supporting responses to stressors to be less defensive and encouraging more challenge appraisals, orchestrating an inclination to take interest in one's emotions, and orienting individuals towards a lifestyle where needs are better fulfilled and choices that result in less pressure. Through needs satisfaction, individuals are able to better emotionally regulate, participate in active coping, experience increased vitality and energy thus, resulting in resilience (Weinstein & Ryan, 2011).

Research has shown that autonomous motivation facilitates various psychological constructs. Autonomous motivation has been found to be a trustworthy predictor of well-being, performance, workplace satisfaction, retention (Gegenfurtner et al., 2009; Yelon et al., 2004),

and emotional intelligence (Perreault et al., 2014). Furthermore, autonomous motivation sets the foundation for individuals to appraise situations as a challenge rather than a threat, therefore acting as protection against negative effects of job strain and burnout (Hakanen et al., 2005; Crane, 2017). Additionally, research alludes to the potential connection between autonomous motivation and constructs such as risk-taking (Power & Goodnough, 2018), and humour (Ceha et al., 2021). The foundational nature of autonomous motivation in relation to emotional intelligence, challenge appraisals, risk-taking, and positive humour is discussed below.

Emotional Intelligence

Emotional intelligence is defined as “the set of abilities (verbal and nonverbal) that enable a person to generate, recognize, express, understand, and evaluate their own, and others’, emotions in order to guide thinking and action that successfully cope with environmental demands and pressures” (Van Rooy & Viswesvaran, 2004, p. 72). Salovey and Mayer (1990) divide emotional intelligence into four dimensions: perception of emotion, integration and assimilation of emotion, knowledge about emotions, and management of emotions. The ability to normalize and make one’s emotions, whether positive or negative, work for oneself is at the core of emotional intelligence (Edward & Warelow, 2005). Emotional intelligence can more simply be understood as the ability to identify, express, and understand emotions of oneself and others, and incorporate emotions into thought (Matthews et al., 2002).

Emotional Intelligence and Motivation

Emotional intelligence is comprised of understanding why people attend to, process, and regulate their emotions. What accounts for this individual variation may be linked to motivation orientation. The capacity to identify, process, and manage emotions is important for health and well-being that can partially be attributed to an underlying self that is motivational in nature,

oriented toward greater organization and unity, grounded in SDT (Perreault et al., 2014). Greater self-determination has been found to be associated with increased emotional intelligence.

Suggesting that the more people participate in their daily lives with a sense of autonomy and volition, the more skilled they'll become in responding to and using emotion laden information (Perreault et al., 2014).

In fact, two motivational orientations (autonomous and controlled motivation) are identified as the two primary ways of self-regulating behaviours and emotions (Weinstein & Hodgins, 2009). An autonomous motivation orientation is regulating one's behaviour via integrated goals and values, and incorporating a sense of choice and endorsement of one's own behaviour (Ryan and Deci, 2000). Weinstein and Hodgins (2009) suggest that inherent autonomous motivation facilitates non-defensive behaviours and leads individuals to process thoughts and emotions effectively.

The capacity to integrate effective and adaptive self-regulation of action is reflective in the manner with how one meets their moment-to-moment experiences. Hodgins and Knee (2002) state that greater self-determination enables an individual to be more open toward potentially threatening and difficult events. Consequently, self-determined individuals report less desire to escape, and engage in fewer self-serving attributions regarding failure (Hodgins et al., 2006). After viewing traumatic film clips, autonomously oriented individuals have been found to exhibit better emotional regulation and integration of negative affect (Weinstein & Hodgins, 2009) contributing to overall emotional intelligence.

Emotional Intelligence and Resilience

Emotional intelligence has been considered a prerequisite to becoming resilient (Magnano et al., 2016), suggesting that research targeting this potential connection would be

useful, both to characterise the nature of the connection between these two concepts and to explore how to foster the development of each. Across different populations, previous research has found emotional intelligence can positively predict and facilitate resilience (Trigueros et al., 2020; Magnano et al., 2016; Delhom et al., 2020) demonstrating that higher levels of emotional intelligence result in higher levels of resilience (Sarrionandia et al., 2018). Emotional intelligence has proven to be valuable within the workplace and is considered to be a valuable predictor of job performance (Van Rooy & Viswesvaran, 2004; Miao et al., 2017), academic performance, emotional labour, organizational citizenship behaviour (Jung & Yoon, 2015), life satisfaction, stress, and work-family conflict (Miao et al., 2016). Within specific vocations, a strong link has been found between employees' social competencies such as emotional intelligence and their resilience (Magnano et al., 2016; Grant & Kinman, 2011). Additionally, emotional intelligence has been found to facilitate resilience when perceived stress is present, suggesting that effects of emotional intelligence influences resilience at the onset of stress (Schneider et al., 2013).

Emotional intelligence facilitates avenues towards desired behaviours and achievement of objectives. One way is that emotional intelligence helps individuals to be more aware of their own emotions and that awareness aids in understanding why one may be feeling that way and choose to respond in a healthy manner (Vitello-Cicciu, 2003). Indicating that emotional intelligence will enable an individual who perceives stress to identify the source of the stress and carry out the necessary steps to manage it subsequently facilitating their resilience. Furthermore, emotional intelligence helps with understanding how emotions affect behaviour.

Individuals with emotional intelligence skills have been found to be better equipped to confront their internal biases and assumptions (Moon, 2021). This may be facilitated through

emotional self-awareness and accurate self-assessment, two behavioural competencies of the emotional intelligence dimension - self-awareness (Goleman, 2001). It is suspected that those who are able to question their internal biases and assumptions regarding a perceived stressful situation would be able to have a more holistic view and therefore experience greater resilience.

Another dimension of emotional intelligence is social awareness, represented by the behavioural competency – empathy (Goleman, 2001). Having high emotional intelligence and subsequent empathy allows individuals to better understand and respond to the emotions of others thus, creating social bonds and relationships. In turn, the creation of social bonds and relationships contribute to levels of resilience as demonstrated in previous research demonstrating how social support is positively related to resilience across samples (Hill et al., 2020; Sippel et al., 2015; Vartak, 2015).

The significance of emotional intelligence as a prerequisite for developing resilience has been established, although further clarification is required to understand the exact nature of this relationship. Additional research is also needed to solidify the connection between the two and how to foster both within specific social contexts such as the workplace. Overall, the present research predicts that emotional intelligence will be a key mediator in the relationship between autonomous motivation and resilience. Thus, individuals with greater emotional intelligence will demonstrate greater overall resilience.

Challenge Appraisals

Individuals experience a range of emotions prior to events, especially while anticipating the occurrence of stressful events. Lazarus and Folkman's (1984) theory of stress and coping defines stress as the perceived imbalance between demands on the individual and the individual's coping resources. In short, cognitive appraisals are the personal interpretation of

whether or not a situation is perceived as stressful or not. For example, an employer asks an employee to take over supervision while he is away. “Individual A” may perceive the situation as stressful because he has never done this before while “Individual B” perceives the situation as beneficial because it is the perfect opportunity to develop and test his skills as a supervisor. The example demonstrates how the range of emotions differs between individuals when there is an impending stressor and therefore will impact the outcome/appraisal of such event. Evidently, there are significant differences amongst individuals and the way in which they perceive stress. How an individual interprets an event, and the outcomes of specific thinking patterns may help to account for the response differential of resilient individuals versus non-resilient individuals.

Cognitive appraisals can be further divided into primary appraisals and secondary appraisals (Lazarus & Folkman, 1984). During primary appraisals the individual evaluates a situation as positive, negative, or irrelevant. If the situation is deemed negative, the individual will move on to make a secondary appraisal, during which the individual may evaluate whether or not they have the ability or resources to cope with the situation at hand. An individual will either appraise the stressor as a threat or challenge. A stressor is perceived as a threat when individuals do not believe they have the resources to effectively cope and there may be loss or harm in the future. A stressor is perceived as a challenge when an individual identifies the situation as demanding/stressful but conquerable, which results in the individual benefiting (Campbell et al., 2013). In other words, a situation is viewed as a threat when the individual lacks the resources to cope with the stressor but is viewed as a challenge when the individual’s resources are deemed adequate to cope with the stressor.

Challenge Appraisals and Motivation

Challenge appraisals are the way in which an individual perceives a stressful situation as conquerable with their effort and resources as well as an opportunity for growth and development (Burns, 2018). Autonomously motivated individuals are more likely to perceive stressors as challenges due to the opportunity to develop one's skills, abilities, and achieve goals. Embracing a stressor or adversity as an opportunity for personal growth may lead to more effort and persistence when adversity arises. Autonomous individuals have been found to have greater ownership over goals and greater personal accountability, thus supporting their engagement with challenge appraisals (Deci et al., 2017).

Furthermore, it is suggested that motivation orientation is an important predictor of threat and defence (Hodgins et al., 2010) and effects of stress appraisals have been found to be partially explained by different types of motivation (Parker et al., 2019). SDT considers autonomous motivation to be associated with self-structures and self-esteem. More specifically, autonomous motivation is interconnected with integrated and secure self-processes (Deci & Ryan, 2017). Self-structures have been found to influence one's threshold for threat, with autonomous motivation resulting in a higher threshold (Hodgins & Knee, 2002). Hodgins et al., (2010) suggest autonomous motivation and the underlying secure self, enables individuals to process information with lower defensiveness and to integrate the information rather than defend against it subsequently, interpreting events as challenges instead of threats. This may be explained through autonomous motivation orientations supporting individuals to take interest in their experiences, desire to obtain new knowledge, and experiences when facing stressors, therefore reducing perceived stress experienced (Weinstein & Ryan, 2011). Overall, suggesting that those

who are autonomously motivated would be more inclined to appraise events as challenges versus threats.

Challenge Appraisals and Emotional Intelligence

How an event is appraised has been linked to an individual's level of emotional intelligence. Salovey et al. (1999) theorized that persons with higher emotional intelligence cope better with the emotional demands of stressful encounters. The presence of emotional intelligence has been found to impact the anticipation of stressful events, and how these events are appraised. The way in which an individual interprets a potentially stressful situation (i.e., challenge or threat) shapes the way they respond to it (Lazarus & Folkman, 1984). Emotional intelligence has a positive relationship with coping processes, it is believed that through the managing of emotions, stressors may decrease (Folkman & Lazarus, 1980), thus, appraising situations or events as a challenge rather than threat. Moradi et al., (2011) believe that the significant connection between emotional intelligence and coping helps to explain how emotions organize processes that can facilitate the effects of decreasing the frequency and intensity of stressors and even enduring stressful situations. Therefore, emotional intelligence aids in the organizational process that can facilitate a challenge appraisal instead of a threat appraisal. Overall, individuals high on emotional intelligence exhibit greater self-efficacy to cope and appraise situations as challenges rather than threats (Mikolajczak & Luminet, 2007).

Challenge Appraisals and Resilience

Previous research on resilience and the appraisal of events as either a challenge or threat has been relatively meagre yet has shown to be fruitful. Crane and Searle (2016) explored the relationship between stressors in the workplace and their capacity to promote resilience in a longitudinal study on working adults and revealed that challenge stressors had the potential to

create opportunities for building resilience. Furthermore, findings by Kern and Zapf (2020) found positive effects of challenge stressors on resilience amongst a sample of employees further supporting the importance of challenge stressor appraisals within organizational contexts. While Kochenour (2020) found that higher challenge levels of appraisal are related to higher self-reported levels of resilience. Ultimately, research suggests that challenge stressors can positively predict psychological resilience.

Altogether, mediation or moderation, there is a suggested relationship between resilience and challenge appraisals that requires greater investigation. The present research aims to demonstrate how challenge stressors as a mediator will facilitate the process of resilience, subsequently providing support for the hypothesis that those who assess stressors as challenge appraisals will demonstrate greater resilience than those who assess them as threat appraisals.

Risk-Taking

Leigh (1999) defines risk-taking as behaviour that involves the possibility of harm or loss, but also provides the opportunity to obtain rewards. Furthermore, risk-taking can be divided into stimulating or instrumental risk. Stimulating risk happens when the aim of the risky behaviours is for the purpose of seeking pleasure, often accompanied by pleasant physiological arousal (i.e., sex, drugs, extreme sports). This type of risk is often associated with thrill seekers and a need for stimulation that isn't preceded by an analysis of potential loss (Makarowski, 2013). Instrumental risk is engaged upon when an individual wants to attain an intended goal (Brunet & Sebiston, 2011) and are motivated to think in an analytical and rational way (Makarowski, 2013). With this type of risk-taking behaviour, positive emotions may be felt but they are not the intended purpose, risk-taking is considered as a tool or instrument used for obtaining a goal. The risk is a result of rational calculations of possible losses and behaviours

(strategy, tactics) to set an objective with the focused on an expected result. Risk-taking behaviours are commonly studied in relation to economic activity, decision-making, and positive affect (Xing & Sun, 2013) as well as in demanding contexts such as natural disasters (McCleskey, 2021). Combining both stimulating and instrumental, risk-taking research suggests it may be connected to the need to adapt, survive, maintain a positive self-image, and/or desire to reach a goal.

Risk-Taking and Motivation

Risk propensity is an individual's willingness and readiness to take risks and can be influenced from factors such as experience, knowledge, personality, and/or environment (Cooper, 2003). Autonomously motivated individuals have been found to be more likely to take risks as they are less concerned with failure or negative consequences and more focused on potential benefits (Gagné, 2014). Furthermore, autonomous motivation orientation has been linked to greater self-confidence and greater willingness to experiment and learn from experiences (Deci, 2017). Thus, allowing these individuals to reframe failure or setbacks from risk-taking as growth opportunities and push to pursue goals despite obstacles.

Risk-Taking and Resilience

Risk-taking is often viewed as negative or irrational behaviour (Lupton & Tulloch, 2002), however, there are hints throughout research that risk-taking may have a potentially positive role in fostering psychological resilience. Risk-taking is considered to be a construct that helps individuals to persist through the turbulence and uncertainty of different environments (Sulphery, 2020). Such persistence is suggested to be linked to resilience. The specific relationship between risk-taking and resilience appears to be elusive but preliminary research has provided insight. Mayer and Lukacs (2014) revealed that risk-seeking groups (pro social, anti-social, and extreme

sportsman) have proven to be more resilient compared to control groups. Thus, indicating that individuals who take risks are more capable of coping with extreme conditions, problems and/or setbacks, precisely what encompasses resilience. Van Der Vegt et al. (2015) suggested that taking risks will enhance resilience by facilitating a quicker recovery from whatever setback or stressors they encountered. Through the examination of risk-taking in a military context, it is suggested that perceptions of one's invincibility or survival skills results in feeling less susceptible to adverse consequences (Kelley et al., 2012) therefore indicating a presence of resilience. The present research aims to broaden the notion of risk-taking importance as a mechanism of resilience and link it to the overall development of resilience. It is hypothesized that individuals that are willing to take risks have lower perceptions of failure because they expose themselves to failing more often, consequently training themselves and therefore will be more psychologically resilient.

Humour

Humour can be thought of as an approach to sharing moments of lightness and balance the seriousness of everyday tasks (Gostick & Christopher, 2010). For decades the benefits of humour for health, especially when dealing with stressful events, has been widely accepted (Cousins, 1979). It is suggested that humour has stress-buffering effects for individuals in regard to mental health outcomes (Rupert & Kent, 2007; Riolli & Savicki, 2010; Mesmer-Magnus et al., 2012) and is considered a character strength that contributes strongly to life satisfaction (Proyer, 2013; Ruch, 2010). Sense of humour is considered an adaptive strength that is multidimensional and comprised of loosely related positive traits that aid individuals in various ways (Ruch 1996; Ruch & Hofmann, 2017). Research has demonstrated the association between personality traits and disorders, with humour ability and production (Forabosco, 2008; Heintz, 2017). Sense of

humour has the ability to change our thoughts, considerations, and reactions through the improvement of positive emotions (Zahra et al., 2020), and has been conceptualized as a cognitive ability, emotion-related temperament trait, an attitude, coping strategy or defense mechanism (Martin et al., 2003).

The function humour serves in everyday life is connected to psychosocial well-being. Psychologists and health researchers have stated various advantages of humour such as helping to dissipate misery, decreasing displeasure, improving confidence, adaptive coping, enhancing life satisfaction, and positively impacting emotional states (Ramírez-Maestre, 2020; Ruch & Hofmann, 2017). Higher levels of humour have been found to correspond with lower levels of depression and anxiety (Deaner & McConatha, 1993; Kuiper & Martin, 1998; Nezu et al., 1988) by eliciting positive emotions and building personal resources while also reducing negative emotions, all contributing to well-being (Ruch & Hofmann, 2017). The production and use of humour has been suggested to help maintain psychological well-being and alleviate stress by appraising events, environments, and stressors more positively and in a less threatening manner (Bhattacharyya et al., 2019; Perchtold, 2019). Specifically, using humour by creating positive reinterpretations of self-relevant, threatening situations has been found to be related to better stress resilience and emotional regulation (Kalisch, 2015). Additionally, humour has been shown to significantly increase in growth following major traumatic events (Peterson et al., 2008) and has been found to be a predictor of post-treatment recovery from depression (Huta & Hawley, 2010) contributing to overall well-being.

Humour and Motivation

Autonomously motivated individuals have been found to have higher levels of well-being and positive affect (Gillet et al., 2013), suggesting its role in facilitating humour. A greater sense

of control over one's life, facilitated through an autonomous motivation orientation, shows promise to increase happiness, joy, and humour. Furthermore, autonomous motivation has been linked to greater self-awareness and emotional intelligence (Perreault et al., 2014) in turn contributing to one's ability to find humour in difficult situations.

Humour and Risk-Taking

Risk-taking and humour may at first seem like a strange pairing, however, the use and participation in humour often if not always requires an element of risk. The mere initiation of humour is often a potentially risky endeavour (McCreaddie & Payne, 2014), especially outside of one's immediate social circle. There is risk in being funny or trying to use humour demonstrated by research on comedians who have been found to leave secure employment to pursue comedy full-time (Hellstrom & Lapsley, 2016). A good sense of humour has been linked to risk-taking and improved well-being (McCreaddie & Payne, 2014), suggesting that those who have risk-taking tendencies are more likely to be humourous and find humour. The relationship between risk-taking and humour may be understood through a search for psychological balance. When topics or events that elicit fear are paired with humour, it is an effective way to maintain balance between anxiety and monotony (Lyng, 2004). Furthermore, humour can be a platform for people to discuss their fears and anxieties, allowing the discussion of taboo subjects, thoughts, and feelings to be discussed in culturally permissible ways (Billig, 2005). When there is risk-taking and subsequent fear/anxiety, humour is a useful coping tool and instrument to establish a proper emotional foothold (Lyng, 2004) thus, resulting resilience may occur.

Humour and Resilience

There are various ways of assessing resilience to stress, one such way through the lens of positive psychology is the assessment of humour. Positive psychology views humour as “a

personal quality that promotes resilience and well-being by means of cognitive appraisal of stressful events” (p.846, Fritz et al., 2017). Early research by Werner and Smith (1982), illustrates the humour-resilience link and suggests that humour is a contributing factor to building resilience. Furthermore, there is a call for research to integrate a humour styles model (with the Humour Styles Questionnaire measure; Martin et al., 2003) with a resilience approach to help clarify past conflicting results of humour and resilience research. Such an approach acknowledges humour as a multifaceted construct calling for the separation of humour styles to determine their impact on resilience. Examining humour styles offers a more precise examination of its role in building resilience by specifically dividing positive humour styles (affiliative and self-enhancing) from negative humour styles (aggressive and self-defeating) (Kuiper, 2012). Both affiliative and self-enhancing humour have been connected to greater well-being and resilience (Fritz et al., 2017; Cann & Collette, 2014; Cheung & Yue, 2012) however, their connection to resilience has yet to be fully understood. Previous research demonstrating the benefits of positive humour styles indicates the potential role they may play in building resilience.

A wealth of research is available on the beneficial effects of humour leading to greater well-being, which supports the resilience approach, and its contribution has been quite indicative. Nevertheless, there is very limited empirical support for the concept that greater humour results in bouncing back from adversity as predicted by resilience models (Cheung & Yue, 2012; Kuiper, 2012; Yaprak, 2018). The study of humour contributes to the study of positive experiences (Ruch & Hofmann, 2017), thus, studying humour’s contribution to resilience highlights the positives that come from adversity and therefore facilitates the development of resilience. Previous findings demonstrate humour as an important factor in

shaping resilience, stating it enables individuals to stock up personal resilience to enhance well-being (Cann & Kuiper, 2014), yet its role as a mechanism in the process of resilience requires greater understanding. Lastly, there is a call for further clarification of the advantageous effects of various styles of humour on resilience (Kuiper, 2012).

COVID-19 Pandemic and the Workplace

When the pandemic began in March of 2020, the world focused on how to stop the spread of COVID-19 resulting in changes in every part of life including the workplace. Many sectors had to adopt various ways to conduct business in order to accommodate physical distancing while in person services were mandated with extensive rules and protocols. Businesses that were able to, moved to remote work. The changes within the workplace as a result of the pandemic had various impacts for employees worldwide.

The COVID-19 pandemic created a new set of challenges and stressors for workers, not previously experienced. Contracting the virus and its potential health consequences was an imminent risk for those working outside of their homes, in addition to a plethora of new policies and procedures to adhere to. Remote workers encountered new stressors including the difficulties of virtual communication as it was less participative/interactive, more disjointed, and harder to read non-verbal communication (Colley & Williamson, 2020). Furthermore, an increase in technostress (i.e. inability to adapt or cope with new technology) was found as individuals experienced work intensification (Boyer-Davis, 2020; Tahir, 2021).

Research has shown how traumatic experiences can stimulate resilience (Zoellner & Feeny, 2014) thus, the COVID-19 pandemic had an evident impact on psychological resilience within employees. There were numerous negative psychosocial effects of the pandemic, yet positive outcomes were also possible. Most studies on resilience within the workplace during the

pandemic examined the construct within healthcare professionals and demonstrated its association with lower levels of work-related stress (Hong et al., 2021; Huffman et al., 2021) and anxiety (Mosheva et al., 2020). Resilience was found to have a strong effect on intentions to stay employed (Liu et al., 2021) and significantly associated with work engagement (Ojo et al., 2021). Furthermore, resilience was found to significantly influence post-traumatic growth (Liu et al., 2021), was negatively associated with post-traumatic stress disorder (Li et al., 2021) and not surprisingly played an integral role in mediating the relationships between post-traumatic stress disorder and post-traumatic growth (Fino et al., 2023). Resilience was also found to mediate the relationship between depression and burnout (Jose et al., 2020; Serrao et al., 2021; Zhang et al., 2021) as well as the relationship between effects of social support and mental health (Hou et al., 2020). Despite the hardships caused by the pandemic, several studies worldwide found employees to score high on resilience (Bozovic et al., 2021; Leask & Ruggunan, 2021; Van Der Feltz-Cornelis et al., 2020). Resilience research on employees during the pandemic highlighted the importance of several resilience factors (individual resilience, family functioning, social support, social participation, and trust in healthcare institutions) in association with mental health and well-being (Coulombe et al., 2020). The pandemic made employees vulnerable to an increase in workloads, emotional exhaustion, job insecurity, anxiety, and psychological disorders yet, also brought about the opportunity to build resilience at the individual and organizational level (Rahmadian &Ediati, 2022).

Goals and Hypotheses

The main objective of the present research is to identify and solidify mechanisms of resilience (Manuscripts 1, 2, and 3). There is a great need to determine the contributors of the development of resilience, so that particular constructs can be targeted for building resilience in

the future. By identifying and solidifying mechanisms of resilience, training and education will have greater success in fostering resilience within individuals and across contexts. Resilience is malleable, thus it is suitable for intervention (Robertson, 2015), and tailoring such interventions to be the most efficacious as they can be is vital for success. The use of a SDT framework, improves upon previous interventions targeting resilience, as it utilizes an evidence-based approach. Autonomous motivation has a strong link to a range of beneficial mental health outcomes (Crane, 2017), and has been a consistent predictor of performance, well-being, and workplace satisfaction (Gegenfurtner et al., 2009). Furthermore, autonomous motivation creates a condition for individuals to interpret situations more positively, consequently acting as a buffer to negative effects of the workplace (Hakanen et al., 2005), thus, it is hypothesized that autonomous motivation will be a primary foundational mechanism of resilience.

The second objective of the present research is to provide further support and expand upon the importance of previously identified mechanisms of resilience and examine two novel mechanisms (Manuscripts 1, 2, and 3). Within this objective, sub-objectives include solidifying and expanding upon the importance of previously identified mechanisms (emotional intelligence and challenge appraisals) and examining two novel mechanisms (positive humour and risk-taking) of resilience. More specifically, the present research aims to further strengthen the contributions of emotional intelligence and challenge appraisals specifically in the development of resilience within the workplace context. Additionally, the contribution of constructs not previously well established (positive humour and risk-taking) will be examined to advance existing literature and provide hopeful avenues for future research. It is hypothesized that all four constructs will be important mechanisms of resilience and mediate the relationship between autonomous motivation and resilience.

The third objective is to clarify the resilience process as a whole by examining the order of mechanisms that individuals use to foster their resilience. It is only recently that resilience has been increasingly viewed as a dynamic process similar to the development of a skill (Malhi et al, 2019). The changing view of resilience demands greater clarity in characterizing what drives its development.

Given the multi-faceted nature of resilience and its dynamic development, it is important to consider crucial contextual factors and the accompanying mechanisms that influence its growth (Reeve et al., 2020). Factors internal to the individual may suffice to combat adverse situations and foster adaptation, contributing to the development of resilience but may not be enough. By examining resilience and its mechanisms within the workplace, the present research considers the unique environment of the workplace and how it affects resilience and its mechanisms.

Resilience is a capacity that develops over time depending on person-environment interactions (Egeland et al., 1993). The objective of Manuscript 3 is to explore the impact of the person-environment interaction on resilience. Manuscript 3 will be analyzed using qualitative methods, to help better understand and expand upon the nuances of resilience that quantitative data cannot illustrate. Additionally, it will explore concepts specifically related to the military environment and particularities of the role as an infantry soldier and stressors affecting resilience. Therefore, the present research is designed to help clarify what facilitates resilience within the context of the workplace and specific occupations.

Globally, the present research will aim to address the current methodological shortcomings by following a mixed methods approach within the workplace domain. The proposed model was preliminarily tested with a working student population, followed by various

employees and then a specific occupation (teachers) to verify its tenability. Lastly, a high stress occupation (infantry soldiers) was interviewed to gather insights and provide a deeper understanding of resilience. By applying quantitative and qualitative approaches across general and specific workplace sectors, the proposed research will help fill the gaps in the current literature. Results of the systematic review by Bryan et al. (2019) indicated how resources such as motivation are beneficial in response to both chronic and acute adversities, thus, offering a foundation for future research examining the role of psychological resources in the development of resilience. Through the application of SDT, the present research will build upon this initial foundation. Not only will it contribute to the workplace context but also the sporting context as there is evidence of conceptual overlap (Bryan et al., 2019).

In sum, the present research will explore the interplay among cognitive, emotional, behavioural, and social factors that could protect against stressors, and that may enhance functioning by fostering the development of resilience.

It is hypothesized that:

1. Autonomous motivation will be positively associated with resilience (Manuscript 1, 2, and 3)
2. Emotional intelligence, challenge appraisals, positive humour, and risk-taking will all be positively associated with resilience (Manuscript 1, 2, and 3).
3. Emotional intelligence will precede challenge appraisals in a serial mediation between autonomous motivation and resilience (Manuscripts 1 and 2);
4. Risk-taking will precede positive humour in a serial mediation between autonomous motivation and resilience (Manuscript 2);

5. Emotional intelligence and challenge appraisals will sequentially mediate the relationship between autonomous motivation and resilience regardless of the context of a pandemic or not (Manuscript 1);

Overview of Manuscripts

Manuscript 1 (Study 1 & 2)

Study 1 and 2 build upon previous research by examining the role of emotional intelligence and challenge appraisals as mechanisms of resilience. Furthermore, it tested a serial multiple mediation model where emotional intelligence and challenge appraisals mediated the relationship between autonomous motivation and resilience. The second study aimed to replicate the results from study 1 within the context of a pandemic. Similarities and differences between populations are explored.

Manuscript 2 (Study 3 & 4)

Study 3 & 4 build upon Study 1 and 2 by examining the role of emotional intelligence and challenge appraisals as mechanisms of resilience within various employees (Study 3) and specifically teachers (Study 4). Additionally, they examine two novel mechanisms, risk-taking and positive humour as mechanisms of resilience. Study 3 and Study 4 test a serial multiple mediation model where emotional intelligence and challenge appraisals mediated the relationship between autonomous motivation and resilience. Separately, each study tests another serial multiple mediation model where risk-taking and positive humour mediated the relationship between autonomous motivation and resilience.

Manuscript 3 (Study 5)

Study 5 builds upon previous research by examining mechanisms of resilience within a specific population. Semi-structured interviews were conducted with infantry soldiers, and a

deductive content analysis approach was used to examine the nuances of resilience mechanisms. Furthermore, resilience strategies (attitudes and protective practices) as well as insights into defining resilience are explored.

Manuscript 1: Enduring Education & Employment: Examining Motivation and Mechanisms of Psychological Resilience

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Abstract

Resilience, the ability to bounce back from difficult events, is critical for an individual to negotiate stressors and adversity. Despite being widely studied, little is known about the processes involved in the development of resilience. Importantly, Self-Determination Theory (SDT) may be a relevant framework in this respect. Thus, the purpose of this research is to examine the mechanisms of resilience through a SDT framework to identify and understand key mechanisms that contribute to the growth of resilience. Indeed, there are reasons to believe that emotional intelligence and challenge appraisals mediate the relationship between autonomous motivation and resilience. Two studies, using self-report questionnaires were conducted with employed young adults (pre- and during the pandemic) to test the tenability of our proposed models. Study 1 and 2 showed that emotional intelligence and challenge appraisals were mediators of autonomous motivation and resilience. Study 2 revealed statistically significant differences in mean scores of autonomous motivation and emotional intelligence between non-pandemic students and pandemic students. Based on the findings, it is suggested that autonomous motivation, emotional intelligence, and challenge appraisals are important aptitudes for the development of resilience. Furthermore, findings suggest that social isolation caused by the pandemic may have affected levels of emotional intelligence. Ultimately, the research expands the literature on both SDT and resilience by offering a unique multiple mediation model for predicting the development of resilience within the employed undergraduate population.

Introduction

Workplace stressors are experienced daily regardless of occupation or position thus, the development and application of psychological resilience, the ability to bounce back from these stressors (Connor & Davidson, 2003), is critical to well-being and optimal daily functioning (Staudinger, 1993). Many stressors in the workplace are considered chronic (i.e. persistent or reoccurring; Sliter et al., 2014), such as interpersonal conflict, organizational constraints, and workload (Spector & Jex, 1998). Young adults in the workforce encounter different stressors than their older counterparts, they are more likely to be unemployed or underemployed, least likely to be able to work from home, and most likely to be disadvantaged in weak economies as they are less experienced, have greater job insecurity, and are often lowest on seniority lists (Gould & Kassa, 2020).

Psychological resilience proves to be vital within the workplace as individuals experience stressful events every day. This could be especially true for young adults, who are also engaged in post-secondary studies. As they are likely to experience the chronic stressors described above, in addition to those associated with their academic endeavors such as sacrificing study time for working hours, maintaining a work-life-study balance, experiencing greater isolation and lack of social activities (Pusztai & Kocsis, 2019; Carnevale & Smith, 2018; Moreau & Leathwood, 2006). Of importance, stressors, and adversity, to a certain degree, have been linked with opportunity for growth (Cicchetti, 2010; Lupien et al., 2018), thus the feeling of success experienced by working as a post-secondary student may be directly related to their level of resilience, and in fact, improve their level of resilience. Balancing both post-secondary studies and employment is required by numerous individuals, and the application of resilience in both contexts may be immensely beneficial to understand how individuals with competing demands

thrive in the face of adversity. Given that 77% of university dropouts in Canada occur at the end of their second year of studies (Finnie et al., 2014), research conducted with this population may be timely to understand the factors that contribute to their well-being and could prevent attrition.

Although less studied, many factors have been proposed to predict and facilitate resilience. Emotional intelligence (Trigueros et al., 2020; Magnano et al., 2016; Delhom et al., 2020) and cognitive appraisals (Lupe et al., 2020; Baker et al., 2021) are thought to be particularly important to the development of resilience (Kern and Zapf, 2020). Specifically, higher levels of emotional intelligence and positively appraising stressors result in higher levels of resilience (Kern and Zapf, 2020, Sarrionandia et al., 2018). Building on previous research, the present studies aim to build on these findings to reinforce emotional intelligence and cognitive appraisal as important mechanisms of resilience.

In March 2020, the world was met with the unexpected SARS-Cov-2 pandemic. The uncertainty and chaos that ensued was felt worldwide. While everyone was isolated and ordered to stay at home by public health authorities, many post-secondary students dealt with challenges of navigating their studies online as well as maintaining their employment. The purpose of the second study is to examine resilience within an undergraduate working population during this rather unique, unprecedented, and extremely difficult time to help solidify the proposed mediation model.

Resilience

Resilience is a dynamic psychological construct that identifies both processes and outcomes associated with successful adaptation to difficult or challenging life experiences (Wu et al., 2013). Simply, it is comprised of personal qualities that allow individuals to thrive in the face of adversity (Connor & Davidson, 2003). The process of resilience is produced from

continuous transactions between an individual and their environment (Fleming & Ledogar, 2008; Vella & Pai, 2019). The process is comprised of using both personal assets and resources. Assets are protective factors such as self-efficacy and/or self-esteem, while resources are external to the individual such as social supports (Fergus & Zimmerman, 2005; Zimmerman, 2014; Liu et al., 2021). Resilience fluctuates across time, circumstance, and life contexts (Luthar et al., 2000; Stainton et al., 2019), yet, it has also been found to have cascading effects across life domains (Masten & Tellegan, 2012). The capacity and process of overcoming stress and adversity while maintaining normal psychological and physical functioning is the essence of resilience (Russo et al., 2012). Two components of resilience include emotional intelligence and cognitive appraisal, which, when present, positively contribute to developing resilience.

Emotional Intelligence

Emotional intelligence can more simply be understood as the ability to identify, express, and understand emotions in oneself and others along with the ability to incorporate emotions into thought and ability to normalize both positive and negative emotions (Matthews et al., 2002; Kotsou et al., 2019). Salovey and Mayer (1990) divide emotional intelligence into four dimensions: 1) perception of emotion, 2) integration and assimilation of emotion, 3) knowledge about emotions, and 4) management of emotions. Emotional intelligence has been identified in the literature as an important construct contributing to better academic and work performance, positive relationships, and better physical health (Perreault, 2014). In addition, emotional intelligence has been found to negatively relate to indices of psychopathology (Malterer et al., 2008; Piqueras et al., 2020) anxiety disorders, and depressive symptoms (Summerfeldt et al., 2011; Romano et al., 2020).

Emotional intelligence has been found to be a springboard for various psychological constructs. Individuals with high emotional intelligence have been found to exhibit greater self-efficacy, enhanced performance (Lyons & Schneider, 2005; MacCann et al., 2020), increased positive affect (Schneider et al., 2013), greater job satisfaction, well-being, and engagement (Brunetto et al., 2012). Remarkably, emotional intelligence has been linked to promoting challenge appraisals (Lyons & Schneider, 2005; Mikolajczak & Luminet, 2008; Schneider et al., 2013; Lee et al., 2019; Delhom et al., 2020) demonstrating its importance for facilitating challenge appraisals and subsequent resilience.

Several aspects of emotional intelligence are linked to resilience. One of which is the impact emotional intelligence has on problem-solving. Being emotionally intelligent helps enable thinking by using emotions to influence and inform (Mayer et al., 2016), helping to think clearly and rationally to guide thoughts and decisions even when under stress. Furthermore, emotionally intelligent individuals are able to effectively manage their own emotions to achieve desired outcomes by monitoring their emotional reactions and only engaging with ones that are helpful (Mayer et al., 2016). Having such awareness of one's emotions allows them to properly analyze events and not become overwhelmed thus, resulting in greater resilience. Lastly, emotionally intelligent individuals have been found to have greater social awareness and empathy (Goleman, 2001), resulting in better understanding of the emotions of others and helping to create social bonds and connections both personally and professionally. Social supports have been found to enhance resilience particularly within higher education students (Brewer et al., 2019).

Emotional intelligence has been considered a prerequisite to becoming resilient (Magnano et al., 2015; Thomas & Zolkoski, 2020), suggesting that research targeting this

potential connection would be useful, both to characterise the nature of the connection between these two concepts and to explore how to foster the development of each. Additional research is needed to solidify the connection between the two constructs and how to foster both within specific social contexts such as educational institutions and the workplace.

Cognitive Appraisal

Individuals experience a range of emotions prior to events, especially the occurrence of stressful events. Lazarus and Folkman's (1984) theory of stress and coping considers stress as an imbalance between demands on an individual and their coping resources. How an individual interprets an event, and the outcomes of specific thinking patterns may account for the response differential of resilient individuals versus non-resilient individuals. In short, cognitive appraisal is the personal interpretation of whether or not a situation is perceived as stressful or not.

An individual will either appraise the stressor as a "threat" or "challenge". A stressor is perceived as a threat when individuals do not believe they have the resources to effectively cope and there may be loss or harm in the future. A stressor is perceived as a challenge when an individual identifies the situation as demanding/stressful but conquerable, which results in the individual's benefiting often from increased performance and a stronger sense of accomplishment (Cavanaugh et al., 2000; Campbell et al., 2013). Such research indicates a beneficial connection of challenge appraisals and subsequent resilience (Schilbach et al., 2021). Previous research on resilience and the appraisal of events as either a challenge or threat has been relatively meagre yet has shown to be fruitful. Crane and Searle (2016) explored the relationship between stressors in the workplace and their capacity to promote resilience in a longitudinal study on working adults and revealed that challenge stressors had the potential to create opportunities for building resilience. They discovered that when employees had exposure

to challenge stressors within their workplace, there was greater opportunity for the development of resilience. In turn, this result suggests that challenge stressors can positively predict psychological resilience.

Self-Determination Theory

Self-Determination Theory (SDT; Deci & Ryan, 1985, 2017) is a global theory of human motivation that examines how biological, social, and cultural conditions support or thwart the inherent capacity for psychological growth, engagement, and wellness. Within SDT, the sub-theory Organismic Integration Theory (OIT) differentiates between types of motivation along a continuum from amotivation to autonomous (Deci & Ryan, 2017). It is suggested that autonomous motivation orientation is the foundation for increasing cognitive and behavioural performance (Legault & Inzlicht, 2013). Deci and Ryan (1985; 2002) state that autonomous motivation helps people recognize their authentic self and generates behaviours and aptitudes that stem from intrinsic means (Roth et al., 2009). On the other hand, controlled motivation is expressed and experienced as behaviours and aptitudes that are less than ideal, that are often triggered by sources external to the self, such as punishments or rewards. Therefore, controlled motivation drives a person for short term goals, but can ultimately lead to poorer choices, actions, and performances.

Lazarus (1991) links emotions with motivation, arguing that emotions are reactions to the fate of goal pursuit. Furthermore, motivation is essential for understanding cognitive appraisals and coping responses in person-environment interactions. When an individual encounters stress and feels autonomous, competent, and related, (the components of autonomous motivation) they are more likely to appraise demands/constraints as challenges not threats (Ntoumanis et al., 2009), as discussed above. It is suggested that appraisals of stress are shaped by the type of

motivation of an individual (Amiot et al., 2004; Skinner & Edge, 2002). Self-determined motivation will result in more positive appraisals of stress than low or non-self-determined motivation (Ntoumanis et al., 2009). Motivation orientation undoubtedly influences cognitive appraisals, in turn influencing the development of resilience.

Autonomously motivated people are not driven by external influences because they are more concerned with the nature of the action itself. They participate and perform behaviours for their own sake rather than for the pursuit of rewards (Dickinson, 1995). When an individual is entirely autonomously motivated, behaviours are in line with the individual's attitudes, feelings and views, and there is congruency between the self and their actions. Deci and Ryan (2000) describe motivation as the forces that facilitate people to begin and continue behaviour that lead to desired outcomes and goals.

Both motivation and well-being research suggests that employee motivation may have important implications for their resilience (Crane, 2017). Motivation is the force that offers the incentive for initiating and persisting with actions that lead to desired outcomes or goals (Deci & Ryan, 2000). The reasons employees are motivated to perform at work may have important inferences for their resilience. The type of motivation a person experiences has, has been suggested to play a critical role in resilience, which has been linked to various beneficial mental health outcomes (Nix et al., 1999). Thus, if autonomous motivation is facilitated in employees, it is expected that their level of resilience will also increase (Crane, 2017).

Central to SDT is the motivational perspective that individuals are capable of fully integrating behaviours for optimal motivation (Ryan, 1993). Such an integrative capacity for effective and adaptive self-regulation is also apparent within an individual's moment-to-moment experiences. Greater self-determination allows a person to be more open and less defensive

towards potentially threatening or difficult situations (Perrault, 2014), viewing them more as “challenges” as opposed to “threats”. Hodgins et al. (2006) found that self-determined individuals had less desire to escape in response to failure while Weinstein & Hodgins (2009) discovered that autonomously motivated individuals exhibited better emotional regulation and integration of negative affect.

Furthermore, SDT postulates that people with high autonomous motivation are more emotionally intelligent (Perreault, 2014) and have higher challenge appraisal, which directly contribute to the building of resilience (Crane & Searle, 2016). However, research has yet to explore the role of motivation orientation and its impact on emotional intelligence and cognitive appraisal collectively, and how these mechanisms impact resilience.

Unusual Circumstances: COVID-19 Pandemic

When the pandemic began in March of 2020, the world focused on how to stop the spread of COVID-19 and began to implement measures not once experienced. Physical distancing was encouraged in many countries as a way to stop the spread of the virus (Kamga & Eickemeyer, 2021). Many sectors had to adopt various ways to conduct business in order to accommodate physical distancing, seeing in person services with extensive rules and protocols. While other businesses that were able to, moved to remote work. The education system was impacted greatly, transitioning to conducting online or hybrid-learning (Mamahit & Situmorang, 2022).

Online/distance learning presented both challenges and opportunities for students. For example, there was greater flexibility and autonomy for students to engage with their studies and more easily balance work and studies. However, a variety of problems were found to be associated with online learning such as, stress, anxiety, and depression (Lindasari et al., 2021).

Technology problems, personal issues, and psychological impacts were found to stem from online learning (Sharin, 2021). Academic, financial, and social issues as a result of online learning have been found to be related to the development, or exacerbation of, stress (AlAteeq et al., 2020). Not only did students have to experience a new way of learning and assessment but live with the uncertainty and ongoing impact of the COVID-19 virus.

Working during the pandemic created a whole new set of challenges and stressors not previously encountered. Individuals working outside their home dealt with the imminent risk of potentially contracting the virus and the subsequent health ramifications along with an array of new policies and procedures to follow. While those who worked remotely, encountered new stressors such as, the challenge to communicate virtually, as it was less participative/interactive, more disjointed, and harder to read non-verbal communication (Colley & Williamson, 2020). Additionally, levels of technostress (i.e. inability to adapt or cope with new technology) were found to increase as individuals experienced work intensification (Boyer-Davis, 2020; Tahir, 2021). In contrast, there were some positive outcomes, those working from home reported less work/family conflict and less exhaustion due to increased autonomy (Colley & Williamson, 2020).

Individuals who held forms of employment while maintaining their studies during the pandemic were amongst a variety of populations uniquely impacted by the pandemic. The exceptional context presented the working student population with novel challenges and benefits not previously experienced. Further research into what contributes to the development of resilience across contexts, in this case within employed university students is warranted, as resilience has been demonstrated to have positive impacts on mental health and well-being in the

workforce. These studies will aid in our understanding of the mechanisms of resilience and help facilitate better training and counselling.

Present Studies

The two studies herein explore the roles of motivation, emotional intelligence, and cognitive appraisal in fostering resilience and present a new model in order to understand their relationship. In the following studies, resilience is specifically examined through direct and indirect effects of autonomous motivation, emotional intelligence, and challenge appraisals on resilience in non-pandemic students (NPS) and pandemic students (PS). Additionally, direct and indirect associations were investigated to determine if these associations showed similar patterns across the two groups of employed students.

Additionally, mean scores of autonomous motivation, emotional intelligence, challenge appraisals and resilience are compared between NPS and PS to evaluate differences.

In this paper, a new model is proposed, integrating SDT (Deci & Ryan, 1985), to understand how fundamental human motivation shapes cognitive aptitudes, which in turn, influence the development of resilience in a sample of employed post-secondary students. The first study was conducted to examine constructs required to cultivate resilience within working, post-secondary students while the second study builds on this by examining the same model in a unique circumstance, employed students working and studying during the COVID-19 pandemic.

Hypotheses

1. Employed post-secondary students, who are more autonomously motivated, will have higher overall resilience scores;

2. In employed post-secondary students, emotional intelligence and challenge appraisals will mediate the relationship between autonomous motivation and resilience (Study 1 & 2);
3. There will be little to no differences between the samples of employed students (Study 1 & Study 2) as the constructs (autonomous motivation, emotional intelligence, challenge appraisals and resilience) will hold true to both samples regardless of non-pandemic or pandemic context.

Study 1

The first study explored the relationships between motivation orientation (autonomous motivation) and mechanisms of resilience (emotional intelligence and challenge appraisals) within a group of employed post-secondary students, to determine if those who were autonomously motivated had higher levels of resilience. This study used a cross-sectional survey design. The second objective of this first study was to determine if emotional intelligence and challenge appraisals mediate the relationship between autonomous motivation and resilience.

Methods

Participants

A sample of 329 undergraduate post-secondary students who were also employed, either part-time, full-time, or casual were recruited through the University of Ottawa's System of Participation in Research (ISPR) platform. Participant's age ranged between 17 and 29 years old ($M = 19$, $SD = 3.85$) and the majority were White (62%), followed by Asian/Pacific Islander (14%), Black or African Canadian (10%), Other (12%), and Hispanic or Latino (2%). The majority of participants were employed part-time (71%), female (80%), and in their first year of undergraduate studies (61%).

Data Collection

All questionnaires were completed online using Qualtrics, a secured survey website (www.qualtrics.com). All participants completed an online consent form and consented to participation prior to being redirected to the survey questions. Participants completed demographic information including gender, age, ethnicity, and status of employment, as well as a series of questionnaires outlined in detail below. A copy of the demographic questions as well as full scales can be found in Appendix B.

Measures

The following validated scales were employed to measure general motivation orientation, emotional intelligence, cognitive appraisal, and resilience.

Motivation

Global Motivation Scale (GMS; Guay et al., 1999) identifies motivation orientation. Six types of motivation (intrinsic, integrated, identified, introjected and external) and amotivation are assessed via the GMS. Each motivation orientation has a 3-question subscale in which participants respond on a 7-point Likert scale, whether they agree disagree to the statement. Scores were averaged across the intrinsic and identified regulation items to compute the autonomous motivation index. This scale showed satisfactory internal consistency values across the seven subscales as demonstrated by a Cronbach's α ranging from .75 to .91 (Guay et al., 2003).

Emotional Intelligence

Emotional intelligence was assessed using the Trait Emotional Intelligence Questionnaire – SF (Petrides, 2009). This scale measures global trait emotional intelligence. Fifteen facets of trait emotional intelligence are assessed, each with a two-item subscale in which participants

respond on a 7-point Likert scale, whether they completely agree or completely disagree regarding a specific statement. A global Emotional Intelligence (EI) score is calculated along with scores on the four trait EI factors. Satisfactory internal consistency of all 20 variables is demonstrated with robust alphas. Cronbach's α range from .68 to .89.

Cognitive Appraisal

The Cognitive Appraisal Scale (CAS; Skinner & Brewer, 2002) consists of 18-items that measure both threat and challenge styles of cognitive appraisal. The threat subscale consists of 10 items and the challenge subscale consists of 8 items. Participants respond on a 6-point Likert scale, whether they agree or disagree with the statement. Satisfactory internal consistency was demonstrated with Cronbach's $\alpha = .92$ for the threat scale and .80 for the challenge scale (Skinner & Brewer, 2002).

Resilience

Connor-Davidson Resilience Scale (CD-RISC; Connor & Davidson, 2003) assessed resilience across 25 items. Participants respond on a 5-point Likert scale, from not true at all to true nearly all of the time, as to how they identify with a statement. The total score ranges from 0-100, with higher scores indicating greater overall resilience. Cronbach's α for the full scale is .89 (Connor & Davidson, 2003).

Results

Correlational Analyses

Bivariate correlations and descriptive statistics for all variables are presented in Table 1. As hypothesized, significant positive correlations were found between the following constructs of interest: autonomous motivation, emotional intelligence, challenge appraisals and resilience.

Table 1*Bivariate Relations and Descriptive Statistics NPS (N=329)*

| <i>Variable</i> | <i>1</i> | <i>2</i> | <i>3</i> | <i>4</i> |
|---------------------------|----------|----------|----------|----------|
| 1. Autonomous Motivation | — | .28** | .44** | .42** |
| 2. Emotional Intelligence | | — | .52** | .72** |
| 3. Challenge Appraisals | | | — | .60** |
| 4. Resilience | | | | — |
| <i>M</i> | 5.06 | 4.73 | 4.84 | 3.70 |
| <i>SD</i> | 0.81 | 0.69 | 0.63 | 0.54 |

Note. ** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Mediation Analyses

A serial, multiple mediation analysis (Hayes Model 6) was conducted using the PROCESS (v4.2) macro by Hayes (2013). The results from these analyses are reported in Table 2. Consistent with previous research, the mediation model showed a significant direct effect of autonomous motivation on resilience ($c' = .10, p < .00$). As hypothesized, significant direct effects of autonomous motivation on emotional intelligence ($a_1 = .24, p = .00$) and challenge appraisals ($a_2 = .26, p = .00$) emerged. Emotional intelligence was significantly related to challenge appraisals ($a_3 = .39, p = .00$), as anticipated, as both are mechanisms of resilience and previous research has found strong correlations between the two factors. Furthermore, a significant direct effect of emotional intelligence on resilience ($b_1 = .44, p < .00$) along with a significant direct effect of challenge appraisals on resilience ($b_2 = .20, p = .00$) was found, supporting our primary hypotheses that there would be a significant indirect effect through emotional intelligence and challenge appraisals, respectively (point estimate = .02, 95% BCa CI [.01, .03]).

Table 2

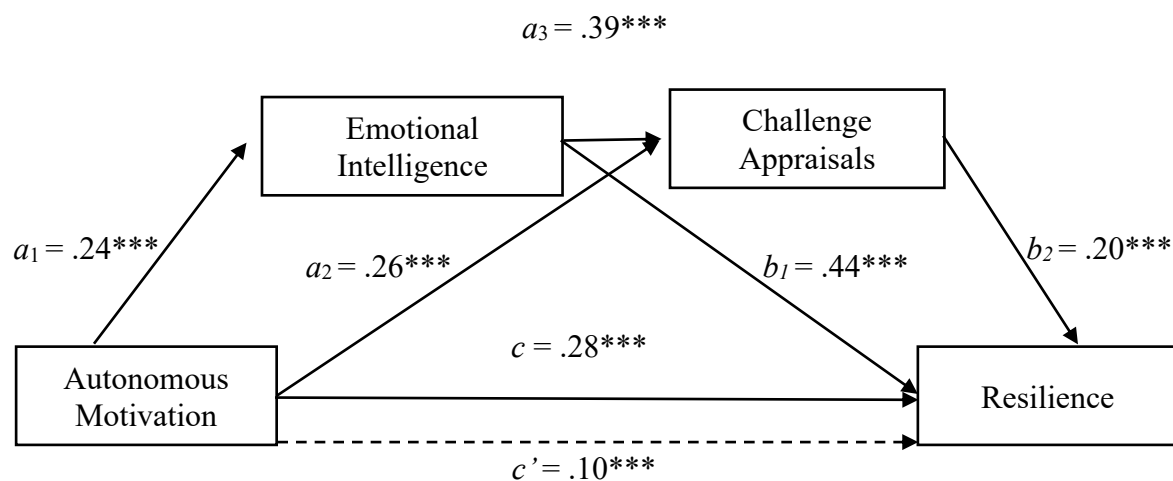
Indirect effects of autonomous motivation on resilience through emotional intelligence and challenge appraisals NPS (N = 329)

| | Point Estimate | Product of Coefficients SE | Bootstrapping BCa 95% CI | |
|------------------------|----------------|-------------------------------|--------------------------|-----|
| | | | LL | UL |
| Indirect Effects | | | | |
| Autonomous Motivation | .10 | .03 | .05 | .15 |
| Emotional Intelligence | .10 | .02 | .06 | .15 |
| Challenge Appraisals | .05 | .01 | .03 | .08 |
| Both Mediators | .02 | .01 | .01 | .03 |
| TOTAL | .28 | .03 | .21 | .34 |

Note. BCa, bias corrected and accelerated; CI = confidence interval; *LL* = lower limit, *UL* = upper limit; 5000 bootstrap sample.

Figure 1

Serial multiple mediations model of the effect of autonomous motivation on resilience directly and indirectly through emotional intelligence and challenge appraisals (NPS)



Note. Dotted line, path c' , represents the effect of autonomous motivation on resilience when emotional intelligence and challenge appraisals are not included as mediators.

Study 2

The second study was designed to repeat our serial mediation model (Hayes Model 6) used in Study 1, but with the intention to examine the impact of the COVID-19 pandemic on the

proposed outcome measures. Specifically, the goal of the second study was to investigate whether the direct and indirect associations already demonstrated, showed similar patterns across the two groups of working students prior to, and during, the COVID-19 pandemic. Data was collected from a group of working students (NPS) prior to the pandemic and in a second group of working students a year and a half into the pandemic (PS). It was hypothesized that there would be little to no differences between the samples of students as the constructs would hold true to both samples regardless of non-pandemic or pandemic context. Additionally, because data collection was over a year into the pandemic, it is suspected that no changes would have been noticed due to habituation of the pandemic.

Method

Participants

A sample of 386 Canadian post-secondary students who were also employed (either part-time or full-time) were recruited through the University of Ottawa's System of Participation in Research (ISPR) platform. Participant's age ranged between 16 and 29 years old ($M = 19$, $SD = 2.97$) and the majority were White (57%), followed by Asian/Pacific Islander (15%), Other (15%), and Black or African Canadian (12%). The majority of participants were employed part-time (71%) and (29%) employed full-time or casual. The sample consisted of 75% females and 25% males, and the majority of students were in their first year of post-secondary studies (61%).

Data Collection

The same data collection procedure as Study 1 was followed.

Measures

The same validated scales used in Study 1 were used in Study 2.

Results

Correlational Analyses

Bivariate correlations and descriptive statistics for all variables are presented in Table 3.

As predicted, significant positive correlations emerged between the following constructs of interest: autonomous motivation, emotional intelligence, challenge appraisals and resilience.

Table 3

Bivariate Relations and Descriptive Statistics PS (N=386)

| <i>Variable</i> | <i>1</i> | <i>2</i> | <i>3</i> | <i>4</i> |
|---------------------------|----------|----------|----------|----------|
| 1. Autonomous Motivation | — | .40** | .56** | .54** |
| 2. Emotional Intelligence | | — | .56** | .72** |
| 3. Challenge Appraisals | | | — | .67** |
| 4. Resilience | | | | — |
| <i>M</i> | 5.23 | 4.60 | 4.76 | 3.63 |
| <i>SD</i> | 0.89 | 0.69 | 0.67 | 0.55 |

Note. ** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Mediation Analyses

A serial, multiple mediation analysis (Hayes Model 6) was conducted using the PROCESS (v4.2) macro by Hayes (2013). Consistent with previous research, the model (Hayes Model 6) showed a significant direct effect of autonomous motivation on resilience ($c' = .12, p < .00$). As predicted, significant direct effects of autonomous motivation on emotional intelligence ($a_1 = .31, p = .00$) and challenge appraisals ($a_2 = .30, p = .00$) emerged. Emotional intelligence was significantly related to challenge appraisals ($a_3 = .38, p = .00$). Furthermore, a significant direct effect of emotional intelligence on resilience ($b_1 = .38, p < .00$) along with a significant direct effect of challenge appraisals on resilience ($b_2 = .24, p = .00$) surfaced. To interpret our main hypotheses, the results revealed a significant indirect effect through emotional intelligence

and challenge appraisals, respectively (point estimate = .03, 95% BCa CI [.02, .04]). The results from these analyses are reported in Table 4.

Table 4

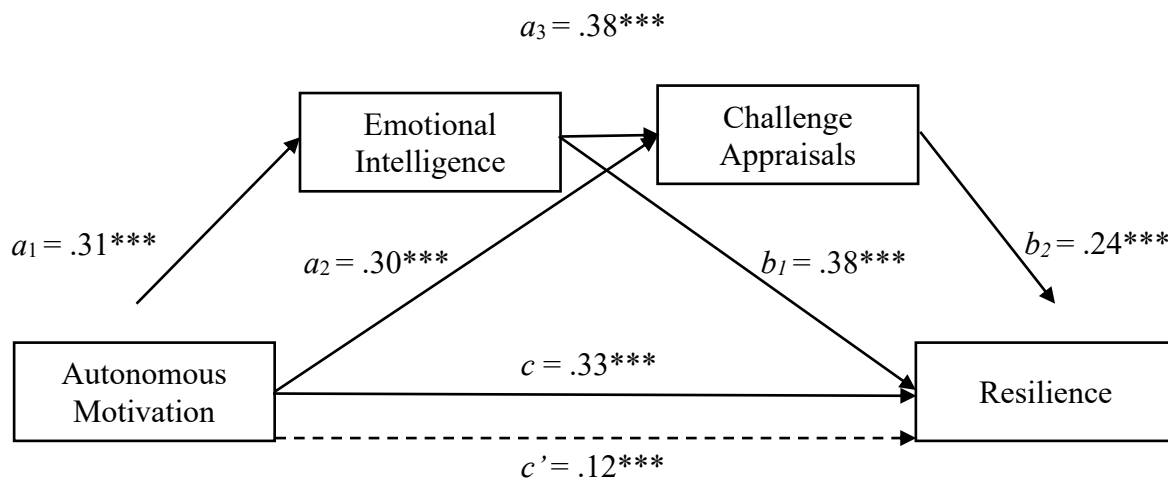
Indirect effects of autonomous motivation on resilience through emotional intelligence and challenge appraisals making PS (N = 386)

| | Point Estimate | Product of Coefficients SE | Bootstrapping BCa 95% CI | |
|------------------------|----------------|-------------------------------|--------------------------|-----|
| | | | LL | UL |
| Indirect Effects | | | | |
| Autonomous Motivation | .12 | .02 | .06 | .15 |
| Emotional Intelligence | .12 | .02 | .09 | .15 |
| Challenge Appraisals | .07 | .01 | .05 | .10 |
| Both Mediators | .03 | .01 | .02 | .04 |
| TOTAL | .22 | .02 | .18 | .27 |

Note. BCa, bias corrected and accelerated; CI = confidence interval; LL = lower limit, UL = upper limit; 5000 bootstrap samples.

Figure 2

Serial multiple mediations model of the effect of autonomous motivation on resilience directly and indirectly through emotional intelligence and challenge appraisals (PS)



Note. Dotted line, path c' , represents the effect of autonomous motivation on resilience when emotional intelligence and challenge appraisals are not included as mediators.

Context Differences

Further statistical analyses were conducted to determine if autonomous motivation, emotional intelligence, challenge appraisal, and resilience mean scores of the NPS and PS showed significantly statistical differences. These findings are presented in Table 5.

There was a statistically significant difference in autonomous motivation scores between NPS and PS, with PS scoring higher than NPS (0.18, 95% CI [0.30 to 0.05], $t(713.14) = 2.75, p = .01$). There was also a statistically significant difference in emotional intelligence scores between NPS and PS subjects, with NPS subjects scoring higher than PS subjects (0.13, 95% CI [0.03 to 0.23], $t(701.80) = 2.50, p = .01$). Notably, there was not a statistically significant difference in challenge appraisal scores between NPS and PS participants, with NPS scoring higher than PS students, though non-significantly (0.09, 95% CI [-0.01 to 0.18], $t(713) = 1.76, p = .08$). Finally, there was not a statistically significant difference in resilience mean scores between NPS and PS subjects. PS participants did score higher than NPS participants, though not statistically significantly (0.07, 95% CI [-0.01 to 0.15], $t(711) = 1.82, p = .07$).

Table 5

T-test results of scores of all measures of NPS and PS

| <i>Variable</i> | <i>Sample</i> | <i>N</i> | <i>Mean</i> | <i>SD</i> | <i>t</i> |
|------------------------|---------------|----------|-------------|-----------|----------|
| Autonomous Motivation | NPS | 332 | 5.06 | .80 | 2.75a |
| | PS | 385 | 5.24 | .88 | |
| Emotional Intelligence | NPS | 332 | 4.73 | .69 | 2.50a |
| | PS | 385 | 4.60 | .69 | |
| Challenge Appraisals | NPS | 332 | 4.84 | .62 | 1.76b |
| | PS | 385 | 4.76 | .67 | |
| Resilience | NPS | 332 | 3.70 | .53 | 1.82b |
| | PS | 385 | 3.63 | .55 | |

Note. NPS = non-pandemic students, PS = pandemic students.
a = $p < .05$, b = $p > .05$

Discussion

The goal of the two studies presented here was to support, and extend, previous resilience research by examining the relationship between motivation orientation, emotional intelligence, challenge appraisal, and resilience. The presented results provided further evidence of statistically significant relationships between all of the proposed constructs. Furthermore, the serial multiple mediation model is a novel addition to both SDT and resilience literature that indicates that emotional intelligence and challenge appraisals are important mechanisms of resilience.

The results of Study 1 revealed the proposed multiple mediation showed a significant direct effect of autonomous motivation on resilience. In addition, emotional intelligence and challenge appraisals mediated the relationship between autonomous motivation and resilience. The sequential mediation through emotional intelligence and challenge appraisal indicates that the combined presence of both mediators may be essential for the development of resilience. As hypothesized, individuals who were autonomously motivated had higher levels of resilience and the relationship was mediated by emotional intelligence and challenge appraisals.

Results of Study 2 replicated the results of Study 1 in the context of the COVID-19 pandemic, further supporting the notion that motivation orientation strongly fosters resilience through both emotional intelligence and challenge appraisals across contexts even if one is as extreme as a pandemic. These results are consistent with previous studies that demonstrated how self-determined motivation positively predicted resilience which aided students to thrive in the face of adversity (Kusurkar, 2019; Manzano-Sanchez et al., 2021). The results between the two studies did not differ when examining challenge appraisals and resilience. This could be due to various factors. Firstly, it could be that samples were not large enough and therefore lacked

power to detect small, but existing differences between the two populations. It is also possible that the level of resilience did not vary because the pandemic did not create the impact that was expected in Study 2 and that the sample of employed students was “habituated” to the pandemic by the time the study was conducted - a year and a half after the start of the pandemic.

In Study 2, there were no statistically significant differences in challenge appraisals or resilience between NPS and PS. This was expected, as it was hypothesized that resilience would not have changed this far into the pandemic. It’s suggested that students would have had their mechanism of resilience determined, thus not impacting their resilience levels, and resulting in similar levels from pre-pandemic. Interestingly, there were statistically significant differences in autonomous motivation and emotional intelligence. PS had statistically significantly greater autonomous motivation than NPS. Perhaps this is due to their needs being better met in a pandemic context, with such changes to their studies (moving online) or their work (reduced hours, greater flexibility, remote work). NPS had greater emotional intelligence than PS. It is suggested that the increased social isolation in the pandemic, resulted in negatively impacting emotional intelligence scores thus leading to such a difference. This is in line with other research that reported a reduction in emotional intelligence scores post COVID-19 lockdowns (Martin-Requejo & Santiago-Ramajo, 2021; Kirkpatrick et al., 2022).

Finally, it may also be suggested that post-secondary students who work, experience greater life demands, requiring them to have a baseline resilience that is higher than those who do not have to balance both studies and work. Subsequently, the pandemic and transition to online learning may have been less impactful as those students who need to balance the demands of work and education, were already equipped well with resilience.

Limitations and Future Directions

Both Study 1 and Study 2, presented here, do not go without limitations. Each study was predominantly female, which makes it difficult to generalize the results across male students and populations beyond working post-secondary students. Future research should aim to get a more balanced sample of both genders as there is a difference in literature on how genders differ in their way to deal with stress and their ultimate impact on well-being (Matud, 2004; Van Der Feltz-Cornelis et al., 2020; Prowse et al., 2021; Perez & Matud, 2022). For example, females have been found to have coping styles that are more emotion-focused (Matud et al., 2020; Graves et al., 2021) while males use more problem-focused coping (Leong, 1997; Baker & Berenbaum, 2007).

In addition, all variables were measured at one point in time with self-report measures, making the study correlational. Therefore, although significant associations were documented, the direction of causal relationships cannot be established. Both studies were entirely self-report questionnaires, which may result in inflated or deflated responses due to the social desirability effect (Petróczi & Nepusz, 2011). Future longitudinal studies are required to address these limitations. Moreover, replicating findings using experimental or quasi-experimental designs could be beneficial.

Regardless of these limitations, the two studies presented provide further groundwork for understanding resilience in the workplace and suggest that future research should be conducted to build on the roles of motivation orientation, emotional intelligence, and challenge appraisals in the development of resilience, particularly among working, post-secondary students. These studies, together, offer a building block for future studies to examine the impacts of various stressful events that draw on young adults' resilience, and how they manage academic studies

and employment. These findings could be used to improve training and counselling strategies with post-secondary students for refining resilience, a vital attribute for performing and succeeding optimally across life contexts.

Furthermore, these predictor variables should be studied in various work contexts to learn how resilience arises amongst different populations and to examine whether it varies according to different vocations.

Future research should also expand on the different facets of emotional intelligence. The model presented here revealed the importance of emotional intelligence for challenge appraisals and resilience but did not examine the specific dimensions of emotional intelligence. Previous research has found positive relationships between emotional clarity and emotional repair with resilience and a negative relationship with emotional attention (Ramos-Diaz et al., 2018). Future research may consider examining these within different occupations and contexts.

Coincidentally and interestingly, both samples were predominantly part-time workers. It may be suggested that there was no statistically significant difference between our two populations (NPS and PS) as the combination of part-time work and pursuing post-secondary education creates enough of a challenge to build resilience. Perhaps, if the majority of the students were full-time workers, different results would have been found. It could be that the combination of part-time work and post-secondary studies created the right environment and facilitated important factors to build resilience. Further research could examine the difference between part-time working, post-secondary students and full-time working post-secondary students.

Additionally, the cross-sectional nature of the research design does not infer the direction of our results. No causal relationships between the constructs can be drawn and future studies are

required to elucidate these relationships. Furthermore, the cross-sectional data may lead to common method variance affecting the validity of our results (Podaskoff et al., 2003). Future research is encouraged to replicate the findings of this study longitudinally, and across domains, to further examine whether the context influences these findings. Furthermore, for future studies to examine additional characteristics and mechanisms as mediators between the relationship of autonomous motivation and resilience, such as interpersonal factors, intrapersonal factors, and personality traits. Through the exploration of more factors, the process and development of resilience can be better understood.

Conclusion

The purpose of the studies was to investigate the relationship between motivation orientation, emotional intelligence, challenge appraisals and resilience within employed undergraduate students. Emotional intelligence and challenge appraisals successfully mediated the relationship between autonomous orientation and resilience. Thus, highlighting the importance of autonomous motivation, emotional intelligence, and challenge appraisals as important mechanisms of resilience. The studies further established the constructs as important mechanisms of resilience and their integral part in developing resilience within an employed, undergraduate population.

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Roaring with Risk: Investigating Motivation and Mechanisms of Psychological Resilience in
Diverse Occupations

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Abstract

The importance of resilience within the workplace continues to produce a substantial amount of evidence-based research, as such, research into the factors that aid in facilitating its process is growing. Examining mechanisms that aid in the development of resilience continues to progress, helping to solidify previous found constructs, while uncovering new ones. In the present paper, two studies were conducted with two employee groups (workers of diverse vocations and teachers) to test the tenability of a proposed models of both previously found mediators (emotional intelligence and challenge appraisals) and two rather novel ones (risk taking and humour). Self-report questionnaires were used to examine if the proposed factors mediated the relationship between autonomous motivation and resilience. Data were analyzed using bivariate correlations and serial multiple mediations. Results found that autonomous motivation, emotional intelligence, and challenge appraisals are important aptitudes for the development of resilience. Additionally, risk-taking and positive humour may be important aptitudes for the development of resilience in certain occupations. Ultimately, the research contributes to the literature on Self-Determination Theory and resilience by offering unique multiple mediation models for forecasting the growth of resilience within employees. Furthermore, informing clinical interventions to prepare employees for the stressors encountered in the workplace via the development of training, educational material, and interventions to strengthen resilience.

Introduction

More than a decade of research has attested to the importance of resilience in the workplace and its implications for employee well-being and job performance (Connor & Davidson, 2003; Robertson et al., 2015; Hartmann et al., 2020). Resilience is crucial for understanding how employees successfully handle adversity, yet the factors that lead to its development and how it influences outcomes are still largely under debate (Hartmann et al., 2020). Individuals are dealing with heavier workloads and being asked to perform under great pressure within the framework of “getting more from less” (Chartered Institute of Personnel and Development, 2009), which has resulted in the increasing interest in examining resilience within the vocational domain.

The workplace can be a precarious environment providing meaning and purpose, yet also causing large amounts of stress. Achievement goals, pressures, and uncertain chances of success are common contributors to workplace stressors (Seery, 2011). Previous research has shown that having meaning and valued purpose can enhance resilience to stress (Southwick et al., 2012). Thus, the workplace provides a unique context to both build, and exercise, resilience to ultimately minimize the negative effects of workplace stressors on employee’s well-being and the organization. Indeed, resilience is generally viewed by some researchers as the ability to develop problem-solving skills (Rushton et al., 2015) and which can be applied to alleviate workplace adversity (Guo et al., 2017). Additionally, resilience has been shown to be an important ability that helps prevent job dissatisfaction and burnout (Guo et al, 2017), minimize psychological distress (Bonanno, 2004), as well as increase engagement in organizational citizenship behaviour (Boakye et al., 2022; Paul et al., 2019), defined as discretionary behaviour that is not recognized by the formal reward system of an organization and can quickly increase

the effectiveness of organizations (Organ, 1998). Subsequently, resilience plays an important role in overall organizational success and providing benefits to employees individually.

While the positive effects of resilience are widely documented, the mechanisms by which resilience is promoted are under debate. One theory that relates to the development of resilience is Self-Determination Theory (SDT). SDT (Deci & Ryan, 1985, 2017) is a universal theory of human motivation that examines how biological, social, and cultural conditions support or thwart the inherent capacity for psychological growth, engagement, and wellness. By exploring motivation orientation, SDT, more specifically Organismic Integration Theory (OIT), differentiates between types of motivation along a continuum (Figure 1) from amotivation to autonomous (Deci & Ryan, 2017). Deci and Ryan (1985) state that autonomous motivation offers the platform for people to recognize their authentic self, whereas controlled motivations are experienced as sources of external or internal pressures. When compared to controlled motivated individuals, autonomously motivated people tend to not let external influences affect them, as they are more concerned with how they feel about the circumstance. They are more aware of both external and internal influences and tend to be more inclined to be influenced by internal ones.

Thus, we hypothesize that when people have autonomous motivation and feel they have choice and ownership over their behaviour, they will be more likely to apply effort and persist through workplace stressors that accompanies being employed, resulting in resilience. Risk and humour will also be explored because, while somewhat novel, there is reason to believe that these factors can also contribute to the development of resilience in a working population. It is hypothesized that with greater risk-taking behaviour and humour, individuals will exhibit higher levels of resilience.

Emotional Intelligence

Emotional intelligence is considered a prerequisite to becoming resilient (Magnano et al., 2015), which also has many positive impacts on their well-being, work performance, productivity, and integrity (Mayer et al., 2016; Carminati, 2021). Defined as the capability of an individual to process information with regards to their emotions and experiences that are emotionally relevant, using this information to inform their thoughts and behaviours (Mayer & Salovey, 1997). Importantly, emotional intelligence has been negatively related to stress, depression, negative emotions, and burnout (Huang et al., 2019; Furnham & Taylor, 2020; Trigueros et al., 2020).

High emotional intelligence in the workplace has been associated with lower perceived stress in the workplace stress, lower burnout levels, as well as greater vocational engagement, and more positive workplace relationships (Hong & Lee, 2016; Zhu et al., 2015). It is suggested that emotional intelligence may influence chronic work fatigue and could be vital for the regulation of stress and negative moods (Huang et al., 2019). Furthermore, emotional intelligence has been identified as a protective variable that may reduce perceived stress across various occupations, including but not limited, to healthcare (Li et al., 2020), military (Garcia Zea et al., 2019), and educational sectors (Trigueuros et al., 2020).

Self-awareness is a component of emotional intelligence (Goleman, 2001) that may be particularly important for resilience as it aids individuals in recognizing their emotions, strengths, weaknesses, goals, and how their emotions impact others. Such a skill allows individuals to understand and manage their emotions and therefore accurately respond to perceived stressful situations (Vitello-Cicciu, 2003). The ability to handle one's emotions has been found to be particularly pertinent for resilience to handle workplace adversity (Badu et al.,

2020) Additionally, emotionally intelligent individuals have increased social awareness which includes empathy, a valuable skill for building social support systems; both of which have been found to contribute to resilience (Cooper et al., 2020; Sippel et al., 2015; Southwick et al., 2016). Lastly, emotional intelligence includes self-management competencies such as: emotional self-control, conscientiousness, and adaptability. All attributes that have been found to be associated with resilience (Cope et al., 2016; Delgado et al., 2017; Wei & Taormina, 2014).

Surprisingly, studies examining emotional intelligence and resilience are still at a deficit (Trigueros et al., 2020) suggesting that research targeting this potential connection would be useful. Further research is required to solidify the connection between emotional intelligence and resilience in order to encourage their development within the specific contexts such as the workplace.

Challenge Appraisals

The Transactional Stress Theory (Lazarus & Folkman, 1984) which dominates occupation stress research, proposes that a stressor is deemed as a “challenge” or “threat” depending on the individual and the situation (Kern & Zapf, 2021). A stressor appraised as a “challenge” elicits positive emotions and outcomes, often viewed as motivating while a “threat” elicits negative emotions or outcomes (Kochenour, 2016). In short, the theory illustrates how not all stressors elicit negative emotions and outcomes, rather, they provide the opportunity to offer growth opportunities and positively influence employee well-being (Widmer et al., 2021) and resilience (Kunzelmann & Rigotti, 2021; Crane & Searle, 2016).

Research indicates the potential for workplace stressors to influence the development of resilience through challenge appraisals, demonstrated by Crane and Searle (2016) who conducted a two-wave longitudinal study in the workplace. They demonstrated that experiencing stressors

and/or adversity can strengthen an individual's resilience via challenge appraisals. Thus, suggesting further research on the implications of challenge stressors and its impact on the development of resilience is warranted.

Risk-Taking

There are reasons to believe that risk-taking is also an important contributor to resilience. Leigh (1999) defines risk-taking as a behaviour that involves the possibility of harm or loss, but also provides the opportunity to obtain rewards. Risk-taking is often viewed as negative or irrational behaviour (Lupton & Tulloch, 2002), however, the proposed research aspires to examine risk-taking and its potentially positive role in fostering psychological resilience. Risk seekers have been considered as those who pay attention to the best outcomes rather than the worst outcomes (Lopes, 1987; Lion & Meertens, 2005), a potentially valuable tool contributing to resilience.

It is proposed that risk-taking helps individuals develop a sense of self-efficacy (Taniguchi et al., 2017) and vice versa (Cannon & Rucker., 2022). When those that take risks succeed, it creates a belief in one's abilities. Therefore, aiding in their development of knowing that they are capable of overcoming previous challenges, creating greater resilience. Simultaneously, risk-takers put themselves in situations with the potential to fail subsequently providing an opportunity to learn from such failure and develop resilience. It is assumed that risk-takers experience more failures and therefore have a greater threshold for adversity and consequently have greater resilience. Furthermore, risk-taking is associated with a growth mindset (Cartwright & Haller, 2018). Growth mindsets believe in the power of learning from mistakes and the potential for improvement. Risk-takers are more likely to frame failure through

a growth mindset, helping to mitigate fears and cultivating the idea of “failing forward” (Miller, 2015). Therefore, contributing to a greater level of resilience.

Mayer and Lukacs (2014) revealed that risk-seeking groups (pro social (firemen), anti-social (violent criminals), and extreme sportsman) have proven to be more resilient compared to control groups. Thus, the action of supporting risk-taking behaviour may aid in the ability to cope with risky or stressful life events. By examining risk-taking in a military context, it is suggested that perceptions of one’s invincibility or survival skills result in feeling less susceptible to adverse consequences (Kelley et al., 2012). The proposed research aims to broaden the notion of risk-taking importance as a mechanism of resilience and link it to the overall development of resilience. It is hypothesized that individuals that are willing to take risks have lower perceptions of failure and therefore will be more psychologically resilient.

Humour

Humour can be thought of as an approach to sharing moments of lightness, and balance the seriousness of everyday tasks (Gostick & Christopher, 2010). For decades the benefits of humour for health, especially when dealing with stressful events, has been widely accepted (Cousins, 1979). It is suggested that humour has stress-buffering effects for individuals in regard to mental health outcomes (Rupert & Kent, 2007; Riolli & Savicki, 2010; Mesmer-Magnus et al., 2012), and is considered a character strength that contributes strongly to life satisfaction (Proyer, 2013; Ruch, 2010). The function humour serves in everyday life is connected to psychosocial well-being including - dissipating misery, decreasing displeasure, improving confidence, adaptive coping, enhancing life satisfaction, and positively impacting emotional states (Ramírez-Maestre, 2020; Ruch & Hofmann, 2017). Higher levels of humour have been found to correspond with lower levels of depression, anxiety, and negative emotions (Deaner &

McConatha, 1993; Kuiper & Martin, 1998; Nezu et al., 1988). Humour elicits positive emotions and builds personal resources while also reducing negative emotions, all contributing to well-being (Ruch & Hofmann, 2017). Humour has been found to defuse stress and build resilience (Cameron & Brownie, 2010), indicating its importance as a mechanism of resilience.

While unique, there appears to be a link between risk-taking and humour (McCreddie & Wiggins, 2008). The connection may begin with the natural risk that is involved with using humour itself (Palmer, 2003; McCreddie & Payne, 2011). Previous research has demonstrated that an individual's level of sensation seeking, a variable related to risk-taking, is related to humour appreciation and finding humour in a greater variation of contexts (Lourey & McLachlan, 2003). Furthermore, sensation seeking has been found to predict humour styles in men and women (Kennison & Messer, 2018). Historically, it has been suggested that humour may reflect a disposition of sensation seekers and sensation seekers may use humour as a tool for stimulation (Ruch, 1988). It is suggested that risk-takers may engage in humour as a coping mechanism and therefore demonstrate greater resilience.

A wealth of research is available on the positive effects of humour leading to greater well-being, which supports the resilience approach, and its contribution has been quite indicative. While there is currently limited empirical support for the concept that greater humour results in bouncing back from adversity, as predicted by resilience models (Cheung & Yue, 2012; Kuiper, 2012; Yaprak, 2018), there is reason to further study this variable as it relates to the development of resilience. Some findings have demonstrated that humour is an important factor in shaping resilience, stating that it enables individuals to stock up personal resilience to enhance well-being (Cann & Kuiper, 2014). Furthermore, research among school principals has shown the use of humour indicated greater personal resilience in the workplace (Alazmi &

Alhajeri, 2022). The study of humour contributes to the study of positive experiences (Ruch & Hofmann, 2017), thus studying humour's contribution to resilience will highlight the positives that come from adversity and therefore facilitate the construction of resilience. To this end, its role as a formal mechanism in the process of resilience requires greater understanding.

Further examination of humour styles may lead to a more detailed understanding of how humour can impact resilience. Martin et al. (2003) proposes four humour styles - affiliative, self-enhancing, aggressive, and self-defeating. Two are considered positive or beneficial to the self: (1) affiliative humour is considered non-hostile, affirming of the self and others, and seemingly enhances relationships with others, and (2) self-enhancing humour is considered as finding amusement in life's incongruities and maintaining a humorous perspective in the face of stress or adversity (Kuiper et al. 1993). While the other humour styles are viewed as negative or detrimental to the self: (3) aggressive humour is comprised of sarcasm, teasing, and ridicule and may include manipulating others and have little regard for its impact on others and (4) self-defeating humour includes being excessively critical of oneself and saying things at one's own expense (Martin et al., 2003). Specifically, positive humour styles (affiliative and self-enhancing) have been linked to lower depression and anxiety, higher positive affect, higher self-esteem (Kuiper et al., 2004; Martin et al., 2003) and positively related to well-being (Leist & Müller, 2013). Self-enhancing humour has been associated with higher levels of happiness, hope, and optimism (Cann & Etzel, 2008; Yue et al., 2010) while affiliative humour has been shown to enhance well-being (Jiang et al., 2020) and reduce stress (Bennett & Lengacher, 2006). Furthermore, both affiliative and self-enhancing humour have been found to be negatively related to burnout and positively related to work engagement (Van den Broeck et al., 2012).

Subsequently, the aforementioned research on positive humour styles provides cautious optimism that such styles contribute to the facilitation of resilience.

The purpose of the reported studies is to examine motivation orientation and mechanisms of resilience within employed individuals of various occupations as well as within a specific vocation. The specific vocation of teaching was chosen as they experienced a great number of difficulties during the COVID-19 pandemic, experiencing the back and forth of teaching in person and online; having to adapt and overcome new challenges that have not been previously experienced. It is hypothesized in both studies that (1) autonomous motivation will be the primary foundational mechanism of resilience; (2) Emotional intelligence, challenge appraisals, risk taking and positive humour will be important mechanisms and mediate the relationship between autonomous motivation and resilience; (3) The order of mediators will be important in the process of developing resilience i.e. emotional intelligence will precede challenge appraisal, and risk propensity will precede positive humour. This specific order of mediators is hypothesized as emotional intelligence fosters a mindset that helps to perceive stressful events more confidently and positively, seeing the opportunities for growth and development. Furthermore, it enables individuals to engage with problem-solving skills, emotional awareness, and emotional regulation thus leading to challenge appraisals (Alvarado et al., 2017; Ashkanasy et al., 2003; Schneider et al., 2013). It is hypothesized that risk-taking will precede humour as the use of humour requires vulnerability and risk (Lake, 2019). Previous research has found humour is related to higher levels of participation in risky hobbies (Martin et al., 2002), indicating those who are more likely to engage in risky behaviours may be more likely to use humour, therefore indicating risk-taking facilitates the use of humour. Previous research has suggested that resilience may in fact be domain-specific (Harms et al., 2017; Kossek &

Perringino, 2016). Thus, there is a greater need to examine resilience within specific work contexts such as job demands and requirements which change from profession to profession. The goal of the studies presented here are to examine employees across different sectors and further the resilience literature as a whole while providing specific suggestions for constructs to target to build resilience within the workplace.

Present Studies

Study 1

Study 1 aimed to 1) examine motivation orientation and mechanisms of resilience within individuals who hold part-time or full-time employment; 2) solidify the roles of emotional intelligence and cognitive appraisal as mechanisms of resilience, and 3) examine two novel mediators, humour and risk propensity, as mechanisms of resilience.

Method

Participants

A sample of 390 North American employed adults were recruited via social media (Facebook, Instagram, Twitter, and Kijiji, etc). Participant's average age was 44.46 years ($SD=13.04$). The majority of participants identified as White (90%), employed full-time (82%), female (64%), and married (61%). Over 50% of participants had a minimum of a Bachelor's degree (54%). The top three employment sectors were education (26%), emergency services (police, firefighter, military; 14%), and healthcare (9%).

Data Collection

All questionnaires were completed online on the secured website Qualtrics (www.qualtrics.com). Participants completed the consent form, which outlined the study and notified participants of their anonymity and the voluntary nature of participating in the study.

Participants who agreed to participate were then directed to the secure online platform to complete a series of questionnaires.

Measures

The following demographic characteristics were collected: gender, age, highest degree of education obtained, current working environment (e.g., working from home, working in an office setting, etc), occupation, community they grew up in (rural, suburban, city), country they currently live in, marital status, ethnicity, and status of employment (e.g., part-time or full-time). A copy of all demographic questions and full scales can be found in Appendix B

The following validated scales were used to measure general motivation orientation, emotional intelligence, cognitive appraisal, resilience, risk propensity, humour, and burnout. Complete details of the scales are listed below.

Motivation

Global Motivation Scale (GMS; Guay et al., 1999) identifies motivation orientation. Six types of motivation (intrinsic, integrates, identified, introjected, and external) and amotivation are assessed via the GMS. Each motivation orientation has a 3-question subscale in which participants respond on a 7-point Likert scale (from Strongly Agree to Strongly Disagree), how much they agree with the statement. Scores were averaged across the intrinsic and identified regulation items to compute the autonomous motivation index. This scale showed satisfactory internal consistency values across the seven subscales as demonstrated by a Cronbach's α ranging from .75 to .91 (Guay et al., 2003).

Emotional Intelligence

Emotional intelligence was assessed using the Trait Emotional Intelligence Questionnaire – SF (Petrides, K.V., 2009). This scale measures global trait emotional intelligence. Fifteen

facets of trait emotional intelligence are assessed, each with a two-item subscale in which participants respond on a 7-point Likert scale, whether they completely agree or completely disagree regarding a specific statement. A global Emotional Intelligence (EI) score is calculated along with scores on the four trait EI factors. Satisfactory internal consistency of all 20 variables is demonstrated with robust alphas. Cronbach's α range from .68 to .89.

Cognitive Appraisal

Cognitive Appraisal Scale (CAS; Skinner & Brewer, 2002) consists of 18-items that measure both threat and challenge styles of cognitive appraisal. The threat subscale consists of 10-items and the challenge subscale consists of 8-items. Participants respond on a 6-point Likert scale, whether they agree with the statement or not. Satisfactory internal consistency was demonstrated with Cronbach's $\alpha = .92$ for the threat scale and .80 for the challenge scale (Skinner & Brewer, 2002).

Resilience

Connor-Davidson Resilience Scale (CD-RISC; Connor & Davidson, 2003) assesses resilience across 25-items. Participants respond on a 5-point Likert scale as to the truth of a statement. An example item includes "*When things look hopeless, I don't give up*". The total score ranges from 0-100, with higher scores indicating greater resilience. Cronbach's α for the full scale is 0.89 (Connor & Davidson, 2003).

Risk Taking

The Stimulating and Instrumental Risk Questionnaire (Makarowski, 2013) assesses risk-seeking behaviour. The scale consists of 7-items and participants respond on a 5-point Likert scale in regard to how much they agree with a statement. Cronbach's α for the stimulating risk section of the scale is .80 and for the instrumental risk section .65 (Makarowski, 2013). Example

items include “*When I pursue my passions, I like the moments of balancing on the edge of risk*” and “*I take the risk only when necessary to reach my goal*”.

Humour

The Humour Styles Questionnaire (HSQ; Martin et al., 2003) assesses types of humour style. The HSQ measures 4 styles of humour: affiliative, self-enhancing, self-defeating, and aggressive. The scale consists of 32-items and participants respond on a 7-point Likert scale in regard to how much they agree with the statement. An example item includes “*Even when I’m by myself, I’m often amused by the absurdities of life*”. Cronbach’s α for all four scales ranges from .77 to .81 (Martin et al., 2003).

Results

Correlational Analyses

Bivariate correlations and descriptive statistics for all variables are presented in Table 1. As hypothesized, significant positive correlations were found between the following constructs of interest: autonomous motivation, emotional intelligence, challenge appraisals, positive humour, risk-taking, and resilience.

Table 1

Bivariate Relations and Descriptive Statistics (Various Occupations) (N =390)

| <i>Variable</i> | <i>1</i> | <i>2</i> | <i>3</i> | <i>4</i> | <i>5</i> | <i>6</i> |
|---------------------------|----------|----------|----------|----------|----------|----------|
| 1. Autonomous Motivation | — | .30** | .43** | .28** | .23** | .41** |
| 2. Emotional Intelligence | | — | .55** | .46** | .15** | .71** |
| 3. Challenge Appraisals | | | — | .40** | .36** | .66** |
| 4. Risk-Taking | | | | — | .20** | .27** |
| 5. Positive Humour | | | | | — | .47** |
| 6. Resilience | | | | | | — |
| <i>M</i> | 5.13 | 5.15 | 5.26 | 5.12 | 3.11 | 3.80 |
| <i>SD</i> | 0.87 | 0.64 | 0.70 | 0.82 | 0.53 | 0.48 |

Note. ** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Mediation Analysis

Two separate serial, multiple mediation analyses (Hayes Model 6) were conducted using the PROCESS (v4.2) macro by Hayes (2013). The results from the first serial mediation analysis (Hayes Model 6) are reported in Table 2. Consistent with previous research, the model showed a statistically significant direct effect of autonomous motivation on resilience ($c' = .06, p < .00$). As predicted, significant direct effects of autonomous motivation on emotional intelligence ($a_1 = .22, p = .000$) as well as challenge appraisals ($a_2 = .24, p = .00$) emerged. Emotional intelligence was significantly related to challenge appraisals ($a_3 = .50, p = .00$). Furthermore, a significant direct effect of emotional intelligence on resilience ($b_1 = .36, p < .00$) along with a significant direct effect of challenge appraisals on resilience ($b_2 = .24, p = .00$) was found. In line with our main hypotheses, these results showed a significant indirect effect through emotional intelligence and challenge appraisals, respectively (point estimate = .03, 95% BCa CI [.01, .04]).

Table 2

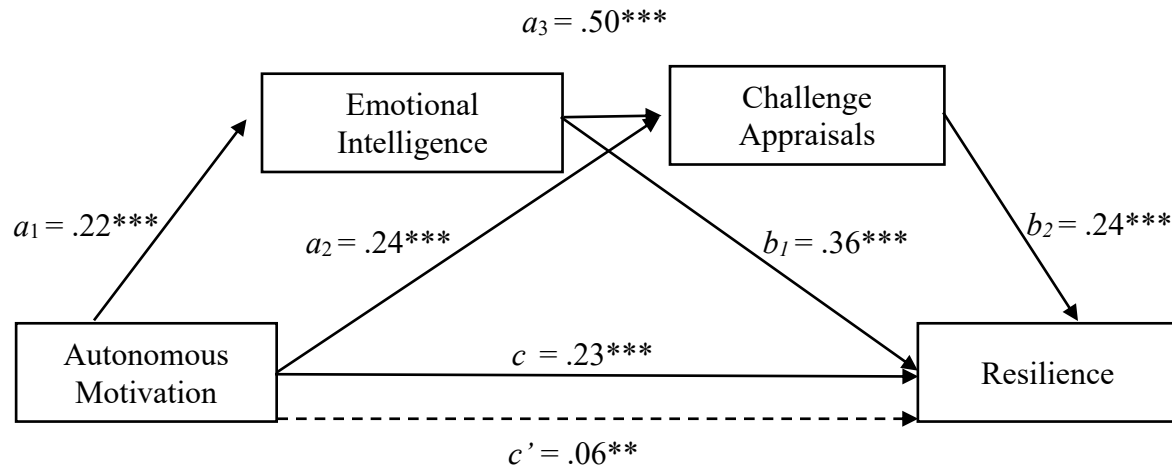
Indirect effects of autonomous motivation on resilience through emotional intelligence and challenge appraisals (Various Occupations) (N = 390)

| | Point Estimate | Product of Coefficients | Bootstrapping BCa 95% CI | |
|------------------------|----------------|-------------------------|--------------------------|-----|
| | | SE | LL | UL |
| Autonomous Motivation | .06 | .02 | .03 | .10 |
| Emotional Intelligence | .08 | .02 | .05 | .11 |
| Challenge Appraisals | .06 | .01 | .04 | .08 |
| Both Mediators | .03 | .01 | .01 | .04 |
| TOTAL | .23 | .03 | .18 | .28 |

Note. BCa, bias corrected and accelerated; CI = confidence interval; *LL* = lower limit, *UL* = upper limit; 5000 bootstrap samples.

Figure 1

Serial multiple mediations model of the effect of autonomous motivation on resilience directly and indirectly through emotional intelligence and challenge appraisals (Various Occupations)



Note. Dotted line, path c' , represents the effect of autonomous motivation on resilience when emotional intelligence and challenge appraisals are not included as mediators.

The results from the second mediation analysis (Hayes Model 6) are reported in Table 4. Consistent with previous research, as well as our hypothesis, the model showed a significant direct effect of autonomous motivation on resilience ($c' = .23, p < .00$). As predicted, significant direct effects of autonomous motivation on risk ($a_1 = .14, p = .00$) and positive humour ($a_2 = .23, p = .00$) emerged. Risk propensity was significantly related to positive humour ($a_3 = .22, p = .00$). Furthermore, a significant direct effect of risk propensity on resilience ($b_1 = .12, p < .00$) along with a significant direct effect of positive humour on resilience ($b_2 = .22, p = .00$) surfaced. To interpret our main hypotheses, the results revealed a significant indirect effect through risk propensity and positive humour, respectively (point estimate = .01, 95% BCa CI [.00, .01]).

Table 3

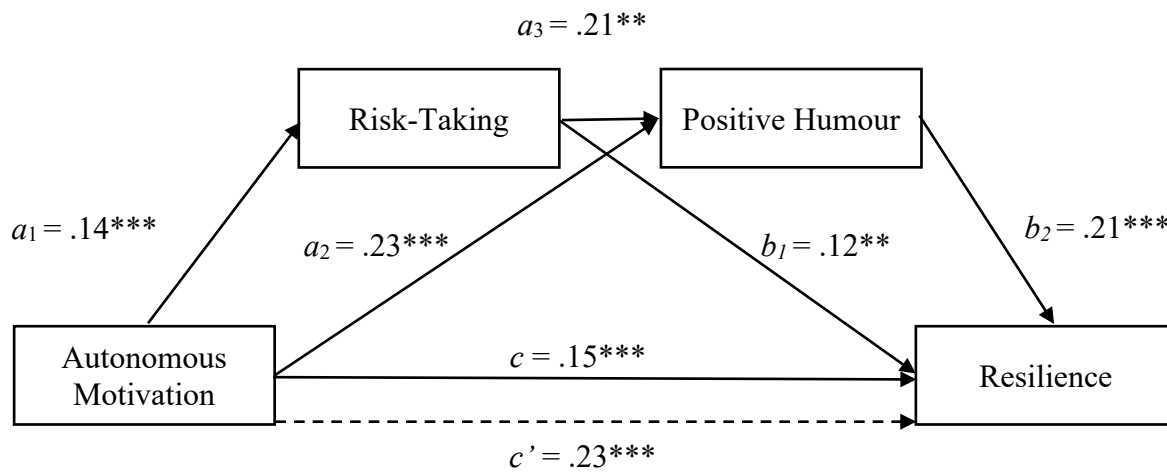
Indirect effects of autonomous motivation on resilience through risk propensity and humour (Various Occupations) (N = 390)

| | Point Estimate | Product of Coefficients | | Bootstrapping BCa 95% CI | |
|-----------------------|----------------|-------------------------|-----|--------------------------|--|
| | | SE | LL | UL | |
| Autonomous Motivation | .15 | .01 | .05 | .10 | |
| Risk-Taking | .02 | .01 | .00 | .03 | |
| Positive Humour | .05 | .01 | .03 | .08 | |
| Both Mediators | .01 | .00 | .00 | .01 | |
| TOTAL | .23 | .03 | .18 | .28 | |

Note. BCa, bias corrected and accelerated; CI = confidence interval; LL = lower limit, UL = upper limit; 5000 bootstrap samples.

Figure 2

Serial multiple mediations model of the effect of autonomous motivation on resilience directly and indirectly through risk-taking and positive humour (Various Occupations)



Note. Dotted line, path c' , represents the effect of autonomous motivation on resilience when risk-taking and positive humour are not included as mediators.

Study 2

Study 2 aimed to 1) examine motivation orientation and mechanisms of resilience within the specific profession of teaching; 2) solidify the role of emotional intelligence and cognitive appraisal as mechanisms of resilience within the teaching profession; and 3) examine risk propensity and humour as mechanisms of resilience within teachers, specifically. We aim to explore our model within the teaching profession to solidify our proposed constructs for building resilience within a specific population. During the COVID-19 pandemic, teachers dealt with drastic changes in their job duties and how they conducted their classes, requiring the utilization of resilience and its mechanisms thus, we chose to study this unique and impactful profession.

Method

Participants

A sample of 69 North American teachers, were recruited via social media (Facebook, Instagram, Twitter and Kijiji). Participant's average age was 44.89 years (SD= 10.99). The majority of participants were white (94%), female (87%), and married (68%).

Data Collection

The same data collection procedure as Study 1 was followed.

Measures

The same validated scales used in Study 1 were used in Study 2.

Results

Correlational Analyses

Bivariate correlations and descriptive statistics for all variables are presented in Table 1. As hypothesized, significant positive correlations were found between the following constructs of interest: autonomous motivation, emotional intelligence, challenge appraisals, positive humour, and resilience.

Table 4*Bivariate Relations and Descriptive Statistics (Teachers) (N = 69)*

| <i>Variable</i> | <i>1</i> | <i>2</i> | <i>3</i> | <i>4</i> | <i>5</i> | <i>6</i> |
|---------------------------|----------|----------|----------|----------|----------|----------|
| 1. Autonomous Motivation | — | .28* | .58** | .26* | .30* | .48** |
| 2. Emotional Intelligence | | — | .52** | .07 | .47** | .60** |
| 3. Challenge Appraisals | | | — | .23 | .44** | .74** |
| 4. Risk-Taking | | | | — | .14 | .15 |
| 5. Positive Humour | | | | | — | .39** |
| 6. Resilience | | | | | | — |
| <i>M</i> | 5.22 | 5.25 | 5.37 | 3.00 | 5.22 | 3.89 |
| <i>SD</i> | 0.66 | 0.53 | 0.61 | 0.39 | 0.73 | 0.42 |

Note. ** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Mediation Analysis

Two separate serial, multiple mediation analyses (Hayes Model 6) were conducted using the PROCESS (v4.2) macro by Hayes (2013). The results from the first mediation analysis (Hayes Model 6) are reported in Table 6. Consistent with previous research, as well as our hypotheses, the model showed a statistically significant direct effect of autonomous motivation on resilience ($c' = .06, p < .00$). As predicted, significant direct effects of autonomous motivation on emotional intelligence ($a_1 = .22, p = .00$) and challenge appraisals ($a_2 = .43, p = .00$) emerged. Emotional intelligence was significantly related to challenge appraisals ($a_3 = .45, p = .00$). Furthermore, a significant direct effect of emotional intelligence on resilience ($b_1 = .24, p < .00$) along with a significant direct effect of challenge appraisals on resilience ($b_2 = .37, p = .00$) surfaced. To interpret our main hypotheses, the results revealed a significant indirect effect through emotional intelligence and challenge appraisals, respectively (point estimate = .04, 95% BCa CI [.00, .09]).

Table 5

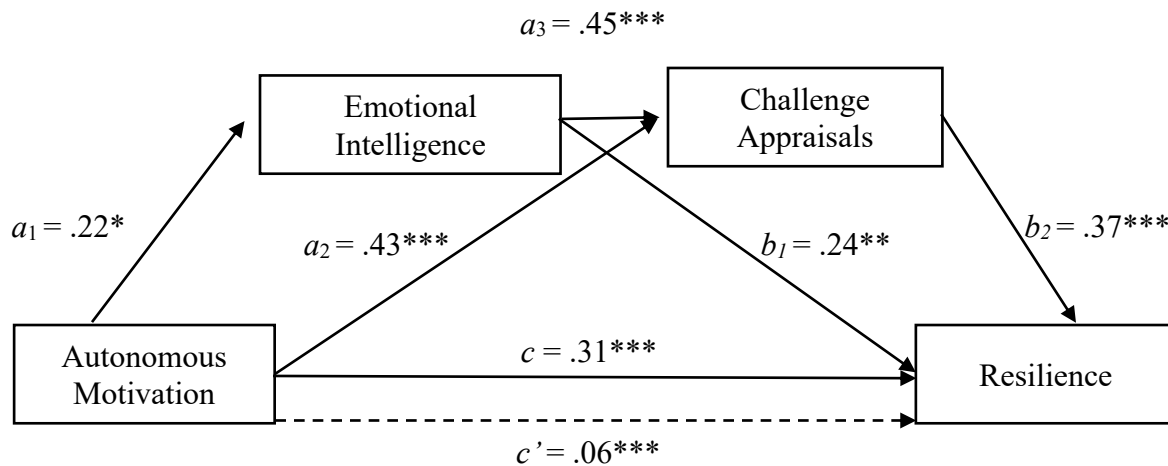
Indirect effects of autonomous motivation on resilience through emotional intelligence and challenge appraisals (Teachers) (N = 69)

| | Point Estimate | Product of Coefficients SE | Bootstrapping BCa 95% CI | |
|------------------------|----------------|-------------------------------|--------------------------|-----|
| | | | LL | UL |
| Indirect Effects | | | | |
| Autonomous Motivation | .06 | .07 | .06 | .18 |
| Emotional Intelligence | .05 | .04 | .00 | .14 |
| Challenge Appraisals | .16 | .04 | .08 | .25 |
| Both Mediators | .04 | .02 | .00 | .09 |
| TOTAL | .31 | .07 | .17 | .44 |

Note. BCa, bias corrected and accelerated; CI = confidence interval; *LL* = lower limit, *UL* = upper limit; 5000 bootstrap samples.

Figure 3

Serial multiple mediations model of the effect of autonomous motivation on resilience directly and indirectly through emotional intelligence and challenge appraisals (Teachers)



Note. Dotted line, path *c'*, represents the effect of autonomous motivation on resilience when emotional intelligence and challenge appraisals are not included as mediators.

The results from the second mediation analysis (Hayes Model 6) are reported in Table 8. Consistent with previous research, the model showed a significant direct effect of autonomous motivation on resilience ($c' = .25, p < .00$). As predicted, significant direct effects of autonomous motivation on risk propensity ($a_1 = .15, p < .05$) and positive humour ($a_2 = .32, p < .05$) emerged. Risk propensity was not significantly related to positive humour ($a_3 = .12, p = .60$). However, there was a significant direct effect of humour on resilience ($b_2 = .15, p < .05$) but there was no significant direct effect of risk propensity on resilience ($b_1 = .02, p = .89$). To interpret our main hypotheses, the results revealed a significant indirect effect through positive humour (point estimate = .05, 95% BCa CI [.00, .12]) and an insignificant indirect effect through risk propensity (point estimate = .00, 95% BCa CI [-.03, .04]).

Table 6

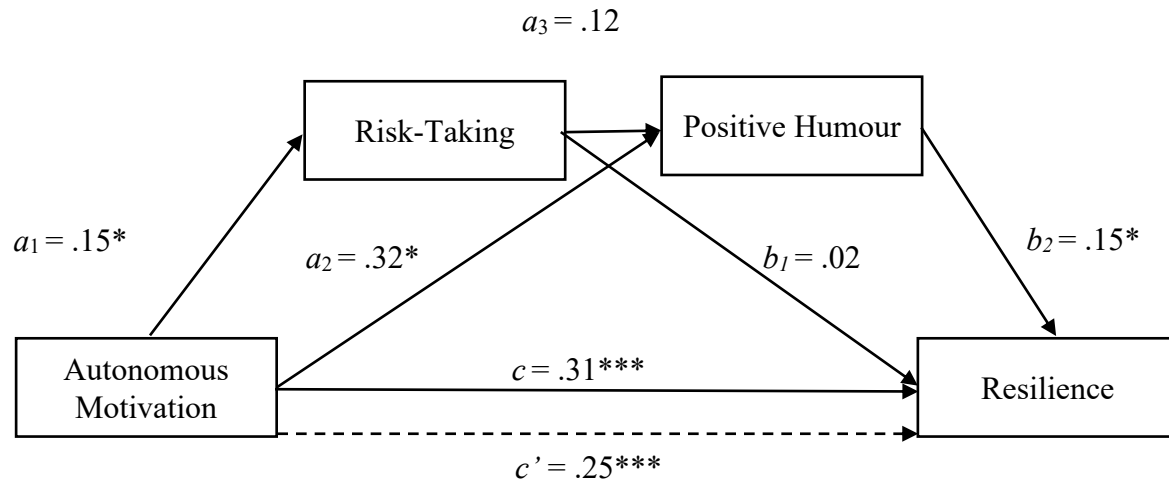
Indirect effects of autonomous motivation on resilience through risk-taking and positive humour (Teachers) (N = 69)

| | Point Estimate | Product of Coefficients | Bootstrapping BCa 95% CI | |
|-----------------------|----------------|-------------------------|--------------------------|-----|
| | | SE | LL | UL |
| Indirect Effects | | | | |
| Autonomous Motivation | .25 | .07 | .11 | .40 |
| Risk-Taking | .00 | .02 | -.03 | .04 |
| Positive Humour | .05 | .03 | .00 | .12 |
| Both Mediators | .00 | .01 | -.01 | .02 |
| TOTAL | .31 | .07 | .17 | .44 |

Note. BCa, bias corrected and accelerated; CI = confidence interval; LL = lower limit, UL = upper limit; 5000 bootstrap samples.

Figure 4

Serial multiple mediations model of the effect of autonomous motivation on resilience directly and indirectly through risk-taking and positive humour (Teachers)



Note. Dotted line, path c' , represents the effect of autonomous motivation on resilience when risk-taking and positive humour are not included as mediators.

Discussion

The goal of the two studies presented here was to support, and extend, previous resilience research by examining the relationship between resilience and specific factors that have shown to impact resilience including - motivation orientation, emotional intelligence, challenge appraisal, risk-taking, humour. The results provided further evidence of a statistically significant relationships between all of the proposed constructs amongst employed individuals. Furthermore, the serial multiple mediation models are a unique addition to both SDT and the resilience literature that indicates emotional intelligence, challenge appraisals, positive humour, and risk propensity are important mechanisms of resilience.

Resilience is a key factor that can help elucidate how employees effectively handle workplace stress and adversity. Hartmann et al. (2020) suggested that future research should provide further understanding of specific processes by which resilience develops and may

positively impact work outcomes. Organizations are encouraged to identify how employees may build resilience as a developable process. Each of the presented studies provided support to these initiatives by providing potential processes by which resilience is built, or amplified, in employees.

The results of Study 1 revealed that the proposed multiple mediation showed a significant direct effect of autonomous motivation on resilience. In addition, emotional intelligence and challenge appraisals mediated the relationship between autonomous motivation and resilience. The sequential mediation through emotional intelligence and challenge appraisals indicates the combined presence of both mediators may be essential for the development of resilience. Furthermore, in the second multiple mediation model, results revealed a significant direct effect of autonomous motivation on resilience. The results are consistent with previous research within the industrial-organizational field indicating higher autonomous motivation leads to the promotion of resilience (Crane, 2017). In addition, positive humour and risk propensity mediated the relationship between autonomous motivation and resilience. The sequential mediation through positive humour and risk propensity indicates the combined presence of both mediators may be valuable for the development of resilience. As hypothesized, individuals who were autonomously motivated had higher levels of resilience and the relationship was mediated by positive humour and risk propensity.

Results of the first mediation model in Study 2 showed similar results to those of Study 1, specifically within a sample of teachers, further supporting the notion that motivation orientation strongly fosters resilience through both emotional intelligence and challenge appraisals across occupations. These results are consistent with previous studies that demonstrated how teachers who were more autonomously motivated possessed more resilience to pressures (Roth, 2014).

Furthermore, the results are in line with previous research that demonstrates how autonomous motivation creates the right conditions for individuals to perceive situations as challenges, subsequently creating a protective layer against job strain, exhaustion, and burnout (Hakanen et al., 2005).

Results of the second mediation model did not fully replicate those found in Study 1, when examined within the sample of teachers. While positive humour did mediate the relationship between autonomous motivation and resilience, risk propensity did not. This may be due to the fact that different occupations encounter different stressors and attract different personality profiles. It is suggested that those employed in sectors with greater bureaucracies, experience an institutionalized caution rather than risk-taking ethos (Paton & Filby, 2019). It is also possible that because the teacher sample was predominantly female, this did not reveal risk-taking as a mediator. This is consistent with risk-taking research, as historically, males have been identified as greater risk-takers than females (Apicella et al, 2017). Furthermore, previous research has shown that men and woman have different risk-taking levels. Additionally, sensation-seeking has been found to predict different kinds of humour, with sensation seeking predicting positive (affiliative) humour styles in men only (Kennison & Messer, 2018). Lastly, the difference may be that the teacher's sample was not large enough.

Limitations and Future Directions

Both studies do not go without limitations. The second study was predominantly female, which makes it difficult to generalize the results across male teachers. Future research should aim to get a more balanced sample of both genders as previous research has shown differences between genders in regard to how they experience and subsequently deal with stress (Salin, 2021). For example, it has been suggested that female teachers could be more susceptible to

workplace stressors as they have less resources at home and greater demands in the workplace (Stengard et al., 2022). Other gender disparities that have been studied in relation to women in male dominated sectors as well as the increased stress women with children experience when working remotely (Lyttleton et al., 2020; Bridges et al., 2021; Wills, 2019).

Furthermore, each study consisted of entirely self-report questionnaires, which may result in inflated or deflated responses due to the social desirability effect (Petróczi & Nepusz, 2011). Moreover, it would be beneficial to replicate findings using experimental or quasi-experimental designs. Experimental designs may include the manipulation of environments to be more or less autonomy supportive or the manipulation in the level of autonomy for specific workplace tasks. Furthermore, supervisor feedback could be tailored to be autonomy-supportive vs. controlling or no feedback at all. The correlational nature of the research design does not allow to make cause-effect inferences. However, mediation analysis hypothesizes causal networks among variables and the conclusions from such analysis are useable if causal assumptions are valid (Judd & Kenny, 2010). Lastly, the cross-sectional data may lead to common method variance affecting the validity of our results (Podaskoff et al., 2003). We urge future research to replicate the findings of this study longitudinally and across various occupations to further examine whether employment type influences these findings. Future studies are encouraged to examine additional characteristics and mechanisms as mediators between the relationship of autonomous motivation and resilience, such as interpersonal factors, intrapersonal factors, and personality traits. Through the exploration of more factors, the process and development of resilience can be better understood.

Additionally, the sample size for study 2 is quite small which may affect power. Power calculations for mediation analyses prove to be more complicated as an indirect effect is formed

as a product of two effects with no agreed upon way of quantifying the magnitude of those effects or their product (Hayes, 2018). A power analysis simulation (Schoemann et al., 2017) were used to calculate the power, indicating sufficient power, yet caution is warranted as the call to improve power calculations for mediation analyses and provide better tools still remains (VanderWeele, 2020).

Irrespective of these limitations, the studies provide further groundwork for understanding resilience and future research should be conducted to build on the factors examined here and their role in the development of resilience including, motivation orientation, emotional intelligence, challenge appraisals, risk propensity, and humour, particularly within employees. They offer a building block for future studies to examine the impacts of various forms of employment and subsequent facilitation of building resilience within the workplace. These findings could be used to improve training, counselling, and resilience building strategies and initiatives with employees for refining resilience, a crucial attribute for performing and succeeding optimally across life contexts.

Furthermore, these predictor variables should be studied in various work contexts to learn how resilience arises amongst different populations and to examine whether it varies according to different vocations. Replicating the model across various occupations will help efforts to target which mechanisms are most relevant for specific forms of employment.

Future research may expand on the different facets of emotional intelligence to potentially identify ones that may account for contributing to resilience more than the others. While our model demonstrated the importance of emotional intelligence for challenge appraisals and resilience, it did not explore the specific dimensions of emotional intelligence and their potential importance for the two constructs. Previous research has demonstrated the importance

of the emotional intelligence facet of adaptability and its positive impact on performance, especially in high stress jobs (Bernard, 2018). Future research may consider examining facets and their implications for different occupations.

Conclusion

The purpose of the studies presented here was to investigate the relationship between motivation orientation, emotional intelligence, challenge appraisals, risk-taking, humour, and resilience within employed individuals. Emotional intelligence and challenge appraisals successfully mediated the relationship between autonomous orientation and resilience amongst various occupations as well as the specific occupation of teaching. Thus, highlighting their potential importance for informing workplace resilience initiatives and maintaining employee retention. Risk-taking and positive humour successfully mediated the relationship between autonomous motivation and resilience amongst various occupations but not specifically within teachers. Therefore, indicating the value of further investigating their role in developing resilience within employees. The studies further established emotional intelligence and challenge appraisals as important mechanisms of resilience and identified novel mechanisms, risk-taking and positive humour. Overall, the studies suggested integral constructs for developing resilience within employed individuals.

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Insights of Infantry Soldiers: A Qualitative Exploration of Psychological Resilience and Stress

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Abstract

The Canadian Armed Forces (CAF) is currently struggling with a retention crisis. Within the CAF, The Canadian Army (CA) experiences the greatest attrition rates. Staffing shortages lead to an increase in job demands subsequently leading to greater stress, burnout, and turnover intentions. Psychological resilience has been found to buffer the negative effects of workplace stressors. There is a need to understand resilience within specific occupations to better inform resilience building interventions. This study aims to enhance knowledge of how infantry soldiers in the CA define resilience and what challenges they experience within the workplace that contribute to stress and how they cope with such stressors. A qualitative approach was used, with 14 semi-structured interviews conducted with CA personnel employed as infantry soldiers. Data were analyzed using a deductive content-analysis. Four themes emerged from the interviews: the nature of resilience, challenges of the profession, resilience strategies (attitudes), and resilience strategies (protective practices). The study provides unique insights into the experiences of infantry soldier's and the mechanisms they employ to facilitate and maintain resilience.

Introduction

The Canadian Armed Forces (CAF) is currently facing a dire retention crisis, as they are presently short ~16,000 personnel from an authorized manning level of 67,000. This equates to a 24% shortage, which approaches the 30% threshold identified by U.S. military doctrine, of what is no longer considered to be an effective combat unit (United States Army, 2021). Occupational research has demonstrated that staffing shortages lead to increased job demands, which then lead to greater stress, burnout, and subsequent turnover intentions (i.e., the degree to which people think about leaving an organization) (Humphries et al., 2013; Shah et al., 2021; Tracey & Hinkin, 2008). The military context is not bullet proof when it comes to staffing shortages and turnover consequences described in the aforementioned studies. Among the three elements of the CAF, the Canadian Army (CA) experiences the highest attrition rates. Within the CA, specific “at risk” occupations experience even greater attrition, for example, the combat arms trade. As the CAF focuses on reconstitution, it is imperative to examine what factors can support retention. One factor that has been identified is that of resilience, however, as there is currently a deficit in understanding how psychological resilience is cultivated and how to improve, or maintain, it within this population further research is warranted.

Psychological resilience has been proven to buffer the effects of workplace stress (Fletcher & Sarkar, 2013). Psychological resilience is defined as an individual’s ability to bounce back and adapt in the face of adversity (Netuveli, 2008). This study considers resilience as a process, resulting from ongoing transactions between an individual and their environment (Fleming & Ledogar, 2008). Given the nature of the job of an infantry soldier, it is important to include the environment when considering how resilience is conceptualized. Stress is comprised of both physiological and psychological responses when an individual encounters a perceived

threat (i.e., a stressor that is considered to lead to some kind of loss, harm, or negative consequence) (Wright, 2014). Within the workplace, stress is often experienced when the demands of a situation are perceived by that individual to exceed their resources. Resources can be internal to the individual such as self-efficacy and competence, or external to the individual, such as staffing levels or workload (Hasan et al., 2018). When an individual feels they have enough resources to face a particular stressor, they respond in a positive way and they will rely on coping mechanisms to change the environmental stressor or manage their emotional response to the stressor (Kinman, 2001; Mazzola et al., 2011). In contrast, if they feel they do not have enough resources they may experience increase in stress, stress-related illnesses, and burnout (Colligan & Higgins, 2006). For example, when proper equipment is either unavailable or inadequate, it makes it increasingly difficult or impossible to perform one's duties and subsequent stress may be experienced. For psychological resilience and its interaction with an individual's stress response, there has been little research focusing specifically on infantry soldiers within the CAF.

Lower levels of resilience within military personnel have been linked to negative consequences such as substance abuse (Hoopsick et al., 2021), higher baseline anger (Campbell-Sills et al., 2021), and Post Traumatic Stress Disorder (PTSD) symptoms (Andersen et al., 2014). While higher levels of resilience within military personnel have been associated with greater adjustment, well-being (Sohail et al., 2021), and lower likelihood of exhibiting turnover intentions (Hettigoda & Hamersley, 2019). Furthermore, higher levels of resilience have been linked with lower levels of turnover intentions in various other occupations (Indirasari et al., 2019; Kokubun et al., 2020; Smith et al., 2020) Most resilience training within the military does not go through full scientific testing and few studies have examined the effectiveness of

resilience training programs over time (Britt et al., 2016). It is often difficult to differentiate resilience training programs from traditional stress management training programs in the general working population (Vanhove et al., 2015). However, when resilience training programs are targeted to employees, in general, the effectiveness of the training for resilience has been found to increase over time (Britt et al., 2016).

Typically, interventions have been designed to improve resilience at the individual level, missing organizational issues that impact resilience such as staffing, workload, and the shortage of resources – issues that have been identified by the CAF. Resilience at the organizational level has been found to be important in various areas of resilience research (Vogus & Sutcliffe, 2007). Resilience research on first responders (e.g., paramedics and firefighters) has highlighted the benefits of concentrating on organizational factors for supporting and fostering resilience (Scully, 2011). The aforementioned research serves as a springboard for further resilience research within the context of organizational factors among specific occupations, as it can highlight issues for specific occupations, such as the CA, thus, being able to provide specific resilience and coping intervention programs to these personnel.

Self-Determination Theory (SDT; Deci & Ryan, 1985, 2017) is a theory of human motivation that examines how conditions support or thwart the inherent capacity of psychological growth, engagement, and wellness. A sub-theory of SDT, Organismic Integration Theory (OIT) differentiates between types of motivation from amotivation to autonomous (Deci & Ryan, 2017). Autonomously motivated individuals are considered to have the ability to recognize their authentic selves. Ryan and Deci (2017) propose that three basic psychological needs (autonomy, competence, and relatedness) are essential for autonomous behaviour and the satisfaction of these needs forecasts the degree to which a person's actions are fueled by

autonomous motivation and consequently their level of well-being (Vansteenkiste & Ryan, 2013). Crane et al. (2019) suggests that fostering autonomous motivation may increase resilience thus suggesting, satisfying the three basic psychological needs may be particularly important. Therefore, SDT provides a framework for leadership within the workplace, detailing the benefits of fostering an autonomy supportive environment through the satisfaction of autonomy, competence, and relatedness, in turn boosting resilience.

Given the evidence suggesting the importance of resilience in managing workplace challenges, and the specific challenges faced by CA personnel, it was decided to conduct a qualitative study of infantry soldiers to understand the specific challenges they face and how these impact their level of resilience. The current study aims to a) illuminate and understand the specific challenges faced by infantry soldiers, b) understand how workplace challenges affect the well-being of infantry soldiers and how they cope with challenges, c) understand how infantry soldiers define resilience, d) establish what factors are stressors and possibly hinder resilience, and e) ascertain what practices and strategies infantry soldiers use to maintain their resilience and cope with stressors.

The present study will extend current resilience research through the exploration of infantry soldier's challenges to their resilience that they encounter within the workplace and to understand resilience within the CA and the CAF as a whole.

Methods

The study followed the CORE-Q reporting guidelines for qualitative studies (Tong et al., 2007), a 32-item checklist to help guide researchers to report qualitative research in a comprehensive and transparent way covering a wide array of topics (research team, study design, data collection,

findings, and ethical considerations).

Data Availability Statement

The participants of this study did not give written consent for their data to be shared publicly, so due to the sensitive nature of the research supporting data is not available.

Participants

A total of 14 Canadian Armed Forces, personnel were interviewed. All participants were male and ranged in age from 25-33 ($M = 29.07$, $SD = 2.79$). Interviews were conducted with 12 Non-Commissioned Members (NCM) and 2 Officers. All participants were infantry soldiers, with most completing speciality courses such as basic reconnaissance and basic parachutist. Number of years of service ranged from 4 years to 12 years ($M = 9.3$, $SD = 2.5$) and number of deployments ranged from 0 to 3 ($M = 1.36$, $SD = 1.08$).

Interview Design

A total of 14 interviews were conducted and ranged in length from 16 minutes 36 seconds to 43 minutes 11 seconds ($M = 33$ min 22 s; $SD = 14$ min 08 s). A total of 147 transcript pages were generated. Semi-structured interviews adapted from Dowd et al. (2018) were used (Appendix D). The purpose of the interviews was to obtain information on the interviewee's definition of resilience, the perceived challenges of their job, strategies they use to remain resilient and deal with challenges that they encounter, and advice they would provide their peers on how to remain resilient in the challenging military environment. The interview questions were designed to gain knowledge, which could be used to aid in the development of effective interventions at both the system and individual level.

Procedure

The semi-structured interviews were carried out by the primary researcher who is a PhD candidate in Psychology and holds an MSc. in Mental Health. Participants were recruited using a variety of social media strategies. Information on the study was distributed by email when participants then inquired about participating in the study. After this, a snowball sampling technique was used (Atkinson & Flint, 2001), such that interviewees were asked to identify other potential participants. Participants were emailed a study information sheet prior to the interview and provided consent at the beginning of the interview. Interviews were conducted via Zoom or telephone call. All interviews were audio recorded and transcribed. After transcription, the audio recordings were destroyed. Interviews continued for as long as interviewees were volunteering. Fourteen interviews were conducted, meeting qualitative data saturation guidelines (Hennink & Kaiser, 2021). Specifically, saturation was met and achieved when no further data (new themes, subthemes, or explanations) could be found that provided any further insights and data began to be redundant thus, indicating all important issues and insights had been extracted.

Data Analysis

A deductive content analysis approach (Elo & Kyngas, 2007) was used for analyzing the data. Two researchers, both with Masters (Mental Health and Psychology) performed the coding. Themes and subthemes previously identified were used as the initial framework for coding the data (O'Dowd et al., 2018; Zwack & Schweitzer, 2013). The initial framework included the following themes: the nature of resilience, challenges of the profession, resilience strategies (protective practices) and resilience strategies (attitudes). Any changes made to the Zwack and Schweitzer (2013) framework was discussed until consensus was met, which included the addition of new subthemes or the elimination of subthemes. Primarily, subthemes differed when

it came to occupation specifics. Similar to O'Dowd et al. (2018) the changes to the Zwack and Schweitzer (2013) framework include "resilience strategies" were categorized as protective practices or attitudes, and additional themes and subthemes were added. The researchers read each transcript, coded each interview using the initial framework, and compared their coding of all data until consistent coding was accomplished. Coding was done line by line, and content from the soldier's interviews were deducted through the initial framework themes and subthemes. All final coding was examined and agreed upon by the researchers. Themes and subthemes are listed in Table 1.

Table 1

Number and percentage of interviews which explored subthemes

| Theme Subtheme | Sample (<i>n</i> = 14) <i>n</i> ; % |
|--|--|
| The nature of resilience | |
| Coping with challenges | 14; 100% |
| Moving forward despite failure/setbacks | 10; 71% |
| Mental state | 6; 43% |
| Maintaining health & well-being | 5; 36% |
| Developing with experience | 5; 36% |
| Achieving goals | 2; 14% |
| Challenges of the profession | |
| Immense physical demands | 14; 100% |
| Maintaining health | 12; 86% |
| Lack of autonomy | 8; 57% |
| Not doing job that was trained for | 7; 50% |
| Deployments | 6; 43% |
| Operating in harsh environments | 5; 36% |
| Training implications | 5; 36% |
| Effects on the family | 4; 29% |
| Constant mental focus | 4; 29% |
| Trusting others with your life | 3; 21% |
| Staffing shortages | 2; 14% |
| Level of personal competence | 1; 7% |
| Resilience Strategies (Attitudes) | |
| Motivation and opportunities in challenges | 11; 79% |
| Keeping a positive outlook | 9; 64% |

| | |
|---|----------|
| Maintaining perspective | 8; 57% |
| Humour | 8; 57% |
| Resilience Strategies (Protective Practices) | |
| Maintaining physical fitness | 14; 100% |
| Support from colleagues | 14; 100% |
| Support from family and friends | 14; 100% |
| Challenging oneself | 12; 86% |
| Learning from the past | 9; 64% |
| Goal setting | 9; 64% |
| Hobbies | 9; 64% |
| Work-life balance | 7; 50% |
| Box breathing | 4; 29% |
| Visualization | 3; 21% |
| Educating oneself | 3; 21% |

Results

Themes

Five themes are presented from our analysis and further divided into subthemes (discussed below). Each theme and their subthemes can be found in Figures 1-4 and Table 1.

Theme 1: The Nature of Resilience

Theme one captures how participants define resilience and what it means to them. Six subthemes emerged from the 14 interviews (Figure 1). “Coping with Challenges” was the first theme to emerge, with all participants signifying that resilience was the ability to cope with challenges or difficulties: *“someone who’s resilient is someone that’s able to be in a difficult situation or stressful environment and have the self-awareness, or flexibility to maintain who they are and not let stressors or difficulties to have a negative impact on them”- P9* and *“Resilience is the ability to not allow external or internal stressors to affect your performance. I guess, to sort of compartmentalize the stressor so you can focus on the job at hand” – P14*. The majority of participants also considered resilience as “Moving Forward in Spite of Failure/Setbacks” indicating they continued to make progress and pursue goals in spite of

challenges or difficulties. They did not let any setbacks or failures deter them and continued to persevere. One participant stated *“the state of being or mindset, that regardless of the obstacle or the task at hand, that you will kind of persevere no matter what, and you’ve got both the mental and kind of physical fortitude to kind of grind down and get through something, no matter what that kind of challenge is”* – P5 and *“It’s the ability to kind of look at like a shitty situation or maybe a difficult task and just adapt to it and persevere. – P7”*. The third subtheme comprised resilience as a “Mental State or Mindset” with almost half of participants considering resilience as a mental fortitude or toughness. This theme refers to participants overall attitude and perspective on life. Mindsets have been found to affect and influence coping, indicating its connection with the first theme of “Coping with Challenges”. Participants stated the following, *“Mental fortitude during challenging times”* – P4 and *“Like a big thing in life is just sort of positivity. So I guess making it through, like something that’s very difficult or challenging, and sort of remaining positive and, I guess a good mindset to keep pursuing what you want to do, although it may be tough.”* - P3. The subtheme of “Maintaining Health and Well-Being” was discussed by almost 1/3 of participants, defining resilience as keeping physically healthy and level of well-being despite stressors, with one participant stating resilience encompassed *“looking at stress in a healthy and positive way”* – P14, and another stating *“You’re able to keep moving forward while staying healthy is what I would classify as being resilient. – P12*. Almost half of participants discussed the importance of previous experiences and exposure for developing their psychological resilience resulting in the subtheme “Developing with Experience” as one participant stated, *“resilience is just exposure, put yourself in conditions that are right before your breaking point, or, you know, even at a place that’s like a little bit uncomfortable”* – P7 and another stating *“Like you know, my personal resilience comes from*

lived experience.” – P5. Lastly, the theme of “Achieving Goals” emerged amongst a small number of participants, indicating their definition of resilience included achieving goals and accomplishing what they set out to. One participant stated “*achieve a goal despite the hardship and sacrifice that’s required*” - P6 and another stated “*...living happy or achieving goals or striving for purpose you deem or that you want in life*” – P2.

Figure 1

The Nature of Resilience: Subthemes and the percentage of interviews in which they were mentioned



Theme 2: Challenges of the Profession

Theme two focuses on the challenges and stressors specifically associated with working in the military context as an infantry soldier. There was considerable consistency across participants when identifying themes. This theme is comprised of 12 subthemes (Figure 2); quotes from participants can be found in Table 2. A prominent subtheme was the “Immense Physical Demands” of the job. Within this subtheme issues consistently brought up included: the large amount of weight that is required to be carried (equipment and kit), maintaining peak fitness and injury management. The second subtheme was “Effects on the Family”. Participants spoke about the challenge of having a work-life balance and the long periods of time away from their partner and family. “Maintaining Health” was another prominent subtheme with participants expressing the difficulties in eating properly, maintaining hydration and the deleterious effects of sleep deprivation. A dominant and unique subtheme that emerged was “Not Doing the Job that was Trained for”. The majority of participants discussed the mentally defeating and damaging effects of training for the job that they never actually get to perform, in addition to not getting to use their skillset. The subtheme of “Operating in Harsh Environments” was discussed by participants, noting unpredictable weather, tough terrain, and rough living conditions when deployed or on exercise. The subtheme of “Lack of Autonomy” was discussed by participants, echoing the number of things that are out of one’s control, copious last-minute tasks and having to leave on a moment’s notice. “Training Implications” was a subtheme that was communicated by participants, specifically noting the lack of consistent training, long hours of training/exercises and the serious risks associated with training. Additional subthemes divulged were deployments, trusting others with your life, the level of personal competence required, constant mental focus, and staffing shortages.

Figure 2

Challenges of the Profession: Subthemes and the percentage of interviews in which they were mentioned



Table 2

Quotes representing the subthemes of the theme challenge of the profession

| Subtheme | Quotes |
|------------------------------------|---|
| Immense physical demands | <p><i>“The job is just physically demanding. So physically you need to be, uh, very fit to do this job, my gear weighs more than I do” – P9</i></p> <p><i>“Military itself is already gonna be physically challenging, it puts physical demands on people, things that sort of push people to, that could push people to their physical limits” – P11</i></p> <p><i>“Then physically, uh, well it’s a physically demanding job with the requirements, carrying lots of weight, being in the field, that kind of stuff, it’s a lot” – P13</i></p> |
| Maintaining health | <p><i>“So sleep deprivation, I would say is also a physical, a like physical health deterrent. And then as all, like not eating enough” – P14</i></p> <p><i>“If you’re trying to maintain a healthy weight or maintain, hydration and you know, not get the long term detriments of sleep deprivation, or uh severe dehydration and you know, it’s not beneficial to like longevity.” – P4</i></p> <p><i>“You’re put in a place where you’re very commonly injured. You’re not eating healthy, unable to um, rest and recover, deteriorate and destroy your body and hurt your body” – P1</i></p> |
| Lack of autonomy | <p><i>“In general, youre gonna experience a lot of stress in terms of facing unknowns, a job where you don’t necessarily know or choose what you’re gonna be doing, uh on deployment or whatever” – P11</i></p> <p><i>“Well because it’s your buddy and yourself’s life on the line so it can be stressful when the decisions that dictate that aren’t always up to you” – P14</i></p> |
| Not doing job that was trained for | <p><i>“We don’t get any deployments. You don’t really get to do the job. Do all that training and to not do it. You know what I mean? We do all this training and we go on exercise and we try and we master the basics and we do all this stuff, but we never actually get to apply it in the real world because we don’t deploy” – P12</i></p> <p><i>“The prospect of actually going over and doing the job isn’t there... we’re training for a job we’ll never do. – P4</i></p> |
| Deployments | <p><i>“Of course deployments” – P3</i></p> <p><i>“The unknowns of deployments can be quite stressful and the lack of connection with back home” – P14</i></p> |

| | |
|---------------------------------|---|
| Operating in harsh environments | <p><i>“Operating in like very harsh environments, uh, winter climates, very harsh climates, or um, deserts, or jungles, or whatever” – P11</i></p> <p><i>“To stay focused and stay in it when you’ve been out in the cold and the rain and you’re tired and, you know, you’ve carried all this gear and you haven’t seen anything in three days, it’s just, it’s a lot of work” – P9</i></p> |
| Training implications | <p><i>“I guess it’s just like the lack of consistent training” – P4</i></p> <p><i>“Training, like training is long hours. It’s um stressful cause if you screw up it could cost someone’s life really in hindsight” – P6</i></p> |
| Effects on the family | <p><i>“Your partner is in this constant state of waiting and that is kind of like a huge challenge” – P1</i></p> <p><i>“In some circumstances, it’ll be like, you’re going to do this in like two weeks, sudden nature of opportunities, by they don’t work for families. It could be pretty tough to just have sudden things come up and you have to go away for weeks or months” – P3</i></p> <p><i>“The time away from home, I think would be one of the most impactful things. Leaving at a moment’s notice, uh, for an extended period of time away from your family and loved ones” – P10</i></p> |
| Constant mental focus | <p><i>“On call 24/7, feeling like you’re being hunted, constantly looking for threats and I find that part to be much more tiring than anything else” – P5</i></p> <p><i>“In a constant state of like what could go wrong. Scanning for what that next threat or that next kind of obstacle may be. Kind of draining to always be looking at the bad side of things and the doom and gloom” – P7</i></p> |
| Trusting others with your life | <p><i>“To be able to trust other people, to like, I guess to do their job properly and like be aware of what’s going on” – P6</i></p> <p><i>“This job could be life or death, you could be relying on your buddies for your life” – P14</i></p> |
| Staffing shortages | <p><i>“The military is really short on people these days and well, uh that affects a lot of things. I think that uh, creates, uh the mental challenges too and affects families and work life balance and everything” – P13</i></p> <p><i>“There’s a lack of personnel across the military and that affects everything. Like extra duties or less training or less time off” – P2</i></p> |
| Level of personal competence | <p><i>“You’re expected to know a lot, you might be expected to take on a lot of knowledge and be competent in that at any given time, uh, that could put stress on your mind” – P11</i></p> |

Theme 3: Resilience Strategies (Attitudes)

The theme of resilience strategies (attitudes) are described as the attitudes or mindsets that aid in promoting or maintaining resilience. The present theme refers to personal attitudes and thoughts of the individual. This theme is comprised of 4 subthemes (Figure 3). There was significant consistency across participants' responses. A dominant subtheme was "Keeping a Positive Outlook", where participants described the benefits of remaining positive during down times and choosing to look at the advantages of embracing a positive attitude. One participant stated *"I've always been kind of like a positive guy, like honestly I have a big distaste for negativity. So honestly I look at a lot of these things, like a challenge positively and I'm motivated by the nature of some of them. I definitely try my best and I feel motivated by the fact that they're challenging"* – P13 and another stated *"Keeping a positive outlook, being able to take in information on what you've done wrong and move forward. I would seem like a waste u, to not, um take advantage of the opportunity."* – P1. The second prevailing subtheme was "Maintaining Perspective", where participants explained how remaining cognizant of getting through previous hard times aided in the present moment or looking at the bigger picture and not "sweating the small stuff". With one participant stating *"Things can always be a little bit of a bigger deal, but at the same time, not really, it depends and it's all about your perspective"* – P4 another stating *"You know, look at a stressful situation or whatever situation I may be in at the time uh, with a little but more perspective, uh when I slow things down like that"* - P2. The third subtheme that many participants considered to contribute to resilience was "Having a Sense of Humour" and being able to laugh things off or engage in laughter with colleagues. One participant shared *"Having a sense of humour, best advice I've ever gotten was no matter what, no matter how messed up things are, no matter how things don't make sense, just keep a sense of*

humour” and others stated *“Laughter and happiness, comradery, you know, it is the laughter, like, don't take life too seriously. Like you just gotta laugh about it”* – P6 and *“Every time something kind of goes wrong or gets hard, they kind of like laugh and uh laugh at it and then try to like come back, like that's where their resilience is really high”* – P11.. Lastly, a prominent theme that was consistent across interviews was finding *“Motivation and Opportunities in Challenges”*. *“you kind of learn to love, like the things that get hard really, cause you look back and it's an accomplishment... the more difficult it is, it's more of a challenge so when you succeed, it feels good”* – P14 and another stating *“Challenging yourself, I find myself, sorta looking, I guess you could say for obstacles in order to once again, challenge myself and to give myself a better understanding so then I can go on and overcome other challenge or overcome other obstacles as well. It's important for me to push myself outside, the boundaries of what I'm comfortable with in order to improve that much more”* P2. Participants described the opportunity for growth, motivation, and confidence that they felt from being challenged in the workplace that subsequently fueled their resilience.

Figure 3

Resilience Strategies (Attitudes): Subthemes and the percentage of interviews in which they were mentioned



Theme 4: Resilience Strategies (Protective Practices)

The following resilience strategies (protective practices) are described as behaviours and practices that participants discussed as contributing to their resilience. Protective practices are considered as outward behaviours. This theme included 11 subthemes (Figure 4), quotes from participants can be found in Table 3. The subtheme of “Maintaining Physical Fitness” was mentioned in all interviews, where participants reiterated the importance of maintaining peak physical fitness for their psychological resilience. Furthermore, a prominent subtheme was “Goal Setting” which was evident in over half of the interviews, where participants described the importance of setting goals, “stepping stones” and milestones to work towards, with a participant saying *“in terms of resilience, take it one step at a time and don’t just look at the end goal but look at what you can do in the next hour, next 12, next 24 and so forth”* and *“goal setting, having that next thing to look forward to, carrot on a stick if you wanna say, to keep going and keep you wanting more.”* “Support from Family and Friends” as well as “Support from Colleagues” emerged as subthemes from interviews. These subthemes are interconnected as participants expressed the importance of seeking social support within their workplace as well as outside of it and the positive implications for facilitating their resilience. The significance of comradery was echoed throughout several interviews with one stating *“camaraderie and just talking with the guys, just joking around, you need that”*. Other prominent subthemes that emerged were learning from the past, challenging oneself with stepping outside of your comfort zone, visualization, educating oneself, having a work-life balance, engaging with hobbies and box breathing.

Figure 4

Resilience Strategies (Protective Practices): Subthemes and the percentage of interviews in which they were mentioned.

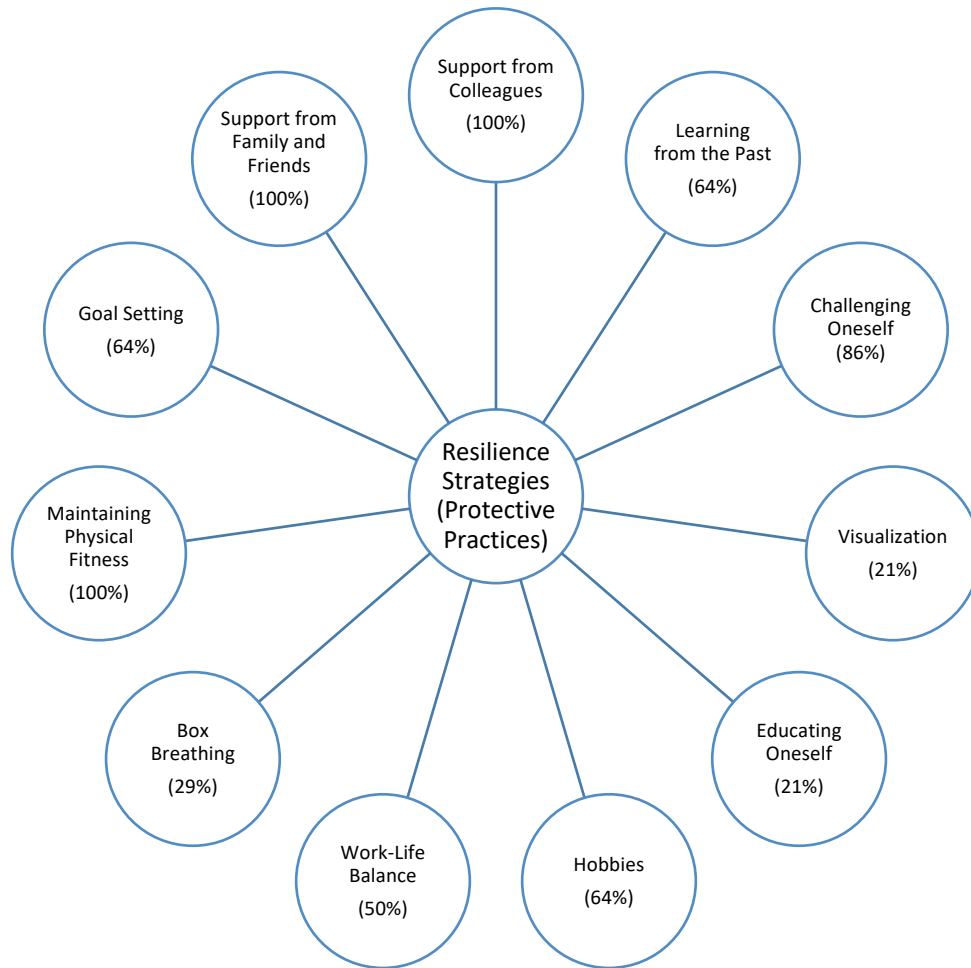


Table 3

Quotes representing the subthemes of the theme resilience strategies (protective practices)

| Subtheme | Quotes |
|---------------------------------|--|
| Maintaining physical fitness | <p><i>“Hard physical training, like stronger physical training, you develop like very good mental health and mental strength through strong physical training” – P5</i></p> <p><i>“The constant is just fitness, I think mental resilience also comes along with the confidence of knowing that you can accomplish like physically difficult tasks” – P9</i></p> <p><i>“Physically stay fit regardless of work or not, I think physical fitness like helps a lot with mental resilience. If you’re able to physically, you know, feel good, look good, and do your job well, it’s gonna help a lot with the mental side of things” – P1</i></p> |
| Support from colleagues | <p><i>“Everything is done in a team in the military and you know, one good thing about that is you have somebody to rely on” – P14</i></p> <p><i>“As long as you’re with a good group of guys, you can make it as fun even in the most miserable of times... it turns into like a brotherhood, always want to be helping each other, like we’ll do anything for each other, if we can” – P4</i></p> <p><i>“We have very close working relationships, finding those people who kind of get it, it’s always good to have, have somebody else that you can kind of lean on or at least just to talk about these things. Cause sometime people don’t get it really. In your smaller circles, you know the guys talking about things and bringing things up” – P3</i></p> |
| Support from family and friends | <p><i>“Connection to the people around me for some kind of support, somebody can have support at home and they’re capable of a hundred times more [than] what they’re capable without it. Having those kind of connections for your mental health and those kinds of things are huge in your resilience” – P7</i></p> |
| Challenging oneself | <p><i>“Challenging yourself and then learning from those challenges, because then the next challenge that comes up is maybe not as difficult or you’ve, you’ve kind of conditioned yourself to be accepting of challenges” – P14</i></p> <p><i>“I find myself, sorta looking, I guess you could say for obstacles, in order to once again challenge myself and other challenges or overcome other obstacles as well. It’s really important for me to sort of push myself” – P2</i></p> |
| Learning from the past | <p><i>“I guess the mental and physical kind of fortitude or resilience, those lived experiences is really what has kind of set me up in terms of like, just reflecting on, on you know, knowing what you’re truly kind of capable of” – P3</i></p> <p><i>“Those lived experiences is really what has kind of set me up in terms of like, like I said, just reflecting on, you know, knowing what you’re truly capable of” – P6</i></p> |

- Goal setting *“Goal setting and planning. That’s my theme for resilience, I’ve found can fix a lot of issues in life” – P6*
- “Set little milestones, there’s like small accomplishments where you feel good about yourself” – P11*
- “Goal setting, having that next thing to look forward to, whether it be a selection or something greater you want to do, or uh the next course you really want, yeah basically having that next carrot on a stick, if you wanna say, to keep going and keep you wanting more” – P4*
- Hobbies *“Hobbies, like hunting with buddies, go out hunting, have supper, a couple beers and just talk and never thought about my job” – P5*
- “Hobbies, I like to improve myself and get better at things like I play music and I skydive outside of work. And I read a lot of books and things like that. Staying physically fit regardless of work or not” – P1*
- “Maintain my hobbies, like hunting, fishing, rock climbing, sky diving. I like stuff that keeps me active and fit” – 6*
- “I love going for bike rides, find a park and read a book, its just like filler, nothing cerebral whatsoever and nothing to do with your reality” – P9*
- Work-life balance *“I just don’t bring any job, uh, anything work related back home. Like I, as soon as I’m done work, I don’t even answer texts, that’s the best coping strategy I have” – P12*
- “I think there needs to be much more clear kind of, um spearationg of church and state in terms of your work and yeah your personal life” – P3*
- Box breathing *“Sit down, close your eyes and think about, you know, take a cuple seconds and really think about what matters, do some box breathing” – P9*
- “I can vouch for box breathing, it’s a breathing technique that’s supposed to be able to lower your heart rate, which in turn should sort of combat the adrenaline rush you have” – P10*
- Visualization *“At least having a general idea for like the major dangerous outcomes we always try to do and I try to visualize what I’ll do in situations at all times. So we always try visualizing that and trying to have a plan in place” – P10*
- “Visualize, set yourself up for success, set those foals and try and continue to improve yourself” – P1*
- Educating oneself *“Educate yourself on, on physical techniques and like mental techniques and strategies and stuff like that, that can help you. You know start researching, learn about it, ask the professionals that they provide us” – P14*

“I was talking to a buddy about different situations and, yeah I’m finding that I’m still learning different things from that, that I’m still learning from events in my life and that’s definitely beneficial and like learn from failures” – P4

“Actually learning some new skills and how to deal with stress and cope with stress in healthier ways” – P2

Discussion

The dire need to understand and facilitate interventions to improve military personnel well-being, resilience, and retention, specifically within infantry soldiers is clear (Meredith et al., 2011). This study sought to contribute to existing knowledge regarding military personnel’s definitions, understanding, and experience of resilience, specifically studying infantry soldiers. Furthermore, to understand how workplace challenges affect the well-being of infantry soldiers and how they cope, identify, and understand specific challenges faced, and establish what stressors possibly hinder resilience, and what practices and strategies infantry soldiers use to cope with stressors and maintain their resilience. Lastly, we examine what organizational and system level factors contribute to the challenges of resilience, and how the definition and experience of resilience by infantry soldiers can contribute to the successful design of interventions.

Defining and conceptualizing psychological resilience remains to be a difficult endeavour (Fletcher & Sarkar, 2013). Our study and the theme “The Nature of Resilience” provides vital insights into how infantry soldiers understand and define resilience. All of the participants viewed resilience as “coping with challenges” explaining that resilience was the ability to cope with challenges or difficulties that they encounter. This was consistent with previous findings in regard to how employees understood resilience (Britt et al., 2016; Kuntz et al., 2017). The view of coping with challenges aligns with the organizational framework of resilience, illustrating the importance to have an in depth understanding of psychological resilience within certain

populations to better tailor workplace resilience interventions. The study helps to inform resilience-building programs specifically tailored to infantry soldiers. Future resilience interventions can be better informed for infantry soldiers when consideration is given to how they define and experience psychological resilience in order to better meet the needs of this specific population.

Work-related challenges were found to be both a hindrance and contributor to resilience. Challenges spanned from personal characteristics, interpersonal relationships with colleagues, the work environment, and organizational factors. The implications of work-related stress on resilience aligns with current stress related research and the way in which the workplace creates stress (Sonnetag & Frese, 2003). Certain stressors discussed by participants mirrors the experiences of other military personnel within the Air Force and Navy. For example, deployments, work-family balance, and training (Adler et al., 2004; Campbell & Nobel, 2009). Furthermore, results were in line with previous studies on military veterans in England and Ireland, indicating the need to experience stress for subsequent resilience (Doody et al., 2022; Merali, 2023).

Challenges of the job resulted in the emergence of various subthemes that indicated insufficient organizational resources as a work-related stressor. Previous research on insufficient organizational resources as a stressor, such as staffing shortages within various occupations, including the military, is evident (DePew et al., 1999) and its implications on resilience.

A unique stressor that emerged from the interviews as being particularly defeating to one's resilience, included not being able to perform the job that they trained to do. This fits with previous self-efficacy research and its connection to resilience. Resilience embodies both a person's belief and confidence in their abilities (self-efficacy) and the actual execution of those

abilities (Mallak, 1998). Indicating the importance of having opportunities to utilize their confidence by demonstrating their ability to perform their job. These findings, as well as previous research, suggest that when individuals are not given the opportunity to utilize their abilities and exercise their skillset outside of training scenarios, their resilience suffers.

Furthermore, the role of an infantry soldier is expected to be accompanied by a certain level of risk and when this risk is not experienced, personnel may be negatively impacted. Similar to those that engage in sport, risk-taking is not an unpleasant side effect, but often an effect that is sought after. Risk, in this respect, is experienced when an individual skillfully places themselves on the edge of order and chaos, they balance on a line of possible and impossible (Gairdner, 2019). Risk-taking behaviours have been connected to feeling alive, pleasure, a sense of euphoria (Murphy & White, 2011) as well as greater resilience (Mayer & Lukacs, 2014). Risk taking behaviours have been found to support coping and resilience by decreasing stress responses and increasing an individual's resources to manage adversity (McKay et al., 2018). Therefore, not being able to perform one's job, that is expected to come with a level of desired risk, may negatively impact one's resilience.

A notable stressor that was discussed by all participants was the immense physical demands of the profession. Particularly, the amount of weight required to carry was discussed and the physical toll that is taken on their bodies from performing their job. The vast physical demands on their bodies and the potential for injury were listed as potentially affecting resilience. Unsurprisingly, maintaining physical fitness was discussed as an imperative resilience strategy, elucidating the importance to upkeep physical fitness to prevent injury, support well-being, and overall resilience. Consistent with previous research on the mind-body connection,

illustrating how physical fitness contributes to overall well-being (Silva et al., 2020) and resilience (Chow & Choi, 2019; Van Der Feltz-Cornelis et al., 2020).

Individual behaviours and practices to increase resilience were discussed in all interviews. Specific practices were highlighted as beneficial to coping with work-related stressors as an infantry soldier. For example, maintaining physical fitness and obtaining support from family, friends, and colleagues emerge as important factors. These are themes that have been previously discussed in military research that explored mechanisms that aid with the demands of the profession (Doody et al., 2022; Nindl et al., 2018; Simmons & Yoder, 2013). Moreover, these findings are supported by previous research on the effects of social support on well-being and the reduction of stress (Hsei & Tsai, 2019; Ragsdale et al., 2021).

Additionally, participants suggested an array of attitudes that help maintain resilience. For example, embracing a positive outlook and maintaining perspective by looking at the bigger picture or drawing on previous hardships to aid in the present moment. Research on prisoners of war has previously demonstrated how engaging in positive thinking by reframing stressful events was strongly linked to resilience (Meichenbaum, 2012), which supports the emergence of this theme from our study. Moreover, the use of humour was a prominent subtheme, highlighting its contribution to resilience and well-being (Oosthuizen, 2021) specifically within infantry soldiers. Employees have been found to demonstrate resilience in regard to stress when they approach the circumstance with a humorous perspective (Hughes, 2008) demonstrating the notion that humour should be facilitated within the workplace for multiple positive outcomes. Furthermore, our study findings were supported by previous research on maintaining perspective, as it has been shown to be negatively associated with depression, anxiety, and stress, and positively related to resilience (Ryan et al., 2019).

Previous research shows satisfaction of workers basic psychological needs was found to increase autonomous motivation (Jungert et al., 2018), as well as provide stress-protective benefits (Neufeld et al., 2020), indicating their potential importance for resilience. Satisfaction of the three basic psychological needs and the implications for resilience were observed across interviews. Participants stated that a challenge of their profession was the lack of autonomy and level of personal competence. Thus, indicating that when their autonomy was thwarted this could negatively impact their resilience. One participant specifically mentioned the need for a high level of competence within their job, therefore indicating the value in having one's competence supported for their resilience. A resilience strategy (protective practice) that all participants discussed was support from colleagues, indicating the satisfaction of the basic psychological need of relatedness, and its positive impact on their resilience. Findings show preliminary promise that satisfaction of basic psychological needs of infantry soldiers may have an important impact on their autonomous motivation and psychological resilience.

Limitations and Future Directions

Our study does not go without limitations. The sample was comprised of a sample of all males, which makes it difficult to generalize the results to female infantry soldiers. Future research should aim to have a balanced sample of males and female participants. Additionally, while the sample size was small, it did meet the requirements for qualitative data saturation guidelines (Hennink & Kaiser, 2021). Future studies should aim for larger sample sizes to explore the lived experience of more individuals to further support our current findings. Due to the small sample size some subthemes identified were only present in 1-2 interviews. There is the possibility that those subthemes may not be of significance, however the rich context of the interviews, and the presence of these themes in previous research give reason to believe they

may hold promising insights and therefore are listed. The deductive analysis approach used could be considered a limitation as it runs the risk of potentially biasing the analysis. Although, the deductive analysis approach has been proven to be an effective method for analysis when a theory already exists and it is evident that researchers are not known to naively begin data analysis (Hsieh & Shannon, 2005). Future research may consider different data analysis for potentially different insights.

Future research should build on the present findings by continuing to explore the mechanisms identified from our interviews that improve infantry soldier resilience, and how to promote recognized behaviors and attitudes to support resilience and reduction of stressors.

Our study suggests many important recommendations for the examination and facilitation of psychological resilience among infantry soldiers, to shield against experienced stress within the military. Techniques to build psychological resilience at the individual level are justified, as it was reported that infantry soldiers utilize personal practices and attitudes to remain resilient. Additionally, an emphasis on creating interventions at the system-level to address workplace stressors is essential to support resilience within infantry soldiers. A focus on exploring organizational changes to address workplace stressors would contribute to building resilience within personnel and maintaining retention.

Conclusion

This study explored infantry soldier's understanding and experiences of resilience. Additionally, participants discussed their perceptions of work-related stressors and coping strategies used to maintain resilience and manage stress. Our sample of infantry soldiers considered resilience as the ability to cope and move forward despite challenges and difficulties. The participants easily identified personal attitudes (opportunities in challenges) and behaviours

(physical fitness, support systems) that aid resilience when encountering stressors within the workplace. Such attitudes and behaviours can be cultivated and encouraged through leadership, organizational climate, and resilience promoting programs. Furthermore, workplace stressors and job challenges (physical demands) that may compromise resilience and fuel burnout were discussed. The findings in this study highlight the need for further research on resilience within infantry soldiers. Additionally, it provides insight on how leaders within the military can inform leadership styles and/or influence training programs to manage certain workplace stressors and challenges to facilitate resilience within their members and positively impact well-being and retention. Through specifically capitalizing on the insights of infantry soldiers and their experiences, psychological resilience programs can be more successfully tailored, and system-level factors can be targeted, subsequently creating change and a more powerful CAF.

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General Discussion

Research on psychological resilience continues to evolve and advance, being examined through the lens of different theories and perspectives. Given SDT's focus on motivation and human growth, it is not surprising that research suggests employee motivation may be critical for an individual's resilience (Crane, 2017). However, research connecting motivation orientation and resilience is still rather sparse, despite literature suggesting that individuals must summon motivation in the face of adversity in order to be resilient. Research has shown that motivation is a needed stimulus for resilience to occur (Resnick et al., 2018) and specifically, autonomous motivation has been associated with more resilient outcomes in various sectors, including education, healthcare, sports, and the military (Cossar, 2010; Kusurkar, 2019; van der Burgt, 2020; Trigueros et al., 2019). For example, athletes who are autonomously motivated tend to have better performance and ability to overcome injuries and setbacks (Taylor et al., 2020) while, autonomously motivated healthcare professionals are less likely to experience burnout, and employees are more likely to be productive and have greater work engagement (Moller et al., 2019; Veenstra et al., 2022). However, these studies did not further examine the interplay between autonomous motivation and subsequent mechanisms of psychological resilience. The overarching goal of our studies was to extend previous research examining autonomous motivation and resilience. In this general discussion, the focus of each study will be briefly summarized and their respective findings. Additionally, the theoretical, research, and practical implications will be discussed. Lastly, limitations and future discussions are discussed to situate the findings.

Summary of Key Findings

Study 1 (Manuscript 1). The first study aimed to explore the relationships between

autonomous motivation and mechanisms of resilience (emotional intelligence and challenge appraisals). Additionally, to determine if emotional intelligence and challenge appraisals mediated the relationship between autonomous motivation and resilience. Broadly, Study 1 results demonstrated direct and indirect effects of autonomous motivation on resilience. In addition, emotional intelligence and challenge appraisals mediated the relationship between autonomous motivation and resilience. The sequential mediation through emotional intelligence and challenge appraisals indicates that the combined presence of both mediators may be essential for the development of resilience. As hypothesized, individuals who were autonomously motivated had higher levels of resilience and the relationship was mediated by emotional intelligence and challenge appraisals. Furthermore, emotional intelligence preceded challenge appraisals.

Study 2 (Manuscript 1). The second study aimed to replicate the same mediation model used in Study 1, with the intent to examine the impact of the COVID-19 pandemic on the proposed outcome measures. Furthermore, to investigate whether the direct and indirect associations demonstrated in Study 1, showed similar patterns in Study 2. Broadly, the results of Study 2 replicated the results of Study 1 in the context of the COVID-19 pandemic, further supporting the notion that autonomous motivation strongly fosters resilience through both emotional intelligence and challenge appraisals across contexts even if one is as extreme and challenging as a pandemic. As hypothesized, the results between the two studies did not differ when examining challenge appraisals and resilience. There were statistically significant differences in autonomous motivation and emotional intelligence. PS (pandemic sample) had statistically significant greater autonomous motivation than NPS (non-pandemic sample). NPS (non-pandemic sample) had greater emotional intelligence than PS (pandemic sample). As

hypothesized, individuals who were autonomously motivated had higher levels of resilience and the relationship was mediated by emotional intelligence and challenge appraisals. Furthermore, emotional intelligence preceded challenge appraisals.

Study 3 (Manuscript 2). Study 3 aimed to examine autonomous motivation and mechanisms of resilience within individuals who hold part-time or full-time employment and to further solidify the roles of emotional intelligence and challenge appraisals as mechanisms of resilience. Furthermore, to examine two novel mediators, risk-taking and positive humour as mechanisms of resilience. The results of Study 3 revealed the sequential multiple mediation showed a significant direct effect of autonomous motivation on resilience. In addition, emotional intelligence and challenge appraisals mediated the relationship between autonomous motivation and resilience. The sequential mediation through emotional intelligence and challenge appraisals indicates the combined presence of both mediators may be essential for the development of resilience. Furthermore, in the second multiple mediation model, results revealed a significant direct effect of autonomous motivation on resilience. Additionally, risk-taking and positive humour mediated the relationship between autonomous motivation and resilience. The sequential mediation through risk-taking and positive humour indicates the combined presence of both mediators may be essential for the development of resilience. As hypothesized, individuals who were autonomously motivated had higher levels of resilience and the relationship was mediated by emotional intelligence and challenge appraisals as well as risk-taking and positive humour. Furthermore, emotional intelligence preceded challenge appraisals and risk-taking preceded positive humour.

Study 4 (Manuscript 2). Study 4 aimed to examine autonomous motivation and mechanisms of resilience within the specific profession of teaching and to solidify the role of

emotional intelligence and challenge appraisals as mechanisms of resilience within the teaching profession. Furthermore, to examine risk-taking and positive humour as mechanisms of resilience within teachers. Results of the first mediation model in Study 4 replicated the results of Study 1, 2, and 3, specifically within a sample of teachers, further supporting the notion that autonomous motivation strongly fosters resilience through both emotional intelligence and challenge appraisals (both directly and in indirectly) across occupations. Results of the second mediation model was not fully replicated amongst the sample of teachers. While positive humour did mediate the relationship between autonomous motivation and resilience, risk-taking did not. As hypothesized, individuals who were autonomously motivated had higher levels of resilience and the relationship was mediated by emotional intelligence and challenge appraisals. However, risk-taking and positive humour did not sequentially mediate the relationship of autonomous motivation and resilience.

Study 5 (Manuscript 3). Study 5 aimed to illuminate and understand the specific challenges faced by infantry soldiers and to understand how workplace challenges affect the well-being of infantry soldiers and how they cope with challenges. Additionally, to understand how infantry soldiers define resilience, establish what factors are stressors and possibly hinder resilience, and to ascertain what practices and strategies infantry soldiers use to maintain their resilience and cope with stressors. Results demonstrated 5 main themes: the nature of resilience, challenges of the profession, resilience strategies (attitudes), and resilience strategies (protective practices) and COVID-19. Top subthemes for each main theme are as follows: coping with challenges (the nature of resilience), immense physical demands (challenges of the profession), motivation and opportunities in challenges (resilience strategies: attitudes) and maintaining physical fitness (resilience strategies: protective practices).

Integrating the Findings

Overall, the findings of these studies contribute to a deeper understanding of how autonomous motivation, emotional intelligence, challenge appraisals, risk-taking, positive humour, and resilience are related to one another in theoretical and practical contexts. Furthermore, the nuances of resilience mechanisms are built upon through the identification of multiple resilience strategies (attitudes and protective practices) as well as insights into how individuals define resilience. Understanding the complex relationships between these variables has various important theoretical, research, and practical implications.

Theoretical Implications

The results of these studies support and extend previous research regarding the relationship between autonomous motivation and resilience. Autonomous motivation has been considered an important mechanism of resilience (Schipor, 2021). Furthermore, it has been associated with emotional intelligence, challenge appraisals, risk-taking, and positive humour. Overall, the results of these studies align with previous findings. For example, autonomous motivation was positively associated with resilience in each study. This aligns with previous research linking autonomous motivation with workplace satisfaction and retention (Gegenfurtner et al., 2009; Yelon et al., 2004) and the premise that autonomous motivation is a buffer against job strain and burnout (Hakanen et al., 2008). Thus, inferring that workplace environments that foster autonomous motivation, reduce negative effects of job strain, and promote resilience (Crane, 2017). Furthermore, autonomous motivation has been connected with emotional intelligence (Alsharari & Alshurideh, 2020; Sukys et al., 2019) and challenge appraisals (Ntoumanis et al., 2014; Ridell et al. 2022). Similar to previous, rather novel studies, the

connections between autonomous motivation and risk-taking (Boyd, 2019) was expanded upon in addition to positive humour.

Interestingly, emotional intelligence and challenge appraisals successfully mediated the relationship between autonomous motivation and resilience in Studies 1-4. This aligns with previous research that demonstrated greater emotional intelligence promotes challenge appraisals (Lyons & Schneider, 2005; Matthews et al., 2002). Based on SDT research, autonomous motivation has been found to facilitate emotional intelligence and challenge appraisals (Perreault et al., 2014; Deci et al., 2017). Excitingly, risk-taking and positive humour successfully mediated the relationship between autonomous motivation and resilience among working individuals. Providing new encouraging constructs to investigate for fostering resilience within the workplace.

The studies linking autonomous motivation with resilience, contributes to SDT research as a whole and SDT-related resilience research. Previous studies have found that autonomous motivation could be crucial for stress regulation in the workplace (Ronen & Mikulincer, 2012; Sisley, 2012) thus, fostering resilience (Crane, 2017). In line with the aforementioned studies, autonomous motivation promotes greater well-being through reduced distress, increasing a sense of meaningfulness, and increase of flow experiences, not surprisingly contributing to an individual's overall resilience.

The definition of resilience continues to be a subject of considerable debate and inconsistency. However, some direction remains consistent listing three main factors across recent definitions: the presence of adversity, the influence of protective factors, and a positive outcome not generally expected considering the adversity (Stainton et al., 2019). With resilience research advancing, it is hopeful that a greater consensus on the definition can be agreed upon.

Our studies contribute to the greater understanding of psychological resilience, the process, and the mechanisms it encompasses, consequently contributing to how to define resilience.

Research Implications

Motivation. While investigating the relationship between autonomous motivation and resilience, the results of our studies agreed with previous research. For example, autonomous motivation was positively and significantly related to resilience. Previous research has stated motivation is required as a stimulus for resilience (Resnick, 2018). This relationship has been previously explored in recent literature (Crane et al., 2017; Trigueros et al., 2019) yet still requires further solidification. Our studies revealed autonomous motivation had significant associations with emotional intelligence and challenge appraisals in all 4 studies. This aligns with prior research conducted by Arribas-Galarraga et al. (2017) and Perreault et al., (2014) that revealed autonomous motivation predicted emotional intelligence. As well as prior research demonstrating autonomous motivation's positive association with challenge appraisals (Cece et al., 2020; Ntoumanis et al., 2014; Parker et al., 2019). Furthermore, one of our studies revealed significant associations between autonomous motivation and risk-taking and two of our studies revealed significant associations between autonomous motivation and positive humour. A limited body of research has demonstrated these connections. However, the link between autonomous motivation with increased risk-taking was found in initial examinations of this relationship (Lepper & Greene, 1978) and more recent literature (Dewett, 2007; Pfister & Lukka, 2019; Tan et al., 2022). Specifically, within the workplace, prior research has suggested that autonomous motivation is needed in order for employees to engage in risk-taking via helping them positively reframe stressors and fostering their self-determination (Pfister & Lukka, 2019). Moreover, previous studies have shown the inverse of the relationship that we found, revealing

that affiliative humour (a form of positive humour) significantly increased motivation (Ceha et al., 2021) and particularly student motivation (Amran & Bakar, 2022). Indicating that the relationship between autonomous motivation and positive humour may be bidirectional.

Resilience. Resilience is one of the most popular yet mystifying constructs in academic research. Although the process of resilience and the identification of its mechanisms still require extensive exploration, the current research enhances the existing research on mechanisms of resilience. For example, our research suggests that autonomous motivation is positively associated with resilience. Additionally, that autonomous motivation is directly and indirectly associated with resilience through emotional intelligence and challenge appraisals (Studies 1-4). Furthermore, for some populations autonomous motivation is directly and indirectly associated with resilience through risk-taking and positive humour (Study 3). The current research also provides further evidence of established and novel resilience strategies pertaining to attitudes and protective practices (Study 5). Our research has put a spotlight on the motivational basis of resilience, however, there is still limited research that examines resilience in the context of SDT. Due to varying results of our studies, there is still a need to examine the proposed relationships to increase our understanding of how motivation orientations are associated with resilience.

Emotional intelligence and challenge appraisals were found to be positively associated with resilience (Studies 1-4). This is consistent with previous research suggesting that emotional intelligence influences resilience (Shuo et al., 2022; Trigueros et al., 2020) and subsequently leads to greater well-being (Akbari & Khormaiee, 2015). Additionally, findings have indicated that when workplace stressors are appraised as challenges, this is linked to building resilience (Cavanaugh et al., 2000; Crane & Searle, 2016). Risk-taking was found to be positively associated with resilience within Study 3 but not in Study 4. These findings are consistent with

the limited research that links risk-taking with resilience (Gakhar & Bhawna, 2020; Prell et al., 2020) and highlights the importance of further investigating this relationship. Our findings revealed that positive humour was positively associated with resilience (Study 3 & 4). This aligns with previous research depicting humour as a contributor of strength-building (Oosthuizen, 2021) and its role as an adaptive component of resilience (Lefocurt, 2001). There is a significant belief that positive humour styles (self-enhancing and affiliative) play a fundamental part in advancing resilience (Bhattacharyya et al., 2019) and when present together, have been found to predict resilience (Oosthuizen, 2021). Furthermore, humour has been shown to advance resilience amongst employees (Hughes, 2008; McCann et al., 2013).

Our findings suggest the importance of researching resilience and its mechanisms within general and specific types of employment and the workplace context. While there is consistent research on promising mechanisms of resilience, there are still many to be discovered so that resilience building initiatives can reach a wider audience and be tailored to specific populations. Given there is still so much misunderstood about resilience, solidifying “tried and true” mechanisms across contexts and populations as well as the identification of new mechanisms is needed. Additionally, with the advancement of understanding the mechanisms and process of resilience, we can move towards a unified definition.

Practical Implications

One of the main goals of our studies was to apply our findings to a practical context and illuminate how individuals and organizations can target resilience building within the workplace. Our studies aim to inform clinical and organizational interventions to better prepare employees for the stressors they encounter in the workplace via the development of training, educational materials, and interventions to strengthen resilience. Furthermore, to provide specific insights

into which mechanisms of resilience should be targeted for specific occupations or those that can be applied across various occupations.

While there have been many resilience building initiatives targeted towards employees, success wavers and few have been informed from a SDT perspective. Although constructs such as emotional intelligence and challenge appraisals have been previously identified as mechanisms of resilience, autonomous motivation, risk-taking, and positive humour are rather novel additions. Whilst we did not obtain all of our desired results, the mediation models provide insights for future use with different populations and potential use to inform resilience building programs.

Interest in resilience continues to grow along with targeted initiatives to increase and enhance individual resilience. Resilience training programs have grown in popularity over the past decades, yet their effectiveness still remain uncertain (Kunzler et al., 2020), calling for informed research to guide their development. Furthermore, benefits of resilience training are considered to be particularly important for high-risk occupations such as first responders, medical staff, or military members (Joyce et al. 2018). Our studies examine resilience as a process and uncover potential mechanisms to target to help foster resilience within the workplace and offer insights into which mechanisms may be more pertinent to specific occupations. Uncovering a process through a SDT lens may impact design and goals of resilience building programs. Additionally, the examination of promising mechanisms of resilience such as emotional intelligence, challenge appraisals, risk-taking, and positive humour can help tailor training initiatives for greater effectiveness. Our studies suggest that specific mechanisms may be more important for resilience building in certain occupations over others. Being able to better inform training programs will enable greater effectiveness for boosting individual resilience.

From an organizational perspective, increasing individual resilience amongst employees has many positive effects. Greater resilience amongst employees allows organizations to better deal with adversity and maintain a level of ideal functioning. Approximately half of the variance in resilience resides within individuals, suggesting its high degree of malleability (Good et al., 2023) indicating the benefit of resilience targeting initiatives. Given resilience acts as a buffer against burnout (Arrogante & Aparicio-Zaldivar., 2017; Cheng et al., 2020) and turnover, as well as contributes to increased performance and effort (Good et al., 2023) our studies contribute to the identification of mechanisms that aid in overall employee and organizational well-being and success.

Personnel employed in emergency services (military, police, and firefighters) encounter a greater number of stressors than other professions. There is immense pressure to provide programs to personnel that offer protection against the psychological impact of stressors inherent of their roles. A specific spotlight is on resilience, as a growing body of literature indicates that psychological resilience may minimize the negative impacts of occupational stressors that first responders experience (Kaplan et al., 2017). Current programs still fluctuate in efficacy, emphasizing the vital need to provide informed training for emergency service personnel prior to exposure of critical incidents (Wild et al., 2020). Our study specifically identifies various resilience strategies (attitudes and protective practices) that infantry soldiers utilize. Support from colleagues and comradery were primary protective practice cited by infantry soldiers in our study. This is consistent with other studies that found resilience within front line workers was driven by relatedness with coworkers (Good et al., 2023). Our study also found that not only do infantry soldiers define resilience as coping with challenges by not letting stressors negatively impact them, but a specific strategy utilized was finding motivation or opportunities in

challenging or stressful experiences. Such findings are consistent with studies who propose stress as enhancing (Jamieson et al., 2018) and suggests trainings should not focus on only deleterious effects of stress and perhaps emphasize the opportunities they provide (Crane et al., 2022).

Cultivating autonomous motivation within the workplace may be the starting point to developing resilient employees. Suggesting, the implication to inform leadership styles in the workplace. Promoting autonomy supportive leadership and helping to facilitate autonomous motivation of employees may result in fostering mechanisms of resilience as well as resilience directly. Prior research has indicated the significant positive effect of leader autonomy support on emotional intelligence (Barberis et al., 2021; Oh & Cho, 2023) and challenge appraisals (Ntoumanis et al., 2009). Limited research connects an autonomous leadership style with risk-taking and positive humour however, our studies suggest that perhaps having the foundation of an autonomous motivation leads to feeling safe to take risks and engage with positive humour within the workplace subsequently resulting in greater resilience.

Limitations and Future Directions

All of the studies presented do not go without limitations. Studies 1, 2 and 4 (Manuscript 1 & 2) were predominantly female, making it difficult to generalize the results across male employed undergrads and male teachers. Study 5 (manuscript 3) consisted of only males, making it difficult to generalise the results to female infantry soldiers. Future research should aim to get a more balanced sample of both genders as there is a difference in literature on how genders differ in the way they experience and deal with stressors and the ultimate impact on their well-being (Prowse et al., 2021; Perez & Matud, 2022; Salin, 2021). For example, females have been found to have more emotion-focused coping styles (Matud et al., 2020; Graves et al., 2021) while males utilize more problem-focused coping (Leong, 1997; Baker & Berenbaum, 2007).

Furthermore, female teachers may be more vulnerable to workplace stressors due to less resources at home and greater demands in the workplace (Stengard et al., 2022). Supplementary gender disparities that have been identified include stressors experienced by women in male dominated sectors, as well as the increased stress women with children experience when working remotely (Lyttleton et al., 2020; Bridges et al., 2021; Wills, 2019). Future research should focus on female infantry soldiers as they are employed in a male dominated industry.

Given the lack of consensus across researchers on a definition of resilience, adhering to one definition may be considered a limitation of the studies. Studies 1-4 (Manuscripts 1 & 2) follow the definition by Connor and Davidson (2003) as that is the scale that was used to measure it. Resilience is a concept that may mean different things to different people creating a drawback of following one definition. There is also the potential that crucial information is missing from the Connor and Davidson (2003) definition that other definitions perhaps include. Additionally, the research may not be as easily comparable to other studies that have used other definitions.

Studies 1-4 (Manuscripts 1 & 2) consisted of entirely self-report questionnaires, which may result in inflated or deflated responses due to the social desirability effect (Petróczi & Nepusz, 2011). Moreover, the correlational nature of the research design does not allow to make cause-effect inferences. With that said, mediation analysis hypothesizes causal networks among variables and the conclusions from such analysis are useable if causal assumptions are valid (Judd & Kenny, 2010). Lastly, the cross-sectional data may lead to common method variance affecting the validity of our results (Podaskoff et al., 2003). We encourage future research to replicate the findings longitudinally and within various occupations to further examine whether employment type influences these results. We urge future studies to examine additional

characteristics and mechanisms as mediators between the relationship of autonomous motivation and resilience, such as interpersonal factors, intrapersonal factors, personality traits, social and environmental factors as well as organizational factors. A better understanding of the process and development of resilience can be achieved by examining additional factors. Importantly, it would be valuable to replicate findings using experimental or quasi-experimental designs.

Specific to Study 4 (Manuscript 2) and Study 5 (Manuscript 3), sample sizes were small and future studies are encouraged to expand sample sizes to decrease type two error. While the sample size was small in Study 5, it did meet the requirements for qualitative data saturation guidelines (Hennink & Kaiser, 2021). Future studies should aim for larger sample sizes to explore the lived experience of more individuals to further support our current findings. The deductive analysis approach used could be considered a limitation as it runs the risk of potentially biasing the analysis. Although, researchers generally do not naively start data analysis, and the deductive analysis approach has been proven to be an effective method for analysis when a theory already exists (Hsieh & Shannon, 2005). Future research may utilize different data analysis for hypothetically different insights.

Despite the limitations, the current studies provide further groundwork for understanding resilience, and future research should investigate the roles of autonomous motivation, emotional intelligence, challenge appraisals, risk-taking, and positive humour in the development of resilience within employees. These studies provide a starting point for future investigations into the effects of different forms of employment on the development of resilience within the workplace. These findings may help improve training, counseling, and resilience-building initiatives for employees, which is an essential attribute for optimal performance and success in various life contexts.

Conclusion

The present research contributed to both a concrete and nuanced understanding of the relationship between autonomous motivation, mechanisms of resilience (emotional intelligence, challenge appraisals, risk-taking, and positive humour) and psychological resilience. Our serial mediation models and identified themes, provide essential insights related to mechanisms of resilience within employed individuals in general and specific occupations (teachers and infantry soldiers). Furthermore, the studies provide potential theoretical and methodological considerations for future resilience research. We hope this research provides individuals and organizations with important insights into the development of resilience, to aid in the ability to thrive in the face of adversity.

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Appendix A: Consent Forms**General Consent Form for Study 1 & 2**

Examining the role of motivation orientation, emotional intelligence and cognitive appraisal in the development of resilience.

Principal Investigator: Laura Seidel
School of Psychology
University of Ottawa
Ottawa, ON

Supervisor: Dr. Céline Blanchard
Department of Psychology
University of Ottawa
Ottawa, ON

You are invited to participate in the above mentioned research study conducted by Laura Seidel as part of her PhD thesis, who is being supervised by Dr. Céline Blanchard.

Participation: If you wish to participate in this study, please complete the survey. Your decision to complete and submit this survey will be interpreted as an indication of your consent to participate. The survey should take you approximately 45 minutes to complete. You do not have to answer any questions that you do not want to answer. Once you have completed the survey, please click submit.

Purpose of the Study: From this research we wish to learn more about how motivation orientation and individual factors contribute to resilience. Specifically, the presence or absence of resilience will be examined amongst participants.

Benefits: The current study may contribute to your knowledge of psychological research. You may also experience some increased awareness of your own thoughts, emotions, and behaviour.

Risks: Your participation in this study will entail that you volunteer personal information, and this may cause you to feel potential emotional or psychological discomforts. You have received assurance from the researcher that every effort will be made to minimize these risks, as you can skip any questions that cause you discomfort, and you have the option of withdrawing from the study at any time without penalty. In order to minimize the risk of security breaches and to help ensure your confidentiality we recommend that you use standard safety measures such as signing out of your account, closing your browser and locking your screen or device when you are no longer using them/when you have completed the study. You will also be referred to contact either the Ottawa Mental Health Crisis Line at 613-722-6914 or the Ottawa Distress Centre at 613-238-3311, should you wish to seek further assistance due to emotional or psychological discomforts as a result to this study.

Confidentiality and Anonymity: This online survey is hosted by Qualtrics. The security and privacy policy for the Qualtrics company can be found at the following link: <http://www.qualtrics.com/security-statement/>^[1]_[SEP]

The information that you will share will be identified only by participant number and will be used solely by the researchers for the purposes of this research. Anonymity is guaranteed since you are not being asked to provide your name or any personal information.

Conservation of data: All data derived from this study will be stored on password-protected computers and/or password-protected external hard drives in the office of the principal investigator, Laura Seidel and of the project supervisor, Dr. Céline Blanchard. Both of these spaces are physically locked at all times. They will be kept for a period of 5 years, at which time they will be securely destroyed

Voluntary Participation: You are under no obligation to participate and if you choose to participate, you may refuse to answer questions that you do not want to answer. Completion and submission of the questionnaire by you implies consent. Once the questionnaire has been submitted it will not be possible to withdraw your data due to the anonymous nature of the study. We recommend that you print and/or save a copy of the consent page for your records.

Compensation: If you are a student at the University of Ottawa, as was explained to you at the beginning of the semester, your participation in this study will grant you 1 ISPR point in your class. If you choose to withdraw from the study at any point in time, you will still be granted 1 ISPR point.

Information about the Study Results:

If you have any questions or require more information about the study itself, you may contact the researcher at the email mentioned above.

If you have any questions with regards to the ethical conduct of this study, you may contact the Protocol Officer for Ethics in Research, University of Ottawa, Tabaret Hall, 550 Cumberland Street, Room 154, Ottawa, ON K1N 6N5, tel.: (613) 562-5387 or ethics@uottawa.ca.

Thank you for your time and consideration.

I agree to participate in the study.

Yes

No

General Consent Form for Study 3 & 4

Examining the role of motivation orientation, emotional intelligence, cognitive appraisal, risk propensity and humour in the development of resilience.

Principal Investigator: Laura Seidel
School of Psychology
University of Ottawa
Ottawa, ON

Supervisor: Dr. Céline Blanchard
Department of Psychology
University of Ottawa
Ottawa, ON

You are invited to participate in the above mentioned research study conducted by Laura Seidel as part of her PhD thesis, who is being supervised by Dr. Céline Blanchard.

Participation: If you wish to participate in this study, please answer the following questions that the researcher has asked. Your decision to complete and participate in this interview will be interpreted as an indication of your consent to participate. The interview should take approximately 30-45 minutes to complete and will be audio recorded. You do not have to answer any questions that you do not want to answer.

Purpose of the Study: From this research we wish to learn more about how motivation orientation and individual factors contribute to resilience. Specifically, the presence or absence of resilience will be examined amongst participants.

Benefits: The current study may contribute to your knowledge of psychological research. You may also experience some increased awareness of your own thoughts, emotions, and behaviour.

Risks: Your participation in this study will entail that you volunteer personal information, and this may cause you to feel potential emotional or psychological discomforts. You have received assurance from the researcher that every effort will be made to minimize these risks, as you can skip any questions that cause you discomfort, and you have the option of withdrawing from the study at any time without penalty. In order to minimize the risk of security breaches and to help ensure your confidentiality we recommend that you use standard safety measures such as signing out of your account, closing your browser and locking your screen or device when you are no longer using them/when you have completed the study. You will also be referred to contact either the Ottawa Mental Health Crisis Line at 613-722-6914 or the Ottawa Distress Centre at 613-238-3311, should you wish to seek further assistance due to emotional or psychological discomforts as a result to this study.

Confidentiality and Anonymity: This interview will be stored on password protected and encrypted software/devices.

The information that you will share will be identified only by participant number and will be used solely by the researchers for the purposes of this research. Anonymity is guaranteed since you are not being asked to provide your name or any personal information.

Conservation of data: All data derived from this study will be stored on password-protected computers and/or password-protected external hard drives in the office of the principal investigator, Laura Seidel and of the project supervisor, Dr. Céline Blanchard. Both of these spaces are physically locked at all times. They will be kept for a period of 5 years, at which time they will be securely destroyed

Voluntary Participation: You are under no obligation to participate and if you choose to participate, you may refuse to answer questions that you do not want to answer. Completion and submission of the questionnaire by you implies consent. Once the questionnaire has been submitted it will not be possible to withdraw your data due to the anonymous nature of the study. We recommend that you print and/or save a copy of the consent page for your records.

Compensation: There is no compensation for this study, it is completely voluntary.

Information about the Study Results:

If you have any questions or require more information about the study itself, you may contact the researcher at the email mentioned above.

If you have any questions with regards to the ethical conduct of this study, you may contact the Protocol Officer for Ethics in Research, University of Ottawa, Tabaret Hall, 550 Cumberland Street, Room 154, Ottawa, ON K1N 6N5, tel.: (613) 562-5387 or ethics@uottawa.ca.

Thank you for your time and consideration.

I agree to participate in the study.

Yes

No

General Consent Form for Study 5

Examining the role of motivation orientation, emotional intelligence, cognitive appraisal, risk propensity and humour in the development of resilience.

Principal Investigator: Laura Seidel
School of Psychology
University of Ottawa
Ottawa, ON

Supervisor: Dr. Céline Blanchard
Department of Psychology
University of Ottawa
Ottawa, ON

You are invited to participate in the above mentioned research study conducted by Laura Seidel as part of her PhD thesis, who is being supervised by Dr. Céline Blanchard.

Participation: If you wish to participate in this study, please answer the following questions that the researcher has asked. Your decision to complete and participate in this interview will be interpreted as an indication of your consent to participate. The interview should take approximately 30-45 minutes to complete and will be audio recorded. You do not have to answer any questions that you do not want to answer.

Purpose of the Study: From this research we wish to learn more about how motivation orientation and individual factors contribute to resilience. Specifically, the presence or absence of resilience will be examined amongst participants.

Benefits: The current study may contribute to your knowledge of psychological research. You may also experience some increased awareness of your own thoughts, emotions, and behaviour.

Risks: Your participation in this study will entail that you volunteer personal information, and this may cause you to feel potential emotional or psychological discomforts. You have received assurance from the researcher that every effort will be made to minimize these risks, as you can skip any questions that cause you discomfort, and you have the option of withdrawing from the study at any time without penalty. In order to minimize the risk of security breaches and to help ensure your confidentiality we recommend that you use standard safety measures such as signing out of your account, closing your browser and locking your screen or device when you are no longer using them/when you have completed the study. You will also be referred to contact either the Ottawa Mental Health Crisis Line at 613-722-6914 or the Ottawa Distress Centre at 613-238-3311, should you wish to seek further assistance due to emotional or psychological discomforts as a result to this study.

Confidentiality and Anonymity: This interview will be stored on password protected and encrypted software/devices.

The information that you will share will be identified only by participant number and will be used solely by the researchers for the purposes of this research. Anonymity is guaranteed since you are not being asked to provide your name or any personal information.

Conservation of data: All data derived from this study will be stored on password-protected computers and/or password-protected external hard drives in the office of the principal investigator, Laura Seidel and of the project supervisor, Dr. Céline Blanchard. Both of these spaces are physically locked at all times. They will be kept for a period of 5 years, at which time they will be securely destroyed

Voluntary Participation: You are under no obligation to participate and if you choose to participate, you may refuse to answer questions that you do not want to answer. Completion and submission of the questionnaire by you implies consent. Once the questionnaire has been submitted it will not be possible to withdraw your data due to the anonymous nature of the study. We recommend that you print and/or save a copy of the consent page for your records.

Compensation: There is no compensation for this study, it is completely voluntary.

Information about the Study Results:

If you have any questions or require more information about the study itself, you may contact the researcher at the email mentioned above.

If you have any questions with regards to the ethical conduct of this study, you may contact the Protocol Officer for Ethics in Research, University of Ottawa, Tabaret Hall, 550 Cumberland Street, Room 154, Ottawa, ON K1N 6N5, tel.: (613) 562-5387 or ethics@uottawa.ca.

Thank you for your time and consideration.

I agree to participate in the study.

Yes

No

Appendix B: Recruitment Texts**Study 1 & 2 ISPR Recruitment Text**

Research Project: A questionnaire

Researchers: Laura Seidel and Dr. Céline Blanchard

Contact Information: Any questions or concerns can be directed to Laura Seidel

REB Approval Code: H-11-18-1239

Description: The purpose of this study is to examine resilience within a student population and identify its outcomes. Participants will do a questionnaire task where they are asked to reflect inwardly, and answer a series of questions about themselves and their feelings. Participants must be 18 years old and enrolled in post secondary studies. Participants should be aged 18 years or older as this study is examining resilience within an adult population.

Duration: 45 minutes

Points: 1 point

Study 3 & 4 Social Media Recruitment Text

Research Project: A questionnaire

Researchers: Laura Seidel and Dr. Céline Blanchard

Contact Information: Any questions or concerns can be directed to Laura Seidel

REB Approval Code: H-11-18-1239

Description: The purpose of this study is to examine resilience within a working population and identify its outcomes. Participants will do a questionnaire task where they are asked to reflect inwardly, and answer a series of questions about themselves and their feelings. Participants must be 18 years old and employed. Participants should be aged 18 years or older as this study is examining resilience within an adult population.

Duration: 45 minutes

Points: 1 point

Study 5 Recruitment Text

If you are interested in participating in an interview in regards to the role resilience plays in your work life please provide your email address below. The interview will take approximately 30-45minutes and questions are all concentrated on resilience within your occupation. Participants must be employed full or part time currently and will be selected on a first come, first served basis. Participation in the survey is completely voluntary, thus there will be no compensation provided. Providing your email will not be connected to your previous survey responses, your survey responses remain completely anonymous.

Appendix B: Demographics and Questionnaires Included in the Studies**Demographics Study 1**

Do you identify as?

Male

Female

Other

How old are you?

What year of study are you in?

1st year

2nd year

3rd year

4th year

5th year or above

What is your university major?

What is the highest degree you have obtained at this time?

High School Diploma

College Diploma

Undergraduate Degree

Masters Degree

PhD

What is your ethnicity?

White/Caucasian

Hispanic or Latino

Black or African Canadian

Indigenous

Asian/Pacific Islander

Other

Which support systems do you have?

Parents

Peer(s)

Siblings

Professors(s)

Roommate(s)

Employer

Significant other

Colleague(s)

Friend(s)

Other

What is the status of your employment?

Part Time

Full Time

Occasional

Demographics Study 2

Do you identify as?

- Male
- Female
- Other

How old are you?

What is your current working environment?

- I am currently working from home due to COVID19
- My work location has not been affected by COVID19 (I attend work outside of my home)
- My work location has not been affected by COVID19 (I have always worked from my home)
- I work both at home and outside of my home

What is your occupation?

Do you volunteer, if so please list your volunteer affiliations.

Indicate the levels of stress for each

| Not Stressful At All | Somewhat Stressful | Stressful | Extremely Stressful |
|----------------------|--------------------|-----------|---------------------|
|----------------------|--------------------|-----------|---------------------|

1

2

3

4

How stressful would you rate your job?

How stressful would you rate your work location?

How would you rate your life in regards to day to day stress?

How would you rate your overall life in regards to stress?

Where did you grow up?

- Rural Community (population less than 30,000)
- Suburban Community (population 30,000-100,000)
- City Community (100,000+)

Where do you currently live?

- Canada
- USA
- Other

What is your marital status?

- Single
- Married
- Domestic partnership
- Divorced
- Widowed

What is the highest level of education you have completed?

Less than a high school diploma

High School Diploma

College Diploma

Undergraduate Degree

Masters Degree

PhD

What is your ethnicity?

White/Caucasian

Hispanic or Latino

Black or African Canadian

Indigenous

Asian/Pacific Islander

Other

What is the status of your employment?

Part Time

Full Time

Occasional

General Motivation Scale

Indicate to what extent each of the following statements corresponds generally to the reasons why you do different things.

| | | |
|---|------------------------|------------------------|
| Does not correspond | Corresponds moderately | Completely corresponds |
| 1 2 3 | 4 5 | 6 7 |

IN GENERAL, I DO THINGS . . .

1. ... in order to feel pleasant emotions.
2. ... because I do not want to disappoint certain people.
3. ... in order to help myself become the person I aim to be.
4. ... because I like making interesting discoveries.
5. ... because I would beat myself up for not doing them.
6. ... because of the pleasure I feel as I become more and more skilled.
7. ... although I do not see the benefit in what I am doing.
8. ... because of the sense of well-being I feel while I am doing them.
9. ... because I want to be viewed more positively by certain people.
10. ... because I chose them as means to attain my objectives.
11. ... for the pleasure of acquiring new knowledge.
12. ... because otherwise I would feel guilty for not doing them.
13. ... for the pleasure I feel mastering what I am doing.
14. ... although it does not make a difference whether I do them or not.
15. ... for the pleasant sensations I feel while I am doing them.
16. ... in order to show others what I am capable of.
17. ... because I chose them in order to attain what I desire.
18. ... for the pleasure of learning new, interesting things.
19. ... because I force myself to do them.
20. ... because of the satisfaction I feel in trying to excel in what I do.
21. ... even though I do not have a good reason for doing them.
22. ... for the enjoyable feelings I experience.
23. ... in order to attain prestige.
24. ... because I choose to invest myself in what is important to me.
25. ... for the pleasure of learning different interesting facts.
26. ... because I would feel bad if I do not do them.
27. ... because of the pleasure I feel outdoing myself.
28. ... even though I believe they are not worth the trouble.

Trait Emotional Intelligence Questionnaire – Short Form

Please answer each statement below by selecting the choice that best reflects your degree of agreement or disagreement with that statement. Do not think too long about the exact meaning of the statements. Work quickly and try to answer as accurately as possible. There are no right or wrong answers.

| | | | | | | | |
|------------------------|---|---|---------|---|---|--|---------------------|
| Completely Disagree | | | Neutral | | | | Completely Agree |
| 1 | 2 | 3 | 4 | 5 | 6 | | 7 |

1. Expressing my emotions with words is not a problem for me.
2. I often find it difficult to see things from another person's viewpoint.
3. On the whole, I'm a highly motivated person.
4. I usually find it difficult to regulate my emotions.
5. I generally don't find life enjoyable.
6. I can deal effectively with people.
7. I tend to change my mind frequently.
8. Many times, I can't figure out what emotion I'm feeling.
9. I feel that I have a number of good qualities.
10. I often find it difficult to stand up for my rights.
11. I'm usually able to influence the way other people feel.
12. On the whole, I have a gloomy perspective on most things.
13. Those close to me often complain that I don't treat them right.
14. I often find it difficult to adjust my life according to the circumstances.
15. On the whole, I'm able to deal with stress.
16. I often find it difficult to show my affection to those close to me.
17. I'm normally able to "get into someone's shoes" and experience their emotions.
18. I normally find it difficult to keep myself motivated.
19. I'm usually able to find ways to control my emotions when I want to.
20. On the whole, I'm pleased with my life.
21. I would describe myself as a good negotiator.

Cognitive Appraisal Scale

Indicate to what extent you agree with each of the following statements.

| | | | | | | |
|----------------------|---|---|---------|---|---|-------------------|
| Strongly Disagree | | | Neutral | | | Strongly Agree |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

1. I tend to focus on the positive aspects of any situation.
2. I worry that I will say or do the wrong things.
3. I often think about what it would be like if I do very well.
4. I believe that most stressful situations contain the potential for positive benefits.
5. I worry about the kind of impression I make.
6. I am concerned that others will find fault with me.
7. Overall I expect that I will achieve success rather than experience failure.
8. In general I look forward to the rewards and benefits of success.
9. Sometimes I think that I am too concerned with what other people think of me.
10. I feel that difficulties are piling up so that I cannot overcome them.
11. I lack self confidence.
12. A challenging situation motivates me to increase my efforts.
13. In general I anticipate being successful at my chosen pursuits, rather than expecting to fail.
14. I worry what other people will think of me even when I know that it doesn't make any difference.
15. I am concerned that others will not approve of me.
16. I look forward to opportunities to fully test the limits of my skills and abilities.
17. I worry about what other people may be thinking about me.
18. I feel like a failure.

Connor-Davidson Resilience Scale

Indicate to what extent each of the following statements corresponds to how you feel about yourself.

| Not True at All 1 | Rarely True 2 | Sometimes True 3 | Often True 4 | True Nearly All the Time 5 |
|-------------------------|---------------------|------------------------|--------------------|----------------------------------|
|-------------------------|---------------------|------------------------|--------------------|----------------------------------|

1. Able to adapt to change
2. Close and secure relationships
3. Sometimes fate or God can help
4. Can deal with whatever come
5. Past success gives confidence for new challenge
6. See the humorous side of things
7. Coping with stress strengthens
8. Tend to bounce back after illness or hardship
9. Things happen for a reason
10. Best effort no matter what
11. You can achieve your goals
12. When things look hopeless, I don't give up
13. Know where to turn for help
14. Under pressure, focus and think clearly
15. Prefer to take the lead in problem solving
16. Not easily discouraged by failure
17. Think of self as strong person
18. Make unpopular or difficult decisions
19. Can handle unpleasant feelings
20. Have to act on a hunch
21. Strong sense of purpose
22. In control of your life
23. I like challenges
24. You work to attain your goals
25. Pride in your achievements

Stimulating and Instrumental Risk Questionnaire

Indicate to what extent you agree with each of the following statements.

| Untrue | Rather Untrue | Hard to Say | Rather True | True |
|--------|------------------|----------------|----------------|------|
| 1 | 2 | 3 | 4 | 5 |

1. When I pursue my passions, I like the moments of balancing on the edge of risk.
2. I take the risk only when it is necessary to reach my goal.
3. Sometimes, I unnecessarily tempt fate.
4. When I have to risk, I carefully calculate the possibility of failure.
5. I am attracted to various hazardous actions (e.g. travelling across remote, unknown places) even if I do not know what can happen to me there.
6. Before taking a risky decision, I always thoroughly consider all pros and cons.
7. Sometimes I risk to feel the “adrenaline” because that makes me feel that I really live.

Humour Styles Questionnaire

Indicate to what extent you agree with each of the following statements.

| | | | | | | | | |
|------------------------|---|---|---|---------|---|---|--|---------------------|
| Completely Disagree | | | | Neutral | | | | Completely Agree |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | | |

1. I usually don't laugh or joke around much with other people.
2. I don't have to work very hard at making other people laugh—I seem to be a naturally humorous person.
3. I rarely make other people laugh by telling funny stories about myself.
4. I laugh and joke a lot with my closest friends.
5. I usually don't like to tell jokes or amuse people.
6. I enjoy making people laugh.
7. I don't often joke around with my friends.
8. I usually can't think of witty things to say when I'm with other people.
9. If I am feeling depressed, I can usually cheer myself up with humor.
10. Even when I'm by myself, I'm often amused by the absurdities of life.
11. If I am feeling upset or unhappy I usually try to think of something funny about the situation to make myself feel better.
12. My humorous outlook on life keeps me from getting overly upset or depressed about things.
13. If I'm by myself and I'm feeling unhappy, I make an effort to think of something funny to cheer myself up.
14. If I am feeling sad or upset, I usually lose my sense of humor.
15. It is my experience that thinking about some amusing aspect of a situation is often a very effective way of coping with problems.
16. I don't need to be with other people to feel amused—I can usually find things to laugh about even when I'm by myself.
17. If someone makes a mistake, I will often tease them about it.
18. People are never offended or hurt by my sense of humor.
19. When telling jokes or saying funny things, I am usually not very concerned about how other people are taking it.
20. I do not like it when people use humor as a way of criticizing or putting someone down.
21. Sometimes I think of something that is so funny that I can't stop myself from saying it, even if it is not appropriate for the situation.
22. I never participate in laughing at others even if all my friends are doing it.
23. If I don't like someone, I often use humor or teasing to put them down.
24. Even if something is really funny to me, I will not laugh or joke about it if someone will be offended.
25. I let people laugh at me or make fun at my expense more than I should.
26. I will often get carried away in putting myself down if it makes my family or friends laugh.

27. I often try to make people like or accept me more by saying something funny about my own weaknesses, blunders or faults.
28. I don't often say funny things to put myself down
29. I often go overboard in putting myself down when I am making jokes or trying to be funny.
30. When I am with friends or family, I often seem to be the one that other people make fun of or joke about.
31. If I am having problems or feeling unhappy, I often cover it up by joking around, so that even my closest friends don't know how I really feel.
32. Letting others laugh at me is my way of keeping my friends and family in good spirits.

Appendix D: Interview Questions

1. General demographic data: professional experience, specialities, number of years in the profession.
2. What does resilience mean to you?
3. What are the major challenges of your profession to your mental and physical health and job satisfaction? How successful would you consider your personal coping?
4. How can someone in your profession remain healthy and satisfied? What strategies do you apply? Are these the most important resilience strategies in your professional life?
5. Of those colleagues that you would deem to have the greatest levels of resilience, what strategies do they apply in order to deal with the stressors of professional life?
6. Of those colleagues that you would deem to have the lowest levels of resilience, what strategies do they fail to apply to deal with the stressors of professional life?
7. If a new colleague asked you what he/she could do to increase resilience or prevent burnout: what advice would you give? What mistakes have you made yourself that you would warn against?
8. Do you know feelings of burnout? How do you deal with them? What helps you out?