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Examining the protective role of posttraumatic growth against the development of suicidal ideation

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"We must never forget that we may also find meaning in life even when confronted with a hopelessness situation when facing a fate that cannot be changed."

Frankl (1959, p.135)

I would like to dedicate this thesis to my husband and son.

Thank you for your unconditional love.

Abstract

Background: Suicide prevention efforts traditionally focused on identifying risk factors and reducing their mental health impacts. But increasing research attention seeks to explore suicide protective factors, which focuses on how individual differences, such as hope or resilience, can inform prevention strategies by reducing the salience of suicide risk factors.

Aims and objectives: This thesis aims to explore the potential protective influence of perceptions of posttraumatic growth (PTG) pertaining to positive changes in worldviews, relationships, and identity after highly challenging life events. Previous research has consistently found negative associations between PTG and suicidal thoughts, but has not explained mechanisms underlining this relationship. This thesis examines the protective function of PTG through a theoretical framework that explains the formation of suicidal thoughts and behaviours: The Integrated Motivational-Volitional Model of Suicidal Behaviour (IMV).

Method and results: Five empirical studies using both qualitative and quantitative methodologies were conducted. The first explored the personal experiences of veterans deployed on operational tours during their military service through semi-structured interviews, finding that they identified PTG from their adverse experiences, reporting some risk factors specified by the IMV. The second examined associations between key suicide risk factors in the IMV (i.e., defeat and entrapment appraisals), suicidal ideation, and PTG within a sample of veterans, finding that PTG was negatively correlated with defeat and entrapment with large effect sizes, but was unrelated with suicidal thoughts. The third study examined a sample of community participants to determine whether PTG moderated relationships between (1) defeat and entrapment and (2) entrapment and suicidal ideation, derived from the pathways specified in the IMV. Perceiving PTG did not moderate either of these two relationships, but it has a direct effect on suicidal ideation, whereby higher PTG predicted lower levels of suicidal ideation (consistent with existing literature). The fourth study examined whether PTG attenuated the strength of the longitudinal relationships between (1) T1 burdensomeness and T2

burdensomeness and (2) T1 thwarted belongingness and T2 thwarted belongingness across six weeks in an at-risk community sample. It found that perceiving PTG from recent stressors reduced the strength of the relationship between T1 and T2 burdensomeness levels. In study five, an experimental design with control and experimental groups was used to induce PTG utilising positive reappraisals about past adversity to investigate whether this manipulation results in reductions in burdensomeness levels from pre to post-test measure. There was not a significant impact of positive reappraisal manipulation on the reports of perceived burdensomeness across groups.

Thesis findings: Overall, findings indicated that perceiving PTG from past adverse experiences did not function in the way that the IMV predicted, but it was negatively associated with suicidal ideation directly. The findings across five studies suggested that the protective influence of PTG against the development of suicidal thoughts might be through negative self-appraisals, such as burdensomeness.

Implications: Given that PTG could be modified through training and interventions, the findings of this thesis may inform suicide prevention strategies after these results are confirmed with further research. For example, PTG training could reduce perceptions of burdensomeness, which is a robust and known risk factor for suicide.

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List of Abbreviations

PTG	Posttraumatic growth
IMV	The Integrated Motivational-Volitional Model of Suicidal Behaviour
PB	Perceived burdensomeness
TB	Thwarted belongingness

Chapter 1 Introduction & Literature Review

Posttraumatic growth (PTG) refers to the positive psychological changes resulting from struggling with adverse events, commonly reported in five different areas: greater appreciation of life, improved relationships with others, realising personal strength, identifying new possibilities, and spiritual change (Tedeschi & Calhoun, 1996). Some recent research has pointed out that perceived PTG is associated with a protective function in reducing suicidal ideation (e.g., Bush et al., 2011; Strader, 2019). These findings are encouraging in highlighting the potential protective effect of PTG against suicidal thoughts and the potential application of this positive psychology phenomenon in suicide prevention strategies. However, the mechanisms underlying this relationship are unclear and have not been addressed by previous research.

This thesis addresses a fundamental question in the newly-developing suicide resiliency field pertaining to PTG: Does PTG have a protective role against the development of suicidal thoughts?

1.1. Aim and rationale

The main aim of the thesis is to explore the protective influence of PTG in relation to suicidal ideation. I am particularly interested in understanding its protective function and when it happens. To address this gap, I use a well-validated suicide model, the Integrated Motivational-Volitional Model of Suicidal Behaviour (IMV), initially developed by O'Connor (2011) and refined by O'Connor and Kirtley (2018), as a framework to explore the protective function of PTG.

1.2. Chapter overview

The current chapter will review the literature on suicide and theoretical frameworks explaining suicidal thoughts and behaviours. Afterwards, I will describe the IMV in detail and provide supporting evidence utilised this model because of its relevance to the current thesis. After this, I will focus on PTG and discuss the current debates about the measurement issues and its conceptualisation. I will then discuss the studies that examined PTG and suicide. In the end, I will justify the reason for choosing the IMV as a theoretical framework for the current thesis and describe the thesis map and research questions.

1.3. Suicide

1.3.1. Background

Suicide has become a major health concern globally. An estimated 703,000 individuals die by suicide worldwide in a year, accounting for more deaths than HIV/AIDS, breast cancer, war, and malaria. In 2019, suicide accounted for 1.3% of all fatalities, more than half of which (58%) were among victims under the age of 50. Given that suicide is preventable, and these numbers are high, the World Health Organization (WHO, 2021) recognises it as a public health priority, and aims to make suicide prevention a top priority on the global public health agenda. Additionally, it supports and encourages countries to develop comprehensive suicide prevention strategies, such as early identification, assessment and management of suicidal thoughts and behaviours, and fostering socio-emotional life skills.

Addressing these calls, a vast body of research has focused on identifying risk factors for suicide to aid public health strategies and suicide prevention efforts. Recent

systematic reviews identified some of the widely examined suicide risk factors within various populations, such as previous mental health disorders and interpersonal violence among young adults (Gili et al., 2019; Miranda-Mendizabal et al., 2019), sleep problems among adolescents and young adults (Kearns et al., 2020), childhood maltreatment impacts in adults (Angelakis et al., 2019), hopelessness and alexithymia in individuals with obsessive-compulsive disorder (Albert et al., 2019), and stressful life events in adults (Howarth et al., 2020).

However, it should be noted that not every individual exposed to one or more suicide risk factors actually think about or attempt suicide. Although the accumulation of these risk factors is likely to increase suicide risk, they have little predictive power and do not explain fully why people think about killing themselves and act on these thoughts (O'Connor & Nock, 2014). Therefore, a greater understanding of the psychological processes that underlies suicidal thoughts and behaviours is needed, so that suicide intervention efforts can target these underlying mechanisms and prevent suicidal thinking and attempts before they emerge.

Over the last two decades, various theoretical frameworks have been developed by researchers to explain why people think about suicide and why individuals move along the pathway to suicide (i.e., from suicide ideation to creating a suicide plan, suicide attempts, and deaths by suicide). The following section explains some of the theoretical frameworks developed to conceptualise and study the formation of suicidal thoughts and behaviours.

1.3.2. Theoretical frameworks

Many suicide models have been put forward to conceptualise knowledge of suicidal ideation and behaviour, the most prominent of which are reviewed below, such as

Cry of Pain Model, Schematic Appraisal Model of Suicide, Interpersonal Theory of Suicide, Three-Step Theory of Suicide, Integrated Motivational-Volitional Model of Suicidal Behaviour.

1.3.2.1. Cry of Pain (CoP)

According to the Cry of Pain (CoP) model (Williams, 2001), suicide risk increases in the presence of defeat and entrapment appraisals, whereby the individual feels defeated in life, perceives no escape from the negative situation. If there are no rescue factors, such as social support and positive future thinking, the individual is highly likely to think about suicide as an escape from the unbearable situation. Rasmussen et al. (2010) tested this model among a group of participants who had self-harmed (N = 103), and matched controls (N = 37) to determine whether the triggers in the CoP model (defeat, entrapment, and no rescue) distinguish individuals who repeatedly self-harm from first-time self-harmers and matched controls.

Rasmussen et al. (2010) found that the repeated self-harm group reported higher levels of defeat and lower levels of social support than individuals who self-harmed for the first time, and that both self-harm groups (repeated and first-time) reported higher levels of defeat and entrapment and lower levels of social support than the control group. These findings supported the CoP models' assumptions, and emphasised the importance of including negative appraisals, such as defeat and entrapment, and protective factors, such as social support, during suicide risk assessments and interventions.

Although this model provides key suggestions for the suicide risk through negative appraisals, it does not provide a comprehensive explanation of the rescue factors, or differentiate suicidal thoughts and behaviours as separate constructs.

1.3.2.2. Schematic Appraisal Model of Suicide (SAMS)

The Schematic Appraisal Model of suicide (SAMS) was developed by Johnson et al. (2008, 2010) to build on the CoP model, aiming to facilitate therapeutic advances in patients with psychotic disorders who are at risk for suicide. This model focuses on appraisal processes and proposes two constructs associated with suicide risk: (1) situation appraisals, referring to defeat and entrapment appraisals triggered by stressful life events; and (2) self-appraisals, which are suggested to influence all the cognitive processes that lead individuals to suicide (e.g., perceptions of low self-esteem and low self-worth). In addition to the negative self-appraisals, this model proposes that positive self-appraisals (e.g., one's perceptions of ability to cope with emotions, solve problems and receive social support) are particularly protective and can provide resilience for individuals who are experiencing difficult life events.

Johnson et al. (2010) tested whether positive self-appraisals buffer the impact of adverse life events against the development of suicidality in a sample of students with some degree of suicidal ideation. Their moderation analyses showed that positive self-appraisals (measured by the Resilience Appraisals Scale, developed by the same authors) interacted with stressful life events to predict lower levels of suicidality. In other words, stressful life events did not lead to increased levels of suicide risk for those who reported higher scores on positive self-appraisals, suggesting that such positive appraisals related to one's perceptions of oneself weaken the impact of adverse events and protect against the increased suicide risk. Although the inclusion of positive self-appraisals as protective factors strengthens this model, it does not distinguish suicidal thoughts from behaviours and fails to

explain the mechanisms underlie the impact of self-appraisals on situation appraisals (Johnson et al., 2010).

1.3.2.3. Interpersonal Theory of Suicide (IPT)

The Interpersonal Theory of Suicide (IPT) (Joiner, 2005) describes the mechanisms underlining suicidal thoughts and behaviours separately, and focuses on the two interpersonal constructs for explaining suicidal ideation: thwarted belongingness and perceived burdensomeness. Thwarted belongingness refers to an unmet need for social connectedness, while perceived burdensomeness is defined as having beliefs of self-hatred and being liable to others (van Orden et al., 2010). Suicidal desire occurs in the presence of these negative perceptions related to interpersonal relationships. Furthermore, this model suggests that one can act on suicidal thoughts when the capability of suicide is high. This capability can be increased through elevated physical pain tolerance, habituation to pain, and fearlessness of death (van Orden et al., 2010).

This theory has particularly attracted attention in research with military veterans due to their involvement in operational deployments and exposure to atrocities during combat, thus increasing acquired capability for suicide. Several studies tested the relationships between thwarted belongingness, perceived burdensomeness, and suicide desire in veteran samples and found that the interaction between burdensomeness and thwarted belongingness predicted suicidal ideation (van Orden et al., 2008; Monteith et al., 2013; Silva et al., 2017).

In terms of its clinical application, Short et al. (2019) conducted a randomised control trial with experimental and control groups and tested a computerised intervention with community inpatient veterans to target burdensomeness and thwarted

belongingness thoughts. Their findings revealed that their intervention, which includes psychoeducation and cognitive bias modification, reduced these negative thoughts over three weeks compared to the control condition. They also found an indirect effect on reducing suicidality through decreasing burdensomeness thoughts. Despite some limitations (e.g., having a control condition without a treatment), this research demonstrated the importance of utilising empirically validated theoretical frameworks to develop suicide prevention strategies, as discussed throughout this thesis.

Despite the strengths of the IPT model (e.g., suicidal thoughts and behaviours are separately explained), this model does not consider other different paths to suicidal thoughts and behaviours and other proximal risk factors which makes it a reductionistic approach (*as discussed in Hjelmeland & Knizek, 2020*) despite suicide being caused by complex interplay of biological, social and contextual factors. Also, this model does not consider protective factors that may buffer against the formation of suicidal thinking.

1.3.2.4. Three-Step Theory of Suicide (3ST)

The Three-step Theory of Suicide (3ST) (Klonsky & May, 2015) has a perspective consistent with the 'ideation to action' framework (Klonsky et al., 2017), similar to the IPT, in which the leading factors of suicidal ideation and suicidal behaviours are described as distinct processes. Also this model includes some protective factors, such as connectedness.

Firstly, the model suggests that any source of pain (physical, emotional) and hopelessness can lead the person to have a decreased desire to live. The second step of the model highlights the protective role of connectedness which is described as

one's attachment to someone, a job, any hobbies, or any meaningful purpose. If a person feels pain and perceives a lack of connectedness, the likelihood of suicidal ideation increases. The last step emphasises the capability of suicide (e.g., acquired capability) (again, similar to the IPT model). Once the desire for life decreases and the individual has the capability of attempting suicide, then suicidal thoughts are more likely to turn into suicidal acts.

Dhingra et al. (2019) tested this model in a sample of 665 university students and supported its central assumptions. The interaction between psychological pain and hopelessness predicted suicidal desire, and connectedness was protective against ideation in those who reported high levels of pain and hopelessness. The capability of suicide also predicted suicide attempt history when controlled for current and lifetime suicidal ideation. However, they highlighted that the model lacks a clear explanation of the predictions related to when the transition from suicidal ideation will occur, and under what circumstances it is more likely to happen. Besides, as argued by Tsai et al. (2021), pain and hopelessness might share some similarities with other proximal factors that were key in other empirically tested suicide models, such as thoughts of defeat and entrapment.

1.3.2.5. Summary

These theoretical models offer essential explanations regarding the formation of suicidal thoughts and behaviours, each of which has its strengths and limitations. Some models do not distinguish suicidal ideation from suicidal behaviour (e.g., SAMS and CoP), which limits their application for the research that assesses suicidal ideation, particularly given that not every person with suicidal thoughts attempts suicide (Klonsky & May, 2015; Nock et al., 2008). Besides, some models employed a

narrow perspective regarding the suicide driving factors, such as interpersonal factors (Joiner, 2005). Although the majority of these models were empirically tested and supported by research, as discussed above, they have a limited scope and fail to build on the expanding body of empirical evidence.

The IMV addressed these issues and aimed to create a new integrated model to combine the knowledge already gathered from the dominating suicide models. For example, this model includes components of defeat and entrapment from the CoP model and SAMS; perceived burdensomeness and thwarted belongingness from the IPT; acquired capability from the IPT and 3ST,[1] and hopelessness from 3ST; and coping from SAMS. It thus provides a comprehensive explanatory framework for the psychology of the suicidal mind in recognising suicide as the outcome of a complex interplay of biological, psychological, environmental, and cultural factors. This model also distinguishes separate constructs within the continuum of suicide (i.e., suicidal thoughts and suicidal behaviours), while some models (e.g., CoP and SAMS) focus only on the psychological factors that form risks for suicide, and do not consider the difference between suicidal ideation and suicide attempts. The IMV also has broader scope by including separate volitional moderators.

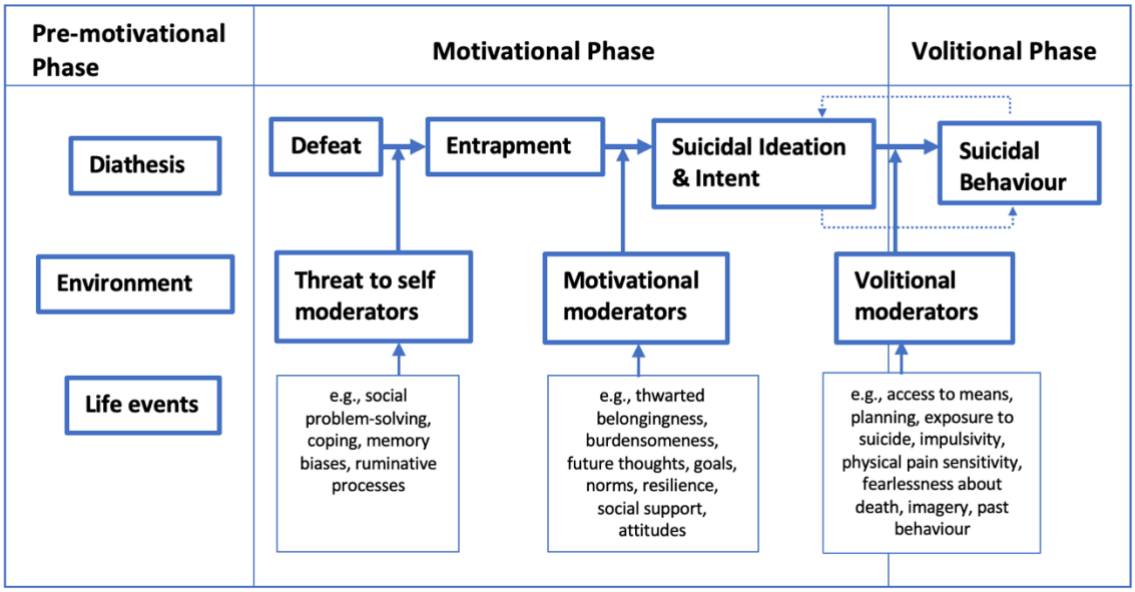
Since the IMV provides a theoretical framework to test research questions of the current thesis, it is explained in detail below.

[1] IMV also expands the scope of acquired capability through the inclusion of separate volitional moderators that influence acquired capability, such as exposure to suicide, physical pain sensitivity, fearlessness about death, and mental imagery, which will be explained below.

1.3.3. Integrated Motivational-Volitional Model of Suicidal Behaviour (IMV)

As mentioned previously, the IMV was developed by O'Connor (2011), and was further modified by O'Connor and Kirtley (2018). It provides a clear understanding regarding the formation of suicidal thoughts and behaviours, considering biological background factors, triggering events, risk and protective factors. The IMV proposes three phases through suicide; pre-motivational phase, motivational phase and volitional phase, as displayed in Figure 1.1.

Figure 1.1
Integrated Motivational-Volitional Model of Suicidal Behaviour (IMV)



Note. Adapted from O'Connor & Kirtley (2018)

1.3.3.1. Pre-motivational phase

The first phase highlights background factors (pre-existing individual vulnerabilities, such as perfectionism), environmental factors (e.g., inconsistent parental attitudes, financial problems), and triggering events (e.g., traumatic life events). These factors are likely to make the individuals vulnerable to suicide risk, and provide background context in which suicidal thoughts and behaviours may develop (O'Connor, 2011).

For example, socially prescribed perfectionism refers to people having unreasonably high expectations of themselves, and it has been empirically associated with suicide risk (Smith et al., 2018). There is evidence showing an association between suicide risk and socioeconomic status, another pre-motivational phase construct (e.g., environmental factors) (Lorant et al., 2018). Negative life events are another background risk factor in this phase, and evidence revealed positive associations between adverse experiences and suicide previously. For example, MacLaughlin et al. (2012) conducted a systematic review of papers that examined intimate partner abuse and suicidality and found a strong relationship between them. Similarly, Serafini et al. (2015) systematically reviewed the literature and found that the number of adversities and negative life events experienced (e.g., violence, familial, and school-related problems) were related to suicidal behaviour in a group of young people aged 10-25 years. To investigate the effect of negative bonding with parents during childhood, Zortea et al. (2020) conducted an online cross-sectional study with 730 young adults. They found that remembering more negative memories of interaction with parents is associated with reports of a higher sense of defeat.

Although cross-sectional, these studies support the idea that background vulnerability factors, such as childhood environment, and negative life events, are likely to increase the suicide risk and may trigger defeat appraisals.

1.3.3.2. Motivational phase

The second phase was derived from Williams' (2001) CoP model, as this phase focuses on the psychological processes that lead to the emergence of suicide ideation, such as defeat and entrapment appraisals. For example, after a triggering life event, a person might have perceptions of defeat and humiliation from the

challenging event, which may then lead to the feelings of being trapped and unable to see an escape from the negative situation, in which case they may realistically consider suicide to be a solution. Specifically, the model suggests that entrapment appraisals mediate the relationship between defeat appraisals and suicidal ideation. The model proposes a range of moderators within this phase that influence the transition from defeat to entrapment, i.e., 'threat-to-self' moderators moderators; and from entrapment to suicidal ideation, i.e., motivational moderators. Moderators are constructs that affect the strength and direction of the relationships between variables. As shown in Figure 1.1, threat to self moderators, such as social problem solving, coping, rumination, and memory biases, are suggested to moderate the relationship between defeat and entrapment and influence the first pathway in the motivational phase. In addition, motivational moderators, such as perceived burdensomeness, thwarted belongingness, future thoughts, goals, resilience, social support and attitudes towards suicide are suggested to interact with entrapment appraisals to predict suicidal ideation.

There has been a growing body of research testing the suggested relationships within this phase of the model. For example, Lucht et al. (2020) tested the main predictions of the IMV in a German high-risk sample with psychiatric inpatients. They found that entrapment mediated the relationship between defeat and suicidal ideation. Owen et al.'s (2018) longitudinal study with bipolar disorder patients also supported this, showing that defeat indirectly predicted suicidal ideation through entrapment at a four-month follow-up.

Dhingra et al. (2016) utilised a structural equation model (SEM) to assess the IMV in a large sample of students in the UK (N = 1809). Their model (based on the IMV's

assumptions) explained a significant amount of variance in defeat (79%), entrapment (83%), and suicidal ideation (61%). As expected, defeat predicted entrapment with a large effect size; entrapment predicted suicidal ideation with a medium effect size. They also found that brooding rumination, as a threat to self moderator, was positively associated with entrapment, while other motivational moderator, such as perceived burdensomeness, thwarted belongingness, and emotional stability (suicide resiliency sub-scale), predicted suicidal ideation significantly (as per expectations). It should be noted that Dhingra et al. (2016) examined the direct effect of the moderators on the suggested outcome variables, and they did not look at the moderating effects due to the limitations in the number of analyses they could run via their primary analysis.

The moderators within this phase can weaken or strengthen the relationships between the key variables in the model (defeat, entrapment, and suicidal ideation). Particularly, some protective moderators in the model are argued to be protective against the development of suicidal ideation through influencing the pathways. For example, coping (a threat to self moderator) may provide the defeated person a context to manage negative feelings and buffer against the entrapment feelings. Being resilient (a motivational moderator) may help the individual with entrapment feelings to easily recover from the adversity, thus protecting against suicidal ideation. These protective moderators have an important role within the model, as they can prevent the formation of negative perceptions and suicidal thoughts, which requires further empirical assessments.Below studies are few examples of how protective factors have been examined within the context of IMV.

In a cross-sectional study, Wetherall et al. (2019) tested whether entrapment mediates the relationship between defeat and suicidal ideation while including trait resilience as a motivational moderator within the analysis. Participants consisted of 422 university students. They found that entrapment mediated the relationship between defeat and suicidal thoughts, while resilience moderated the entrapment-suicidal ideation relationship. These findings supported IMV's key assumptions, and suggested that entrapment is a key mechanism to explain how defeat appraisals resulting from life events may lead to suicidal ideation. Furthermore, their moderation results indicated that at low levels of resilience, higher entrapment was related to higher suicidal ideation, whereas at high levels of resilience they were not associated with each other. In other words, resilient individuals are less likely to report suicidal ideation even they report higher levels of entrapment, suggesting a protective function.

Li and colleagues tested IMV in a group of Chinese adolescents (2021). Particularly they examined whether suicide resilience plays a moderating role within the entrapment-suicidal ideation pathway. In terms of suicide resilience, they measured three types of suicide resilience: internal protection (i.e., positive feelings about oneself), external protection (i.e., positive beliefs about seeking support from others), and emotional stability (i.e., positive beliefs about one's ability to regulate negative emotions). Their findings showed that these three types of suicide resiliency interacted with entrapment in predicting suicidal ideation, suggesting that entrapment is positively associated with suicidal ideation in individuals with low levels of suicide resiliency. Individuals high in these suicide resiliency types seem to have the ability to recover from life stressors and are less likely to report suicidal

ideation even when feeling higher levels of entrapment. By understanding these resiliency domains, researchers and practitioners can develop and implement intervention strategies that target these aspects of suicide resiliency and protect individuals against suicide even when they are at greater suicide risk (i.e. intense entrapment feelings), thus helping to reduce the incidence of suicide.

Furthermore, IMV suggests that future-related constructs, such as goals and future thinking, act as motivational moderators in the model and can buffer against the transition from entrapment to suicidal ideation. Following this, Tucker et al. (2016) tested the moderating role of hope in the IMV in a sample of 174 students with recent suicidal ideation and found significant interaction between hope and entrapment. Particularly, entrapment and suicidal ideation were positively associated with low and moderate levels of hope; however, this relationship was not significant when hope scores were high. These findings indicated that individuals who set goals and have the motivation to achieve these goals (i.e., hope) are at lower risk for suicidal thoughts even if they are feeling trapped because of negative life circumstances, suggesting a protective function of hope.

The findings of these key studies by Tucker et al. (2016), Li et al. (2021) and Wetherall et al. (2019) are highly related to my own research, as they also focused on suicide resiliency and examined suicide protective factors within the context of a well-validated suicide model. Such an approach expands existing knowledge and offers a clearer explanation of why and where the protective influence of these factors happens within the suicide continuum. Understanding their protective function through the IMV will be likely to inform suicide prevention efforts once their findings are confirmed with further research, particularly with longitudinal studies. Thus,

suicide intervention strategies could start naturally considering these factors within the treatments as part of evidence-based practice for healthcare professionals.

Notably, Jobes and Joiner (2019) highlighted the importance of considering suicidal ideation on its own as a treatment target. They illustrated their point using the iceberg metaphor of Geulayov et al. (2018), whereby suicide deaths and attempts represent the tip of the iceberg, but suicidal thoughts represent the larger piece of the iceberg below the water, which includes individuals suffering suicidal misery in silence. They recommend that suicide intervention designs should consider the triggers for suicidal ideation itself and how the influencing factors interact with suicidal ideation over time. Indeed, the IMV, at this point, provides a comprehensive framework related to the risk and protective factors that influence suicidal ideation, the larger piece of the suicide iceberg below the surface of the water.

1.3.3.3. Volitional phase

As suggested by some of the models (e.g., 3ST, IPT), driving factors for suicidal thoughts and behaviours should be distinguished to draw a clearer picture of risk and protective factors for ideation and behaviours. The last phase of the IMV recognises the difference between the two and focuses on the behavioural actualisation of suicidal ideation. It argues that volitional moderators govern the transition from suicidal ideation to suicidal behaviour, some of which include easy access to means of suicide, exposure to the suicide of others (e.g., family members), acting impulsively, increased physical pain tolerance, fearlessness about death, and past history of self-harm or suicidal behaviours.

There is growing evidence to supporting the differentiation between the triggers for suicidal ideation versus suicidal behaviour. For example, Dhingra et al. (2015) found

a significant difference between suicide attempters and ideators in relation to their scores in the volitional factors, such as fearlessness about death, impulsivity, and exposure to suicidal behaviour. However, the two groups did not differ on any variables in the motivational phase moderators.

Furthermore, another cross-sectional study by O'Connor et al. (2012) looked at the differences in motivational and volitional variables in a group of 5,604 adolescents separated into three groups (self-harm enactors, self-harm ideators, no self-harm history). They compared the scores of motivational and volitional moderators across groups and found that volitional phase moderators (e.g., exposure to suicide within family and friends, descriptive norms, and impulsivity) distinguished ideators from the enactors.

1.3.3.4. Summary

As briefly outlined above, the assumptions of the IMV have been validated with different groups of people, providing a promising framework for the understanding of suicidal thoughts and behaviours. Importantly, one of the promising sides of the IMV is that it suggests potential pathways from triggering factors to suicidal thoughts and suicidal behaviours, including moderators that affect these pathways. This detailed framework of the suicidal mind provides future research directions to understand how and when risk and protective factors come into play and affect the suicidality of the person. Although suicide research has mainly focused on identifying *risk* factors, exploring *protective* factors through this practical framework is also an essential avenue for research (O'Connor & Nock, 2014). Thus, we can understand *what* can buffer against the development of suicidal ideation for a distressed

individual and *when*, which can then inform more effective intervention efforts to reduce the risk.

To address this gap, the current thesis explores the protective function of posttraumatic growth (PTG) through the IMV to provide a detailed understanding of its relationship with suicidal ideation, as evidenced in previous research (e.g., Bush et al., 2011). The following section describes PTG itself, and evaluates relevant literature on its relationship with well-being and suicide.

1.4. Post-traumatic growth (PTG)

1.4.1. Background and definition

Negative life events can have a powerful impact on individuals' lives. There has been increasing evidence from meta-analysis studies showing the negative outcomes of traumatic and stressful life events on well-being, such as post-traumatic distress disorder and depression (e.g., Mandelli et al., 2015; LeMoult et al., 2020). However, within the past three decades, researchers have turned their attention toward potential positive outcomes, since adverse experiences do not exclusively lead to negative consequences all the time.

Shakespeare-Finch and Beck (2014) conducted a meta-analysis where they aimed to clarify the relationship between negative and positive outcomes of adversity. They concluded that negative outcomes (e.g., distress and PTSD) and positive ones (e.g., perceptions of positive post-trauma changes) could co-occur, and only focusing on the negative side of post-adversity may limit and lead to slow recovery. Thus, the recognition of the positive outcomes along with the negative impact of the adversity

can provide a more balanced perspective on the negative experiences and their effects on wellbeing and patients' lives in general.

1.4.2. Measuring PTG

There have been discussions in the PTG field related to its conceptualisation and measurement. It is essential to explain these discussions here, to conceptualise PTG in the context of its measurement in this thesis.

1.4.2.1. PTG as a real change

Tedeschi and Calhoun (1996) first conceptualised PTG to capture the positive psychological changes individuals reported as a result of the struggle with highly challenging life circumstances. They argued that PTG involves transformative life changes and results in genuine growth following the adversity, subject to two conditions: (1) the process of identifying positive change, and (2) the positive outcomes of the identification of these changes (e.g., life satisfaction and improved well-being). To measure these changes, they developed the PTG Inventory (PTGI), a questionnaire that reflects the types of benefits mentioned in the existing literature, such as a greater appreciation of life (e.g., living the moment to the fullest and appreciating each moment), meaningful interpersonal relationships with others (e.g., improved relationships with friends and family), increased sense of personal strength (e.g., perceiving oneself as stronger than before), changed priorities (e.g., finding new opportunities/perspectives in life), and a richer spiritual life (e.g., greater engagement with spirituality or a higher power).

Table 1.1 shows some example items from the PTGI. It asks participants to think about a negative life event that happened in their lives and answer questions based on this event. For each question, they are required to indicate to what extent they

think they have changed positively as a result of the adverse experience, ranging from 0 (*I did not experience this change as a result of my crisis*) to 5 (*I experienced this change to a very great degree as a result of my crisis*).

Table 1.1
Five domains of the PTGI measure with example items

PTGI domain	Example item
Relating to others	I learned a great deal about how wonderful people are
New possibilities	I established a new path for my life
Personal strength	I discovered that I'm stronger than I thought I was
Appreciation of life	I have a greater appreciation for the value of my own life
Spiritual change	I have a better understanding of spiritual matters

Note. Items from the PTGI by Tedeschi and Calhoun (1996)

However, some researchers have questioned whether it actually measures genuine changes, given the retrospective nature of the questions. Such retrospective measurement requires participants to recall their memories and the self before the event, to evaluate how they have changed after the event, how much of the change is due uniquely to the adverse event, and to score it in a range of no change experienced to a very great degree of change experienced (Ford et al., 2008; Jayawickreme & Blackie, 2014). An ideal study design exploring genuine PTG changes would require a longitudinal design with baseline measures taken before the adverse life event. Given the practical difficulties in estimating when adversity is likely to occur, PTGI has continued to be used by researchers.

Important research into this debate was published by Frazier et al. (2009), who designed a longitudinal study with a retrospective measure of PTG (i.e., PTGI) as well as its current-standing version with adapted items (C-PTG). The adapted version

asked participants to think about the past two weeks and indicate how they are feeling. Example items include 'I have appreciated each day', 'I have had a strong religious faith'. 1281 participants completed T1 and T2 measures, with 186 of them reporting adverse experiences between T1 and T2. As mentioned above, choosing this sub-sample (N = 186) with individuals that experienced adversity since the baseline measure (T1) offered a solution for measuring the *genuine growth*.

Change scores for the current-standing version of PTGI were calculated by subtracting T1 scores from T2 scores on the C-PTG. The authors then examined how perceptions of PTG (i.e., *retrospectively measured by PTGI*) and actual PTG were associated within this sub-sample. The findings showed that actual growth (i.e., *measured longitudinally by the current-standing version of PTGI*) was associated with decreased distress pre-trauma to post-trauma and unrelated to coping. However, perceptions of PTG (*measured retrospectively*) were related to positive reinterpretation coping and increased distress (Frazier et al., 2009).

Another similar longitudinal research with 64 college students supported Frazier et al.'s (2009) findings, reporting that actual PTG was related to decreases in distress and unrelated to coping while perceived PTG was related to the avoidance coping and increased distress (Boals et al., 2019). These two studies indicated that retrospective measurement of PTG does not necessarily reflect genuine (actual) growth, but rather *perceptions* of growth, as they were unrelated to each other, and were related to different mechanisms.

Taken together, these findings suggested that retrospective self-reports of PTG (i.e., perceptions of/perceived PTG) and actual PTG measured longitudinally (i.e., as genuine changes from pre-trauma to post-trauma) represent separate constructs

and are related to different outcomes. Perceived PTG has been found to be related to distress and coping strategies, whereas genuine PTG was associated with decreased distress, but was unrelated to coping.

1.4.2.2. Perceptions of PTG as coping process

Maercker and Zoellner (2004) described a two-component model of PTG. According to their theory, PTG has a constructive side, as initially argued by Tedeschi and Calhoun (2004), which aids in functional adjustment after traumatic experiences. The other side of PTG is self-deceptive and illusory, which might be linked to avoidance and wishful thinking. Maercker and Zoellner (2004) argued that these two PTG components have different relationships to adjustment; while the positive aspect of PTG is associated with healthy adjustment, the illusionary, self-deceiving aspect of PTG may be linked to denial.

However, Zoellner and Maercker (2006) emphasised that PTG does not always lead to maladjustment; in contrast, it might serve as a coping strategy and help people to manage emotional distress. The question arises of how PTG can be adaptive and how it can help individuals to cope with distressing situations. In other words, why do people hold such positive perceptions about adversity and attribute positive meanings to the negative events?

Taylor (1983) argued that when people experience challenging events, they make efforts to maintain their psychological functioning by utilising cognitively adaptive thoughts, such as self-enhancement cognitions. For example, in several studies with cancer patients, self-enhancement cognitions (e.g., becoming more compassionate, being able to take charge of their lives) were found to protect individuals from the negative impacts of threatening situations, since positive illusions were associated

with better psychological adjustment (e.g., Taylor et al., 1992; Taylor et al., 2000). Taylor et al. (2000) concluded that people's reporting of growth in response to challenging life events might represent exaggerations and illusions that are designed to help the individuals themselves to cope with distressing thoughts and feelings.

McFarland and Alvaro (2000) tested this idea and conducted several experimental studies to examine self-enhancement motivations. Participants were asked to think about the most stressful event they experienced, or the most negative life event that had happened to an acquaintance. They then evaluated and rated the victim's 'current-standing' and 'past-standing' (two years prior to the negative event) based on 27 positive adjectives (such as *honest*, *mature*, *strong coping skills*, and *compassionate*). They found that current-standing scores on the ratings were not different across two victim groups (themselves or their acquaintances); however, participants rated their own pasts more negatively than they rated those of their acquaintances.

These findings suggested that individuals who experience challenging experiences are motivated to derogate their past selves through building a past that allows them to see an improved self. Their findings supported Taylor's (1983) claims related to self-enhancement cognitions, which was attributed to the underlying mechanism of these illusory cognitions (misremembering the past to provide a context for the perceived improvement). Based on this understanding, perceptions of PTG may represent self-enhanced illusions that help individuals manage distress when they are faced with a threatening experience. Relevantly, such self-enhanced self-perceptions may reduce the threat of adverse experiences on self-concept (Taylor &

Brown, 1988), such as negative appraisals of the situation and the self that increases the suicide risk (e.g., defeat appraisals).

Similarly, Tennen and Affleck (2002) conceptualised retrospectively measured PTG as an active coping process, and not as an outcome of adversity, as argued by Tedeschi and Calhoun (2004). Tennen and Affleck (2002) argued that the search for evidence of benefits when individuals try to make sense of their negative experiences may act as a coping strategy (i.e., benefit-finding). Furthermore, when reflecting back on the past adverse experiences and reminding oneself about the benefits gained from the past may act as a coping strategy as well (i.e., benefit-reminding). These individuals may use these perceptions of benefits in times of distress and comfort themselves. For example, one can perceive a stronger self as a result of a past negative experience, and when subsequently faced with another recent adversity, this person may remind themselves about the benefits that they gained previously to help cope with the current stressors: '*I have been through difficulties in the past, I handled that, I am strong enough to handle this current problem*'.

For example, in their study with 89 women with fibromyalgia (i.e., chronic pain syndrome), Tennen and Affleck (1999) examined the daily use of benefit-reminding in relation to daily pain and mood. Every night during the study, participants were asked to describe how much they had 'reminded' themselves of some benefits that have come from living with chronic pain using a seven-point Likert-type scale (ranging from 0 'not at all' to 6 'very much'). Their results showed that days with more benefit-reminding were accompanied by significant differences in mood, specifically increased levels of happiness, being active, and feeling lively. These findings

indicated that finding benefits and reminding these benefits can improve individuals' emotional well-being.

Overall, retrospectively measured PTG appears to be the continued *process* of coping in the presence of a threatening situation rather than the result or *outcome* of successful coping (Infurna & Jayawickreme, 2019), and may have an adaptive effect on psychological adjustment and well-being.

Indeed, a key meta-analytic review by Helgeson et al. (2006) examined the relationship between benefit-finding and psychological health (e.g., coping, distress, depression, anxiety) in 87 cross-sectional studies and found that benefit-finding was associated with better mental health outcomes, such as well-being (with large effect sizes) and lower depression. It was also associated with avoidant thoughts about the stressor, supporting the ongoing coping aspect of these perceptions.

In a longitudinal study with 141 adolescents and young adults diagnosed with cancer within the past four months, Husson et al. (2017) found that perceiving PTG from their challenging experiences during the treatment measured at six-month follow-up predicted better mental health and lower psychological distress at 24-month follow-up. Stallard et al. (2021) assessed the associations between anxiety, well-being, and PTG within a sample of 385 carers of children aged 6-16 in Portugal and the UK during the COVID-19 pandemic. They conducted a cross-sectional online survey where they asked the carers whether there are any positives to come out of the pandemic and the social distancing restrictions (as a PTG measure). Although they did not use PTGI, they asked participants to reflect on past adverse experiences, thus their perceptions of growth. They found that the number of identified positive outcomes was correlated with less anxiety and improved well-being. They compared two groups

(who said ‘yes’ or ‘no’ to the PTG question) and found that there is a significant difference in well-being scores, with lower well-being scores in the non-PTG identified group.

Based on the existing and expanding literature on PTG and well-being, it can be argued that perceiving PTG from adverse experiences seems to have a beneficial impact on well-being because of its function in helping individuals to manage distress. Considering the adaptive function of perceiving PTG either through self-enhanced cognitions (Taylor, 1983) or finding/reminding benefits coping strategy (Tennen & Affleck, 2002), its relationship with suicide has attracted increasing attention over the past decade.

1.5. PTG and suicide

Given the potential adaptive function of perceived PTG, several studies have examined the relationships between PTG and suicidality in different populations, such as veterans and earthquake survivors.

For example, Bush et al. (2011) conducted a cross-sectional study with 5,302 deployed US veterans to test the relationships between PTG, suicidality, combat exposure, and PTSD. Participants were asked to think about their operational deployments and adverse experiences while answering the PTGI questions. Their analyses revealed that higher levels of PTG predicted lower levels of suicidal ideation when controlling for other suicide risk factors, such as PTSD, depression, and substance use. They concluded that PTG resulting from combat-related experiences might make service members suicide-resilient individuals.

Gallaway et al. (2011) conducted a cross-sectional study with 1,834 US veterans who were deployed to operational tours in Iraq to assess the relationships between PTG, mental health, and recent suicidal ideation. Participants were instructed to think about their deployment experiences to respond to PTGI items. For the suicidal ideation questions, they were asked whether they had had thoughts of killing themselves within the four weeks or at the time of the survey. They categorised participants into two groups based on their responses for each variable (e.g., depression: yes/no, recent suicidal ideation: yes/no), and analysed the differences in means and SDs across subgroups. They found that reporting recent suicidal ideation was significantly associated with reporting lower levels of PTG compared to the non-suicidal subgroup, after adjusting for demographic and military characteristics (e.g., deployment history, combat experience, army rank, the intensity of combat). They concluded that soldiers who do not attribute positive meanings to their adverse experiences might be at greater risk of severe psychological adjustment post-deployment.

Another cross-sectional research study within a similar population was conducted recently. Strader (2019) examined the relationships between PTG, combat exposure, and suicide in a sample of 423 veterans in the US, particularly examining whether perceiving PTG moderated the impact that combat exposure has on suicide risk. Although moderation analysis found no significant impacts, findings regarding the direct effect of PTG were consistent with existing evidence (Bush et al., 2011; Gallaway et al., 2011): perceiving PTG was associated with lower levels of suicidal thoughts. These studies indicated that PTG might protect veterans against suicide

risk, but further research is needed to understand the function of PTG against suicidal thoughts.

Importantly, Yu et al. (2010) examined the relationship between PTG and suicide risk in a non-veteran sample. They conducted a cross-sectional study with 623 high school students and earthquake survivors in China (one month after the Sichuan earthquake) using PTGI. For the suicidal ideation questions (two items), students were retrospectively asked whether they were thinking about suicide before and since the earthquake. The change score (post suicidal ideation vs. pre suicidal ideation) was used as an indicator for increased or reduced suicidal ideation since the earthquake. Findings showed that 57.4% of the sample indicated reduced suicide ideation since the earthquake, and this was significantly associated with higher levels of PTGI scores.

Although these studies revealed consistent findings (i.e., a negative association between PTG and suicidality), they failed to provide an explanation regarding the mechanisms underlying this relationship. There is evidence that suggests PTG can function as a coping mechanism in response to the negative experiences (Taylor et al. 1983; Tennen & Affleck, 2002), and it is plausible that it could play a role in the reduction of suicidal ideation. One may argue that PTG may function as a coping mechanism and therefore influence the relationship between key risk factors of suicidal ideation. This research gap is key to advancing the existing knowledge but requires a detailed examination through a theoretical model of suicide. To address this gap in the literature, I chose IMV as a framework to test the protective influence of PTG in relation to suicide. IMV is a comprehensive theoretical framework that aims to explain the complex interplay of motivational and volitional factors that lead to

suicidal behaviour. It is relatively a new model and some of its concepts, such as coping strategies, are not well-defined and require further exploration. Given that PTG perceptions are viewed as coping mechanism, the initial aim in this thesis is to examine it as a moderator within the motivational phase of the model, which places 'coping' among one of the moderators.

It is important to note here that this thesis focuses on understanding the relationship between PTG and suicidal ideation in detail, not mainly testing IMV and its assumptions. In other words, the focus was PTG and its protective function initially. Then I utilised IMV to see whether PTG could be integrated within this theoretical framework.

1.6. The rationale for using IMV in the current thesis

There are a number of reasons for choosing the IMV as a framework to test the protective influence of PTG against suicidal thoughts.

Firstly, as mentioned above, the IMV combined pre-existing suicide models, which strengthened its main predictions. It provides a comprehensive explanation for the psychology of the suicidal mind recognising suicide as a complex interplay of biology, psychology, environment, and culture. It provides a framework with a clear pathway from background risk factors to suicide attempts and describes how separate constructs contribute to the formation of suicidal thoughts and behaviours (i.e., moderators) by analysing suicidal thoughts and behaviours as separate processes. Given that PTG was associated with suicidal ideation in the previous research, a model that acknowledges the distinction between suicidal ideation and behaviour is

a better fit for my research. It is also a well-validated model, and a growing body of evidence supports its assumptions.

Secondly, as this thesis explores the role of PTG in relation to suicidal ideation, previous findings regarding the negative associations between PTG and suicidal ideation (e.g., Bush et al., 2011) were promising. However, a key limitation of these studies is that they were not driven by theoretical models, which makes the potential research implications for suicide prevention strategies unclear. It is not clear under what conditions perceiving PTG may provide protection against suicidal thoughts. Thus, exploring the function of PTG within the framework of the IMV would aid the understanding of when its protective influence occurs against suicidal ideation.

Finally, this model considers protective factors (in addition to risk factors) as moderators that may weaken the relationships between key risk factors, such as defeat and entrapment. Given that the risk-focused approach is one-sided, a model that includes protective factors is needed in the suicide field to inform suicide prevention efforts (O'Connor & Nock, 2014). I am assessing PTG as a protective factor against suicidal thoughts, and a model that considers protective factors along with risk factors is highly germane to the purposes of this research.

1.7. Conceptualisation of PTG in this thesis

As emphasised by Jayawickreme and Blackie (2014), researchers examining PTG should recognise the distinction between actual PTG and self-reported/perceptions of PTG, and carefully interpret their findings depending on the design of their studies. For example, if researchers are using retrospective measures in the studies, then they measure perceptions of PTG, the associated findings and relevant clinical

implications should be interpreted accordingly. I note here that I measured PTG retrospectively in my empirical chapters using PTGI, thus I consider PTG as a *coping process* within the current thesis.

1.8. Thesis structure

The current chapter reviewed existing research relevant to the research aim, providing the broader background context and justification of why this subject is vital to explore, and the research gap I address with the studies I conducted.

Chapter 2 covers an exploratory qualitative study investigating Armed Forces veterans' personal experiences when they were deployed on operational tours in Iraq, Afghanistan, and Northern Ireland and when they left the service. I used Interpretative Phenomenological Analysis to explore veterans' personal experiences to understand how these individuals experience suicide risk factors and PTG during/after their service in the Armed Forces.

Chapter 3 examines the relationships between defeat, entrapment, suicidal ideation and PTG in a sample of UK veterans.

Chapter 4 explains a study utilising the general population, which achieved a bigger sample size and examined whether PTG is a threat to self moderator or motivational moderator within the motivational phase of the IMV.

Chapter 5 focuses on the relationship between PTG and two interpersonal suicide risk factors: perceived burdensomeness and thwarted belongingness: I explored the protective influence of PTG on these risk factors longitudinally (six-week short-term longitudinal study).

Chapter 6 is the final empirical chapter, in which I aimed to expand on the findings of the longitudinal study explained in the preceding chapter by conducting an experimental study utilising positive reappraisals about past adversity to promote PTG. I then assessed the relationship between positive reappraisal manipulation and interpersonal risk factors.

Chapter 7 is the general discussion section where I discussed the findings from a broader perspective with studies' strengths and limitations, evaluated research, theoretical and clinical implications and provided suggestions for future research.

1.9. Research questions

This thesis aims to address one broader research question with a more specific sub-question:

Based on the existing evidence (e.g., Bush et al., 2011), what are the mechanisms underlying the protective influence of PTG against suicidal ideation?

To answer this question, I utilise IMV to examine the potential protective role of PTG within the motivational phase. Precisely, I aim to address the following research questions:

- Is perceiving PTG from stressful experiences associated with lower levels of suicidal ideation?
- Does perceived PTG from stressful experiences act as a motivational phase moderator in the IMV (i.e., a threat to self-moderator or motivational moderator)?

1.10. Reflections on conducting research during the COVID-19 pandemic

Following the first emergence of coronavirus cases at the end of 2019, (World Health Organisation (WHO) declared the coronavirus disease (COVID-19) as a global pandemic in March 2020.

Several research studies within this thesis have been affected by the COVID-19 pandemic. Studies within chapters 2, 3 and 4 were conducted before the COVID-19 pandemic, while the remaining (chapters 5 and 6) were run during the pandemic.

I had several discussions with my supervisors about the ethical implications of running research studies during the COVID-19 pandemic, when support services in the UK (both professional and social levels) were unavailable like before (Johnson et al., 2020). Accordingly, I had to make some amendments to these two studies to minimise the potential negative impact of the questions in the survey on participants' well-being during an ongoing pandemic.

Chapter 5: The first phase of the longitudinal study in chapter five was conducted within the second half of October 2020, when there were restrictions on socialising due to lockdown rules. People were prohibited from meeting more than six people for social gatherings, which applied indoors and outdoors. Pubs, bars and restaurants had shut after 10 pm until 6 am. The second phase of the longitudinal study took place within the last ten days of November, during the second national lockdown. At this time, high-street shops were told to stay closed, and people were allowed to meet

indoors with the ones in their 'support bubble' only. People could leave home to meet one person from outside their bubble outdoors.

The study participants were individuals from economically deprived areas in the UK as they were shown to be at greater suicide risk (e.g., Griffiths et al., 2014). Since the questions in my survey included sensitive questions (e.g., negative perceptions of the self, feeling like a burden, depression), I had to consider participants' well-being while designing the study (e.g., clear instructions in the information and debrief sheets, keeping the survey short by excluding non-primary questionnaires) (*see the heading 5.2.5 for the ethical considerations for this study*).

Chapter 6: Data collection for *the* experimental study occured between December 2020 and June 2021. During this period, the UK government reintroduced another nationwide lockdown until March 2021. After March, England began a phased exit from national lockdown, cautiously easing the restrictions. At first, I designed a three-phase experimental study with in-person assessments, recruiting participants with a greater risk for suicide by employing a pre-screening for depression. However, due to COVID-19-related restrictions (e.g., lockdowns, social distancing) and uncertainties at the time, I redesigned the study. I had a single online survey with participants from the general population and students instead of individuals with depression.

Broader reflections: Conducting PhD research during a pandemic has been challenging since I had limited time to complete my thesis and COVID-19 restrictions were unpredictable. However, I believe that these challenges (e.g., redesigning the studies and considering ethical issues relevant to the

current world circumstances) helped me to improve my problem-solving skills related to conducting research which is helpful when managing unprecedented challenges in real life.

Chapter 2 Qualitative study with veterans

2.1. Chapter Introduction

As mentioned in the Introduction chapter, this thesis aims to examine the relationship between perceptions of post-traumatic growth and suicidal thoughts through the lens of the Integrated Motivational Volitional (IMV) Model of Suicidal Behaviour. I initially aimed to investigate these relationships within a sample of veterans deployed to operational tours while serving in the UK Armed Forces.

Why veterans?

The reason for selecting this group for research is that deployed veterans encounter various traumatic experiences and other specific features of environmental and social processes (e.g., reintegration problems when becoming a civilian), which put them at risk for suicide (Rozanov & Carli, 2012).

Firstly, they are exposed to and participate in traumatic environments (i.e. conflicting with legitimate armed forces). For example, Hoge and colleagues (2006) found that more than 70% of military personnel deployed to Iraq reported violent experiences; being shot, handling dead bodies, witnessing one's death or injury or killing an enemy combatant. Given that the IMV (O'Connor & Kirtley, 2018) poses that traumatic and stressful life experiences provide context for suicide through triggering negative appraisals of the situation and self, more research is needed to understand veterans' challenging experiences and how they perceive these negative experiences.

Secondly, personnel leaving the military are likely to experience struggles related to reintegration into civilian life. This reintegration process involves a variety of challenges, such as financial/employment-related issues and difficulties in making

new friends (Iversen et al., 2011). For example, thwarted sense of belongingness is one of the risk factors for suicidal thoughts (Joiner, 2005; O'Connor & Kirtley, 2018). If one does not feel like one belongs to someone or somewhere, this would increase the risk of thinking about suicide, especially when distressed. To put this into context, ex-military personnel lived in an environment where they had friends and engaged with work-related tasks and daily activities within military settings (dinner with friends, hobbies). Once they leave the service, they become civilians and lose all these activities, thus facing challenges when reintegrating into society. This is likely to impose the risk of not belonging to the civilian community or even feeling like a burden to others, another risk factor for suicidal thoughts, according to IMV. Indeed, a qualitative study with veterans showed that thwarted sense of belonging and perceptions of being a burden is commonly reported in the interviews, indicating that these negative perceptions exist in ex-military personnel (Brenner et al., 2008). For example, one of the participants in Brenner's study (2008) reported that he became a 'nobody' after returning to his civilian life, whereas he gained respect and rank while serving in the military. O'Connor and colleagues (2017) conducted a cross-sectional study with 134 suicidal veterans recruited from the Veterans Affairs Medical Center. They found that veterans had a stronger desire to be dead than alive when feeling disconnected and isolated from others (i.e., higher levels of thwarted belongingness).

In the UK, studies showed that serving military personnel are more likely to report mental health problems compared to the UK general population (Goodwin et al., 2015), such as PTSD, which was associated with higher rates of suicide in this population (Ramchand et al., 2015; Jakupcak et al., 2009). Although military

personnel serving in the UK military reportedly has a lower suicide rate compared to the general population in the UK (Fear et al., 2008), there is research that found increased suicide risk in individuals with mental health problems (Pinder et al., 2011) and those who have left the military service at a younger age and with a short length of service experience when compared to the general UK population (Kapur et al., 2009). Considering the previously mentioned suicide risk factors, such as social isolation, trauma exposure, and hesitance to seek professional support (Murphy et al., 2014), more research should explore the personal experiences of the challenges experienced by ex-military personnel and how they make sense of these experiences. Taken together, existing evidence indicate that veterans are at higher risk for experiencing a variety of risk factors specified in the suicide models (i.e., the IMV). Thus, it is vital to understand such triggering factors and appraisal processes that lead to such negative thoughts within this population in the UK.

Focus on perceptions of post-traumatic growth

As mentioned in the Introduction chapter, focusing on suicide risk factors is a one-sided approach to suicide prevention. It has been suggested to recognise the importance of protective factors that reduce the likelihood of suicide (Rabon et al., 2018), however, there is little research examining them. Given the increased risk for suicidal thoughts and behaviours in veteran populations due to the above reasons, examining protective factors within these populations becomes crucial to inform suicide prevention strategies.

Indeed, most veterans reported perceptions of PTG as a result of their military career (Tsai et al., 2015; Palmer et al., 2017; Pietrzak et al., 2010a) and evidence documented a negative relationship between perceptions of post-traumatic growth

(PTG) and suicidal ideation in military populations, indicating a potential protective function (Bush et al., 2011; Gallaway et al., 2011; Strader, 2019).

As a first step, this qualitative study aimed to understand facilitating processes of such positive perceptions among deployed veterans since qualitative examination might provide rich and in-depth information about how veterans experience positive appraisals concerning negative experiences and how perceptions of post-traumatic growth manifest.

2.1.1. Aims and Objectives of this study

The main aim of the current study is to understand the transitional and stressful life experiences veterans encountered during their military career and what meaning they attribute to the experiences. Since negative appraisals of situations and the self is key for suicide models (e.g., the IMV), qualitatively examining individual accounts of lived experiences will allow me to elucidate relevant suicide risk factors (i.e., appraisal systems) when they make sense of challenging experiences. This study's findings may provide a context to reflect on whether the IMV can be utilised to test the suggested relationships within this population.

I examine whether perceptions of positive changes are reported by the participants when asked about reflecting on past adverse experiences. Given the protective function of perceptions of post-traumatic growth against suicidal thoughts (Bush et al., 2011), examining how it is experienced and manifested within this at-risk group is vital.

Indeed, most of the PTG research has focused on US veterans (Mark et al., 2018), and a qualitative exploration of the UK Armed Forces veteran populations is limited. For example, Palmer et al. (2017) conducted an Interpretative Phenomenological

Analysis (IPA; Smith et al., 2009) study with eight UK veterans who have received treatment for PTSD to explore PTG experiences within this group. They pre-screened participants with higher PTGI scores from a larger dataset and conducted qualitative interviews. Their participants were asked about their thoughts on the positive changes since experiencing military traumas. Following IPA, their findings revealed two key themes: growth development and growth experience. The 'growth development' theme explains participants' understanding of posttraumatic growth that emerged as a result of challenging experiences. For example, participants reported that reaching a crisis point played a role in seeking support and consequently perceiving growth with the help of other promoting factors, such as active commitment to change and being open to new experiences. The second key theme uncovers the areas of life in which their participants identified posttraumatic growth. The sub-themes within this key theme were aligned with the domains of PTGI. For example, their participants reported greater appreciation of the world around them (e.g., finding happiness in small things), increased connection with other people and re-evaluation of a sense of purpose (e.g., changed sense of self, feeling more powerful). However, it should be noted here that their participants already scored higher on the PTGI measure (i.e., greater levels of perceiving PTG), and their PTG perceptions might reflect an outcome of their PTSD treatment rather than unique reports of PTG resulting from military experiences.

Importantly, the current qualitative examination of positive perceptions without pre-screening individuals based on PTGI scores will allow me to explore to what extent veterans reflect on their experiences and identify unique positive changes. I will also

investigate whether these perceptions align with the existing domains of PTGI, given that I will use PTGI in the next quantitative chapter within a group of veterans.

The rationale for conducting an IPA study

As highlighted by Gutierrez and colleagues (2013), the vast majority of available literature on challenging experiences reported by veterans is quantitative (e.g., Barr et al., 2019; Edwards et al., 2021; Pietrzak et al., 2010a, 2010b; Thomas et al., 2016; Tsai et al., 2015). While such information provides a valuable overview of risk and protective factors for mental health outcomes, it does not allow for a detailed understanding of the cognitive processes and appraisals that are key for suicide models as well as perceptions of post-traumatic growth. Therefore, an exploratory qualitative method of investigation (i.e., IPA; Smith et al., 2009) was chosen for this initial exploratory study since qualitative research methods allow participants to share complex and nuanced experiences, as well as they can highlight novel insides about the interest of phenomena that cannot be examined in quantitative work.

2.1.2. Research questions

Research question: How do veterans make sense of key transitional experiences encountered during the course of their military career?

Related to this primary research question, the following areas of interest were explored:

(1) What are the risk factors experienced by veterans?

(2) What positive outcomes are identified by veterans as a result of adverse military-related experiences?

The research questions in this study call for an approach focusing on the individual's lived experience to uncover, describe and interpret the subjective personal meaning

regarding the challenging time points during and after military service. I focused these research questions broadly since my focus is to explore the interest of phenomena (i.e., negative appraisal processes in relation to the negative experiences and positive outcomes of serving in the military) without imposing any assumptions on participants. This approach permits an increased understanding of this population before I design a study to test my assumptions quantitatively, utilising the IMV and the retrospective measure of PTG within the next chapter.

2.2. Method

Because the focus of this chapter was lived experiences of veterans, Interpretative Phenomenological Analysis was applied as the analysis of the interviews.

2.2.1. Interpretative Phenomenological Analysis (IPA)

IPA is a recently developed approach to qualitative inquiry that focuses on examining individuals' major life experiences and mainly how they make sense of these experiences (Smith et al., 2009). IPA commonly utilises semi-structured interviews to gather information around personal experiences through open-ended questions with follow-up prompts. It does not follow strict rules or steps during the analysis process by providing flexible guidelines. Instead, it focuses on personal experiences and how each individual is processing them. To examine personal accounts of lived experiences in a detailed manner, IPA uses small sample sizes to find a reasonably homogeneous population. It is based on three main theoretical foundations (Smith et al., 2009). 1) Phenomenology offers an account of lived experience in its own terms rather than one dictated by theoretical expectations, 2) '*Double hermeneutic*' approach allows the researcher to make sense of the participant who is trying to

make sense of what is happening to them through a process of interpretative activity, 3) IPA is idiographic in a sense that it studies each case's specific experience before moving on to more general statements.

Epistemological Standpoint

As mentioned above, IPA follows the idea of being ***phenomenological***, reflecting the individual's world view, and being ***interpretative***, requiring the researcher to walk alongside the participant while holding a questioning stance to have a different perspective on the human experience.

In the current study, I took a critical realist position that argues that reality exists independently from our experiences and perceptions while assuming knowledge is not objective (Finlay, 2006). Taking this epistemological stance allowed me to generate the knowledge derived from each veteran's experience regarding the meaning-making of the phenomenon being investigated (Braun & Clarke, 2013), which is essential given that the meaning-making process associated with traumatic/highly challenging experiences differs across each person.

IPA and the current study

I recruited UK veterans who experienced operational deployments while serving to examine how they make sense of challenging experiences encountered during their military careers. Through a *double hermeneutic* approach, IPA allowed me to understand the complex interplay of factors that are key for suicide models (e.g., IMV), such as thinking patterns, appraisals of challenging situations, and cognitive processes when making meaning of the experiences. Particularly, I utilised IPA to provide an understanding of the cognitive processes that 1) may trigger poorer

mental health (e.g., suicidal thoughts) and 2) may assist the progress of identifying perceptions of post-traumatic growth.

2.2.2. Recruitment and Participants

The Royal Air Force Association is a charity that supports a range of military personnel, such as veterans who left the military a while ago, reservists and serving personnel[2]. I collaborated with their welfare team, and they helped to recruit participants for the current study.

With the approval of the University of Nottingham's ethics review panel (S1094), the participants of the study were recruited through the snowball sampling technique and the gatekeeper, the Royal Air Force Association (RAFA) in Leicester. RAFA advertised the study on their social media channels (e.g., Twitter), with study information and instructions on how willing individuals could contact the researcher. Recruitment was not topic-blind: participants have been explicitly informed about the nature of the interviews and the extent to which sensitive questions would be asked, such as current or previous suicide ideation.

The inclusion criteria were being 1) a veteran, 2) deployed to one or more operational tours while serving, and 3) 18 years and older.

Nine participants were interviewed, but due to technical problems in the recorder, one participant's recording was corrupted, leaving eight interviewees (2 females, age range 49-66, M= 57 years, SD= 6.45) (*Table* 2.1 *shows the demographic characteristics of participants*). All participants were white ex-service personnel and

[2] www. rafa.org.uk.

I would like to thank Royal Air Force Association, Dr Prema Nirgude and Rory O'Connor for their incredible support for this research study.

had an experience of active service (e.g., in Northern Ireland, Iraq, and Afghanistan). I anonymised all the personal details and replaced them with different names.

Table 2.1
Participants' Characteristics

	Service	Age when joined	Age when left	Reason to leave	Employment	Current mental conditions	Marital status
JON	RAF	19	48	Voluntary early release	Employed	-	Divorced
STEVE	RAF	22	50	Voluntary early release	Employed	-	Married
ANDY	RAF	19	54	Completion of engagement	Employed	-	Married
CARL	Royal Navy	16	39	Voluntary early release	Employed	-	Married
ADAM	Army	15	22	Voluntary early release	Retired	-	Divorced
EMMA	RAF	22	38	Completion of engagement	Employed	-	Divorced
JEN	RAF	25	53	Voluntary early release	Employed	-	Married
BEN	RAF	17	23	Completion of engagement	Retired	-	Married

2.2.3. Measures

Participants completed a socio-demographic form, visual analogue scale (before and after the interview) and a safety plan when necessary.

Demographic Form: Participants were asked to provide demographic information, such as age, gender, ethnicity, education level marital and employment status. I also collected information related to their military career, such as the year

of joining and leaving the military, age when they joined, operational deployment history and the reason for leaving the service.

Visual Mood Analogue Scale (VAS): This scale, described by Biddle et al. (2013), was used to determine participants' feelings before and after the interview to understand the impact of taking part in the interview. At the beginning of the interview, each participant's current emotional state was measured by their ratings range from 0-10 (from 0, indicating poor emotional state - illustrated with a sad face; to 10, indicating the best possible emotional state - illustrated with a smiling face). Ratings helped respondents conceptualise subjective feelings by allowing them to give themselves a score out of ten. Once the interview was completed, participants were presented with this scale again and asked to rate their emotional states. I calculated the difference between pre and post-interview VAS scores to assess whether there had been distress raised due to the interview questions and, thus, to take appropriate action (e.g., safety plan).

Safety Plan: A safety plan (Stanley and Brown, 2012) was in place if participants were to become distressed during the research (considering their rating on the Visual Analogue Scale) or state that they were experiencing distress due to engaging in the research. For each item of the plan, participants would discuss their opinions with the interviewer to have an individual plan in case of the emergence of suicidal thoughts or behaviours. This safety plan focuses on distraction techniques (e.g., doing exercise, reading self-help books), relaxation techniques (e.g., yoga, meditation, mindfulness), social factors (e.g., meeting friends, support groups), and professional support (e.g., Samaritans, therapists, GP referral). However, none of the

participants reported increased distress due to the interviews. Therefore, I did not introduce this safety plan to any of the participants.

2.2.4. Procedure

The interview schedule was developed based on the study's research questions, aiming to elicit answers corresponding to the interest of phenomena (i.e., perceptions of positive changes resulted from military career, risk factors for suicidal thoughts and behaviours). Questions were structured regarding timeline and included: Participants' lives before and just after they joined the service to examine any adjustment-related struggles, participants' experiences of operational deployments to understand traumatic/ challenging experiences related to serving in the military, and participants' lives after they left the service and become veterans, to capture transition problems or other difficulties they may have experienced. The interview schedule is shown in Appendix A. The researchers also used probing and follow-up questions to understand the lived experience and enable participants to tell their stories. The research team (one undergraduate student and the main researcher) received training and practised administering the interview with the project supervisors.

Interested participants contacted me via email. They were informed about the study and that they could withdraw any time before the transcription process since the researchers had removed all identifiable information during transcription. According to participants' convenience, interviews took place either at RAFA or the University of Nottingham. Following consent, participants completed the demographic form and other questionnaires and were interviewed by the primary researcher or the

research assistant[3], with interviews lasting between 36-88 minutes. I ensured to minimise the risk of distressing participants during the interview using a visual mood scale before and after. Seven participants indicated a positive mood at the beginning and ended the interview with either the same or a higher number (i.e., they exhibited an increase in the positive mood); only one participant indicated a two-point decrease in mood rating (from 9 to 7 out of 10), who was then invited to reflect on the change of score. He anticipated that his distress was transient and did not necessarily indicate a negative experience related to the interview content.

I provided relevant information regarding support services and welfare staff at RAFA, and in the end, they were paid an inconvenience allowance for their time and travel expenses (*See the information sheet, consent form, demographic questions and the debrief letter in Appendix B)*

2.2.5. Analysis steps

Interviews were audio-taped with a password-protected recorder and were subsequently transcribed verbatim (*the transcription protocol is described in Appendix C*) and were then analysed through Interpretative Phenomenological Analysis by following steps identified by Smith and Osborn (2008) (*see Table* 2.2 *below for the IPA steps*). In IPA, the analysis involves identifying themes within each transcript (e.g., the idiographic nature of the analysis) while taking an interpretative approach. I started the analysis by reading the first transcript several times to familiarise myself with the content. I then started to make notes on the margins of

[3] First of all, I would like to thank the research assistant for her support during this project. The main responsibility of the research assistant was transcribing the interviews. She also participated in the interviews as an observer and conducted one of the interviews. However this interview's recording was lost due to the problem in the recorder, thus not included in the analysis.

the printout and identified the codes, which are followed by a collation of similar codes and, consequently, sub-themes and themes. I repeated these steps independently for each transcript and looked at similar patterns across cases to finalise the theme structure.

Table 2.2
IPA steps for data coding and creating themes

Stage	Process
1	Reading the first transcription (the richest in detail) and initial noting (coding)
2	Developing emergent themes within the first transcript
3	Searching for connections across emergent themes to reduce the volume of details
4	Moving to the next case and repeating the first four steps for the remaining transcriptions
5	Looking for patterns across cases

2.2.6. Reflexivity of the researcher

To acquire a fresh perspective on participants' experiences, I made notes of any intense emotional feelings in a reflective journal during the analysis process, as recommended by Smith et al. (2009) and Levitt et al. (2018). As I am new to IPA research, keeping a reflective journal helped me to examine my assumptions, beliefs, and other subjective feelings that may impact the analysis phase.

My intellectual curiosity has significantly influenced my decision to work with this particular population (i.e., UK veterans). However, at some points of the analysis, I felt like an outsider as I do not have any connections with the military either here or in my home country. Therefore, I made conscious efforts to understand the British military culture before I started the analysis. For example, I have become a member of the charity I was working with, so I received magazines which I found helpful in

understanding the culture of the UK military. I discussed this reflexivity with some other colleagues who were conducting qualitative research in a similar context. This reflexivity enabled me to reflect on whether the questions I asked or did not ask during the interviews influenced the image I drew and the conclusions I made, which might have shaped the analysis to some extent.

2.3. Findings and Discussion

Analysis of the interviews revealed three superordinate themes:

1) Adjusting in and out of military routine,

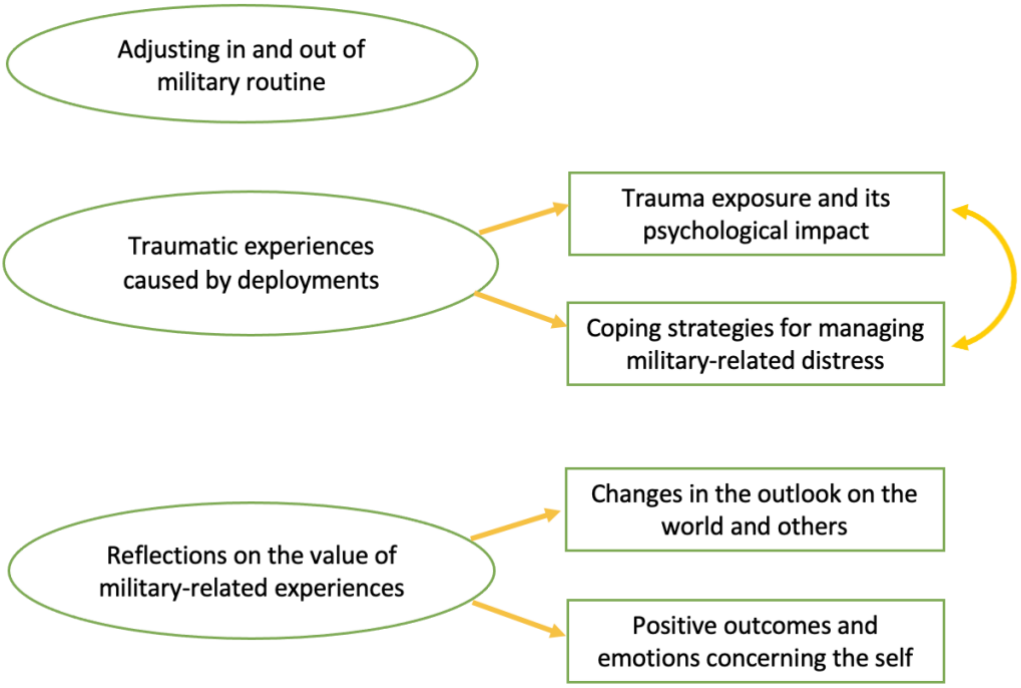
2) Traumatic experiences caused by deployments,

3) Reflections on the value of military-related experiences (*see Figure* 2.1 *for the thematic map*).

In this section, themes and supporting evidence are presented. Smith and Osborn (2008) noted that combining result and discussion parts for each theme provides a more coherent discussion of the findings. Therefore, I followed their guidance in presenting the findings for each theme with a separate discussion and evaluated the themes by linking them to the past literature. I anonymised all the personal details and replaced them with different names. Personal information other than names was replaced with ***.

Figure 2.1

Thematic map showing themes and sub-themes



2.3.1. Superordinate theme: Adjusting in and out of military routine

This theme covers transitional points in veterans' lives, such as when they joined the military, returning home between deployments, and once they left the service. All participants reported some challenging experiences while adjusting to these transitional experiences.

Understanding the new routine, military rules and culture when joined is the first step of the participants' adjustment. Adam explains what his new daily routine involves and talks about the challenges of using a firearm when very young:

> 'We had to learn each weapon of the infantry… we started from scratch, how to strip it down, how to clean it. And then we had to go fire it and we fired it at 15 and the kick, you know, it nearly broke your shoulder (*gun noise*)... You had to learn all this, it takes a long while…' ADAM

Jen worked two years as a *** in a school before she joined the military, and she says this had made her transition harder as understanding military discipline was challenging for her:

> 'I was probably more questioning because I hadn't come straight from school or university… And it's all about making sure that you understand the culture etc. So for me, that transition (to the military life) was maybe a bit harder.' JEN

Carl described his childhood environment, where he responded physically when there was an argument. He explains that leaving these habits behind and understanding military rules and culture was challenging at first as he says:

> 'It was difficult to adapt to stick all of these rules and when you're challenged, it's not a physical response. If somebody upset you, you couldn't thump them. It was a different environment to what I was brought up in.' CARL

After coming home from operational deployment, some veterans reported some post-deployment adjustment issues. These challenges were commonly related to family and partners. For example, Carl was talking about relationship problems with his partner once he was back from a stressful deployment:

> 'You just came straight back (from the deployment). I was expecting to come back and have this massive emotional reunion, seeing my partner. But when she come to the door, she just give me the children and say: I've had the children for nine months, believe me it's your turn! And you just think, ehh that wasn't what I expected.' CARL

Jon was talking about his disappointment when he realised that his absence would not cause significant changes in his family when he was away deployed:

> 'Shock horror, you know, what you want the world stop spinning when you're away, you want to at least be missed whereas you get the sense that you weren't even missed, you know you were just gone. That was quite clear to me that life could go on.' JON

The participants reported emotional, sometimes difficult experiences once they left the military and became a civilian. Working in the military for a long time and leaving that routine and friends behind is challenging for many veterans.

For example, Andy was talking about how he felt emotional on his last day in the military service:

> 'It was very emotional that last day, all my stuff was in the car, 35 years photographs and everything… Once I got home, I realised that's the end of that chapter.' ANDY

Financial and other issues, such as relationship problems, are also reported by many leaving military personnel. Jon talks about these problems are common and says returning to civilian life is more challenging than serving in operational deployments:

> 'The difficulty and negative aspect of it is when you come home, where there is no money, you're not given the resources that you need. The problems weren't when they're away (deployed), the problems were when they come back.' JON

As an example of what Jon said above, leaving the service triggered suicidal thoughts for Ben as he struggled to find a job. He used to have a regular income, routines and a layout when he was in the forces. However, when he left the military after nine years of serving, everything changed.

> 'I came back and I couldn't settle down to jobs. I went into several chef works, couldn't cope with that, couldn't cope with that all. So I lost that good job I have been in (being in the Air Force), and then I didn't feel stable. I wasn't working, and my wife was working, and that was difficult.' BEN

As he stated, he changed a couple of jobs resulting in an unstable life. He evaluated this situation and considered himself as a failure as his wife was contributing to the

house income, whereas he was not. He could not cope with these negative feelings, which then led him to think about suicide.

> 'I think I felt a failure about a lot of things, I think there was a time when I lost a job… And I was suicidal that time.' BEN

Ben also planned his suicide and expressed how an individual can be rational while planning their suicide during a suicidal crisis.

> 'I actually planned to commit suicide… I thought I couldn't drown myself, I'm scared of water, and I don't know if I am going to shoot myself. I thought. It's amazing when you're feeling suicidal how rational you can be about things.' BEN

Importantly, losing the friendship they used to have for many years is another major challenge for veterans. Once they are out of the military, they desire to maintain their existing friendships since they struggle to rebuild new friendships and enter into a society where they would socialise. For example, Ben talked about the difficulty in losing that camaraderie in the end:

> 'You went to your breakfast, there's people talk to you, if you went for lunch, there's people you can talk to, and suddenly, you come out of the forces and you don't have these people around you. … This must be a huge thing.' BEN

On the other hand, Emma struggled to settle into her new life after she left the military. She had moved many times, and it took her long to feel like she belonged somewhere:

> 'I moved to a village, and I'm very much involved with that community. This is probably the first time since I left the Air Force that I really felt settled and being part of something… So it has taken seven years I felt like I belong anywhere again. I didn't expect it to be quite difficult. I wasn't crying the whole time, but I've missed that camaraderie.'

Importantly, the majority of the participants reported some barriers to seeking support from professionals and loved ones. This seems to be mainly because of the fact that non-military people will not understand their experiences, which may tap into the failed sense of belonging to society. For example, Jon was asked where he would turn to get support when needed, and he said he would call his friends and also military charities, but not his physician:

> 'I wouldn't go to my GP. I think I would feel intolerant of going to a GP that doesn't have experience of the world that I've lived in.' JON

Similarly, some participants do not prefer to share their memories or emotions with others. For example, Adam mentioned the difficulties in sharing his feelings with his wife:

> 'At home, when the bombings came at Manchester… and they showed you people screaming running, there's tears coming down, and my Mrs sat there, sort of, and she says where are you going? And I didn't tell her, I had to go upstairs because I was so upset and I sort of burst out crying… I can't talk about it [military-related experiences] with my partner, 'cos she doesn't understand, so I get no support there.' ADAM

Carl also preferred not to share his memories with other non-military individuals, particularly negative ones, with others :

> 'If it was a bad experience, why would you keep sharing it? So, I tend not to talk about it in detail, and if there's a funny bit to it, I would emphasise the funny bit of it, not the seriousness of it, and if you see people that have been shot and you see people that in terrible sort of… in pieces really, then why would you share that with somebody? So I don't see a need to.' CARL

According to some participants, although there is a more open approach to mental health nowadays, it was different in the past. It was common to assume that military

personnel can manage any difficulties they experience, causing mental health stigma and negative consequences for veterans adjusting to civilian life.

> 'I think because it was very early in those days there was not the realisation that it [professional psychological support] was needed.' STEVE

> 'In them days you were expected to cope, to get on with it. They, they think you're a soldier, you gotta get on with it, it's like when you went to the dentist, they didn't give you an anaesthetic cos you're a soldier, do a filling no anaesthetic… I think nowadays it's got better, with PTSD and everything, but in them days you just had to put up with it and everything.' ADAM

Discussion

This theme covers transitional challenges reported by the participants, such as joining the Armed Forces and understanding the routine, deployments to the operational tours, and leaving the military and becoming a veteran.

The first transition to the military environment could be particularly challenging for some due to the difficulties in understanding the military routine and discipline. Newly recruited soldiers are expected to understand the norms and behave accordingly. As noted by Jackson et al. (2012), newcomers are immersed in intensive training, in which their civilian status is broken, and a new military identity is forged. Also, there might be some unique features that would make this transition harder. For example, Fiedler et al. (2004) showed that some personality traits and features (e.g., anti-social, paranoid traits) have a negative impact on adjustment to military life. Some study participants reported that adapting to the military rules could be difficult since there were no rules and routines in participants' lives before they joined.

Furthermore, some veterans reported that returning from operational deployments poses another challenge for their romantic relationships. As supported by the interview data, many military personnel have romantic expectations for their reunion when they return from deployment (Yerkes & Holloway, 1996). Changes at home when they were absent (such as differences in daily routines and at-home partners' changed priorities) could result in dyadic distress and affect both partners' mental well-being (Renshaw et al., 2008). The data from the interviews also supported this argument and showed that returning personnel face specific challenges when returning home between deployments.

The last transitional time period in veterans' military career is when they leave the service and become a civilian. The current interview data provided some examples related to the failed sense of belonging to civilian life. The UK military is structured to ensure its personnel have a robust military identity, with strong social connections with other personnel promoting peer support (Hatch et al., 2013). However, when serving personnel leave the service, they lose such an essential source of support which cause problems related to reintegration into society. For example, previous evidence showed that feeling like an alien and failure in reintegration into civilian life are common among veterans (Ahern et al., 2015). Importantly, if veterans do not feel that they belong within civilian society, this would influence their well-being since belonging is an important protective factor against suicide risk (Joiner, 2005). Given the increased risk of experiences of thwarted belongingness within this population, few qualitative studies (e.g., Brenner et al., 2008; Lusk et al., 2015) have explicitly examined whether perceptions of being a burden and a sense of low belongingness are relevant in a group of leaving military personnel and showed that intense feelings

of belongingness, burdensomeness to family are reported in their interviews (Brenner et al., 2008). A qualitative examination of such negative feelings provided a detailed understanding of the dynamics of these thoughts, such as the loss of relationships and the importance of a sense of shared understanding with comrades in the military, which results in disconnection from the civilians. Brenner et al. (2008) conducted a study with deployed veterans who had a history of seeking mental health services. Although I had taken a broader approach in the recruitment (i.e., not focused on mental health history), I supported these findings as well, suggesting such negative appraisals are experienced within veteran populations.

In addition, leaving military service and disconnecting from the military environment poses a challenge for leaving personnel to seek professional and emotional support from non-military people. The current findings suggest that some veterans cannot express their feelings or negative memories with loved ones, friends and professionals as they think others will not understand. Given that women are more willing to talk about their emotions then men (i.e., verbalise their emotions and share them with others) (Brody & Hall, 2008) and that the high proportion of serving personnel in the UK Armed Forces are men (around 89%) (Ministry of Defence, 2019), difficulties in expressing emotions and sharing memories might be a severe problem in this population. Shared understanding seems the key to seeking support for those in need and creates a barrier to seeking professional support as the participants emphasised that non-military people are not the ones they want the help from. The current findings supported previous studies positing the presence of such barriers (Hoge et al., 2004; Pietrzak et al., 2009). Therefore, steps should be taken to promote expressing emotions, particularly for male ex-service personnel, to minimise suicide

risk. It might be useful to promote mental health care support services within veteran charities, where veterans would turn the most when in need.

Another commonly reported problem for leaving military personnel is related to civilian employment issues once left. As emphasised by Gordon et al. (2020), the conditions of military employment are not comparative with non-military employment as veterans experience feelings of inadequacy and a loss of feeling meaningful (e.g., serving for the country) (Ahern et al., 2015) which would cause employment problems for veterans and make their transition harder. Importantly, such employment problems are risk factors for mental health problems and suicidality among leaving personnel (Doyle & Peterson, 2005; Elliott et al., 2011; Resnik et al., 2012). The current study also showed that employment problems after leaving the service could play a triggering role for suicidal thoughts, which was in line with previous research (e.g., Denneson et al., 2014; Resnik et al., 2012). Importantly, suicide theories put negative appraisals at the centre of their frameworks. For example, feeling defeated and humiliated is one of the key risk factors for suicidal thoughts, according to the IMV (O'Connor & Kirtley, 2018). Ben had suicidal thoughts when he left the service, where he felt unstable and experienced several job losses. He felt like a *failure* about lots of things at the time. He could not work, and his wife was working – so he saw himself as a failure and an unsuccessful man. He could not handle the situation and wanted to die and escape from this unbearable stress. He planned his suicide but did not attempt it. One can speculate that if he could evaluate the situation differently, he might not have been suicidal and could have managed the distress of losing a job. This example may support the IMV's assumption

regarding the role of defeat appraisals and emphasises how the meanings we attribute to the situations affect our psychological well-being.

In sum, veterans who have been in operational deployment/s are likely to experience multiple transitional challenges throughout their careers. This theme explained such challenges from their perspective and how they make evaluations of these difficulties. Focusing on the lived experiences related to transitional challenges permitted us to examine the interplay of factors that influence personal evaluations, such as specific triggers (e.g., job loss) and appraisal processes resulting from the triggers (e.g., negative appraisals, such as feeling like a failure), suggesting suitability for utilising the IMV within this population to explore research questions.

2.3.2. Superordinate theme: Traumatic experiences caused by deployments

This theme covers challenging experiences related to serving in operational deployments, their impact on mental well-being and how participants of the current study responded to those negative experiences. There are two sub-themes clustered within this superordinate theme, and each of them will be explained with examples, followed by a discussion section. I should note here that these two sub-themes are interrelated; thus, a double arrow is placed in the thematic analysis map to reflect the relationship between these sub-themes. Traumatic experiences and their negative consequences were explained within the first sub-theme, and the ways participants manage distress raised by these negative experiences are described within the second sub-theme. They might be related from a broader perspective (i.e., one needs to face a stressor to activate coping mechanisms to deal with the distress), however, they reflect different cognitive processes, thus classified as two separate sub-themes within this superordinate theme.

i. Trauma exposure and its psychological impact

ii. Coping strategies for managing military-related distress

2.3.2.1. Sub-theme: Trauma exposure and its psychological impact

This sub-theme explains participants' accounts of challenging experiences/memories regarding deployments and aftermath and how these experiences affected them. Deployment to an active service might be challenging for some. These individuals are more likely to confront challenging situations during their active duty, such as exposure to dead bodies and losing friends. Carl had been treating injured people in the battle zone and explained the difficult times he had been through while serving as a healthcare provider:

> 'You've got somebody that's injured and they're screaming, and that can be quite, sort of, puts you on edge a bit… you can remember people screaming. And I saw somebody that was hanged, but they were dead, and we just had to cut them down… I saw two people who had their heads chopped off, by a vehicle accident, a vehicle and an aircraft…' CARL

When Adam was asked to tell if he had been in challenging situations during his deployment to Northern Ireland during the Troubles, he started to cry and talked about an explosion that he saw:

> 'I was going to the cookhouse and there was a massive explosion. It threw me back into our accommodation, and what it was, the IRA [Irish Republican Army] had come to the church next door and a graveyard, and they came to the wall of where we were and threw a satchel bomb over, and it blew the cookhouse, one of the cooks came out with his arm missing [crying]… a leg on the floor. I think they killed three people. And we had no choice, we had to go and sort it all out.' ADAM

Emma gave examples of adverse situations a military person might experience during the course of duty:

> ... ‘I do have friends that were pilots who said they were finally in transport aircraft bringing you back the bodies. Friends say ‘I cannot bring back another plane full of dead bodies’, knowing the impact on their families...’ EMMA

Exposure to death and losing people to an enemy attack might sometimes cause individuals to think about death; as it happens to others, it might happen to them. Steve emphasised the fear of ‘being the next one’ a couple of times during the interview.

> ‘We lost three RAF regiment gunners to one rocket attack… basically a direct hit from a rocket on an airbase, massive, I mean the rockets could land anywhere, it’s just unfortunate it landed right on this bed space of the three guys… It’s a little bit of that gnawing in the back of your head, so the next time it happens, the next time there’s a rocket attack, one could land on, on me…’ STEVE

Serving in the active service, conflicting with legitimate forces might violate some individuals’ moral or ethical beliefs (Litz et al., 2009). Such morally injurious events include failing to prevent death (i.e., survivor guilt) which led Adam to think about suicide after his friend’s loss:

> ‘The only time I thought about it (suicide) in the past was when Dan, you know the 20-year-old lad, he got shot, and I just think why him, you know? It’s difficult.’
>
> ‘I’ve been to his tombstone and everything, and just think ‘you’re 20 years’ old for God’s sake, why him?’ And then you know, ‘why not me?’… I could join him, couldn’t I? ADAM

Emma said she struggled with the idea of killing people:

> ‘The reality that you might have to use the weapon and potentially give them life-threatening injuries or kill them. I really struggled with that. I think that’s part of why I left the Air Force in the end. Because I couldn’t get round to the fact that I could be expected to kill somebody.’ EMMA

The majority of the participants also reported some lasting effects of such challenges. For example, some said their awareness of the outside world has increased (i.e., heightened awareness), and they have become more conscious of the things around them. For instance, two veterans stated that they have been more aware of louder sounds, such as cars backfiring, which reminds them of the sound of incoming mortars. Similarly, another participant said that freezer doors in a supermarket reminded him of an incoming mortar, mainly when he left the service.

> 'If you go to Iceland [a supermarket store in the UK] and you take your frozen food out of the freezer. And that door – [hits the table] – shuts down back, and it seals itself on the rubber. That sound is not a good one. Because that sound – for me it's a sound of an incoming mortar. So you hear that – you think – hmm – you hear a car backfire, but – not anymore, but I am very aware.' JON

On the other hand, some veterans commonly reported that when they watch the news about terrorist attacks (e.g., the Manchester attack during the Ariana Grande Concert in 2017), they are likely to remember challenging memories in the military.

> 'When it happens, the bombings in France, in England, the tube bombings, they all bring it back, and I look at the news and I have to go out the room, 'cos I can't, you know… It brings flashbacks, sort of…' ADAM

2.3.2.2. Sub-theme: Coping strategies for managing military-related distress

This sub-theme explains coping strategies that the participants use to manage distress caused by adverse experiences. One of the most consistently reported coping strategies was emotional support from others, particularly from unit members during active service and afterwards. For example, Ben defines the support he used to get while he was in the forces as a natural self-help group and the importance of maintaining it, especially for the people who left the service:

> ‘When you’re in the forces, you have natural self-help group… If I was going for a meal at night there’s all people to talk to… It was very much a natural self-help group and very active.’ BEN

> ‘Absolutely you have some very good friends, it’s a very bonding experience going through. You’re out in November where there’s frost on the ground, huddled together to keep warm and having to get on with things that push you outside of your comfort zones. But you’ve got that support around you…’ EMMA

Jen was talking about how important it is to look after others when deployed. She says:

> ‘I was a fairly senior officer, so had to make sure that my subordinates were looked after properly. But it was a team effort because you were all in the same boat. ‘

Moreover, she talks about how she helped another person when she was also distressed:

> ‘There was a couple of dead people close by and then another person was clearly panicking. I had to make sure that he was looked after properly. He was given some counselling in *** but I had to make sure that he was properly looked after when he came back to the UK… You tend to help each other out.’

Despite leaving the Armed Forces, the majority of the participants still meet with their friends from the military, keeping that camaraderie:

> ‘35 years in the air force, I had quite a few contacts and friends, which we still regularly meet every June for the last 10 years. … We reminisce you know, talk about old times, the stories that make us laugh still now.’ ANDY

> ‘I get support from all the lads (friends from the military) I see now, I’m on Facebook with them. I rang one of them this morning about this reunion in July, it’s nice to talk to him.’ ADAM

Keeping distance from the situation and the feeling was also reported by some veterans as a helpful coping strategy. Steve was talking about losing three people in his regiment, and he explained how he managed to overcome this situation:

> 'It's like, it didn't happen when I was there, although the rockets were coming in when I was there, it was a case of 'well it's not me'. It's an initial 'I got away with it' but then, of course, you start thinking about the families of the three, not least the individual. I didn't know them so that probably helped a little bit. They weren't on any unit, they hadn't worked with me at all.' STEVE

Emma, who struggled with the idea of killing people, was using the term 'ordnance' instead of 'dropping a bomb' to avoid unpleasant feelings about the action.

> 'We even detach ourselves from the emotion of it by calling it 'ordnance' instead of 'dropping a bomb', blowing. We just sense our terminology that we are used to, I don't know, self-preservation to protect ourselves.' EMMA

Carl also says he did not prefer to engage with the negative memories actively and preferred not to talk about them (i.e., avoidance).

> 'I think I've put the bad stuff, I sort of put away. I'm sure at some point it'll all come up but I've sort of put it to one side. I tend not to go to reunions.' CARL

When faced with a difficult situation, some people accept and experience the emotion fully, without attempting to alter or control the negative feelings. Jon said:

> 'I am not gonna sit around home and cry. Because it is not gonna change the matter of fact, which is somebody's died, or X or Y or Z has happened.' JON

Carl had seen somebody die by suicide by putting a weapon into his mouth and said:

> 'They put a gun into their mouth and shot themselves, and that was pretty horrific, and it's funny because you deal with that and then you know, there's absolutely nothing you can do about it… it was just about going 'well, I can't do anything about that'. CARL

Discussion

This superordinate theme, encountering and coping with traumatic experiences, is supported by two sub-themes:

1) trauma exposure and its psychological impact

2) coping strategies for managing military-related distress.

As evidenced in the literature and mentioned in the introduction, operational deployments increase the risk of mental health problems and suicide. The first sub-theme supported this claim and showed that serving in the military and being deployed to operational duties resulted in encountering challenging situations and influenced participants' psychological well-being. Due to the nature of the study and adapting the phenomenological approach to the analysis, I was able to identify how participants made sense of these triggering experiences. Given that negative subjective appraisals are the critical risk factors for suicide (e.g., IMV), the findings within this theme revealed essential points to consider regarding how to support deployed veterans.

Firstly, despite the small sample size (n=8), two participants reported past suicidal thoughts triggered by challenging experiences during active service and after leaving the service. For example, Adam lost his friend while on active duty, triggering suicidal thoughts. He evaluated the situation as if he could save him, resulting in feelings of shame and guilt of being the survivor. He explained his thoughts: '*Why him? Why not me?*'.

Adam's negative feelings could be linked to 'moral injury', which clinicians reported to be fairly common among support-seeking veterans in the UK (Williamson et al.,

2019). It is proposed that military personnel who participate in or witness situations that violate their moral sense of right or wrong (e.g., killing enemy combatants, being unable to prevent peers' deaths) may experience moral injury (Litz et al., 2009), which causes intense feelings of guilt and shame. This finding aligns with quantitative accounts (e.g., Bryan et al., 2013), qualitative findings (e.g., Currier et al., 2015), and reviews (e.g., Gaudet et al., 2016) related to the sense that moral injury could be experienced and increase the suicide risk.

Adam felt guilty and blamed himself because of his friend's death. This traumatic experience (as a background factor in the pre-motivational phase of the IMV) might have resulted in sensitivity to signals of defeat and humiliation and a sense of being a failure which might be triggered by unrealistic expectations (e.g., saving his friend) (O'Connor, 2011). Thus, he could not cope with these negative feelings and wanted to end his own life.

Another explanation of his guilt feelings could be made through perceptions of being a burden. According to IPT and IMV (Joiner, 2005; O'Connor & Kirtley, 2018), perceived burdensomeness is a major risk factor for suicidal thoughts. Van Orden et al. (2010) expanded the meaning of this construct and argued that perceived burdensomeness comprises two dimensions of interpersonal functioning. Beliefs that 1) the self is so faulty that it is a liability to others and 2) they lack self-value involve self-hatred cognitions. It could be argued that the loss of a friend might have triggered self-hate cognitions for Adam, such as feeling useless and thus increased the perceptions of being a burden. Consequently, he had thought of ending his life as he could not cope with these negative feelings.

On the other hand, Steve lost three of his colleagues but did not express such negative feelings as he evaluated the situation differently. His initial thought was: *'it's not me. I got away with it'*. Jon was talking about his friends who were killed in Basra, and he said that that was the *norm which became normal*. It should be noted here that comparing different incidents is not the aim of the argument, but subjective appraisals and personal interpretations regarding the event is the critical point. An explanation for Steve and Jon's responses to their traumatic experiences could be related to how they appraised the situation. O'Connor and Kirtley (2018) put such negative appraisals of distressing events in the centre of the IMV, highlighting their impact on psychological well-being.

Nevertheless, a negative appraisal of the event is not the endpoint in many circumstances. According to Lazarus and Folkman (1984), individuals try to make meaning of challenging experiences, followed by coping responses to handle the negative emotions generated by personal evaluations of the event. Although it is not a primary focus of this thesis, the second sub-theme of the superordinate theme explains coping mechanisms utilised by veterans and how they managed the unpleasant experiences they encountered while serving and after they left the service. Since coping is defined as *constantly changing cognitive and behavioural efforts* to manage specific demands exceeding an individual's resources (Lazarus and Folkman, 1984), a qualitative approach allowed me to understand these coping processes following unique stressors.

Previous evidence showed that receiving emotional support from unit members was associated with less suicidal thoughts in military groups (Pietrzak et al., 2010b; Skopp et al., 2011), indicating its protective function. Therefore, it is essential to understand

how veterans utilise social support when feeling low. The current findings showed that participants have consistently reported some aspects of the 'emotional social support' coping strategy. They emphasised how essential it was to have such camaraderie and called it a 'natural self-help group'. They were approaching friends when they felt distressed as they shared the same understanding and knew that their 'mates' would understand them better than family.

In terms of other coping responses, some veterans reported that mental and behavioural disengagement from the stressful situation (e.g., not thinking about the event) reduced the emotional impact of stressful situations. Although cognitive-behavioural avoidance strategies were associated with increased distress, according to previous research with veterans (Tsai et al., 2012), Bonanno and Burton (2013) argue that the use and functional benefits of any specific type of coping strategy will vary across people and situations. This suggests that such coping strategies (e.g., avoidance) may help some people with healthy adjustment. Such examples were reported by some of the participants and reported as helpful, which may support their argument.

As Lazarus and Folkman stated (1984): vulnerability arises from being in specific environmental contexts (e.g., operational deployments) that interact with relevant personal factors (negative subjective appraisals). Therefore, they emphasise the need for the person to be studied across diverse incidents and contexts. Utilising IPA, I could provide understanding regarding the challenging experiences of veterans who had been in a combat zone during deployments and the coping strategies that were used. This approach allowed me to understand the extent to which veterans

evaluated and appraised military-specific threatening situations and how they manage/managed challenging time points.

2.3.3. Superordinate theme: Reflections on the value of military-related experiences

This superordinate theme with two sub-themes explains the reflections of being a veteran and what this identity brings into veterans' lives. When participants were asked about their overall experience as a veteran, they explained that their military career ended up with many valuable positive outcomes despite all the adversity. These positive experiences have been categorised below, with example quotations given within each category.

2.3.3.1. Sub-theme: Changed outlook on the world and other people

It is reported that serving in the military and the struggles of active combat brought some positives to veterans' lives and their outlook on the world. For instance, Jen explained one of the challenging moments and how that adverse event promoted positive lessons that she took from it:

> 'I had to deal with the family having been killed in a fire in the house. And then there's another individual who had been very seriously injured in a climbing accident. And that all happened within the same day. That, to me, was you tend to value life a bit more, not take everything so much for granted. It gives me a better appreciation of what I've got in my own personal life… And I think it's given me a very broader outlook on life and makes you a bit more… I think consider a new value. You have your core values and that's a good moral compass to live by.' JEN

She also said that these positive lessons learned from difficult experiences help her feel better when she feels low or when she is reminded of those difficult times (e.g., while watching the news about the Manchester bombing in 2017).

When Carl was asked about any changes that resulted from his times in the military, he emphasised that his service experience helped him to have a different perspective on what is important in life.

> I've got a clear understanding of right and wrong and I've got my own values, kind of like a code of conduct really… I've got a different perspective on what is important and what is not important, and for me, it's around my family being content, my family being happy, not having worries, and just general life. CARL

He also explains that those positive changes as a result of adversity led him to live in the moment and not worry about things that have not happened, highlighting the potential protective influence of these positive perceptions.

> 'You never quite know what's round the corner or what's coming your way… You can worry about something that hasn't happened, you can catastrophise about something, but what I try to do is to go on as if it didn't happen.' CARL

When asked, Jon talked about the positive outcomes of serving in the military; understanding the importance of keeping calm when faced with distress:

> 'In the past, I might have been less inclined to deal with stuff calmly. If there was a problem running around, going 'OH MY GOD OH MY GOD! This is awful' would scare everybody. Maybe that's the leadership role. You can't just stand with the fact 'this is dreadful'. You have to keep calm.' JON

Some veterans reported improvements in their relationships with others as well as increased empathy. For instance, Adam explained how he became a more tolerant person and felt sympathy with other people, whereas he used to be intolerant of others, particularly of people who supported the IRA.

> … 'I'm more sort of tolerant of people. I was angry, and I can say I've actually been back to Northern Ireland… I don't feel anger at that, I just feel pity, and realise they've lost people, they've got brothers, everyone's got a mother and everything, I think if the IRA and I met

> up, I think we'd have a laugh more than anything, although they've killed our people, and naturally, we've had to kill gunmen and things, I think we'd have a laugh and reminisce about the old days.' ADAM

Jon emphasised that he realised the importance of friendship and its meaning to him and said he would go to his friends to get help if he felt down in the future:

> 'I think friendship has become more important to me than the family actually… Family's always been important to me. But I think my friends are probably more important than they were before… So I think there's something that friendship is provided over the years and… it's just unconditional there's no bells attached to it, it's just what it is.' JON

He also explains that he changed his perspective towards people, becoming more open, and he would not judge people based on how they look anymore:

> 'I think I'm far less likely to judge somebody based upon someone else's evidence. Arab is good this one is worse – I just wouldn't do that, I would look at everything – with a wider view. So I wouldn't pigeonhole as much as I might have done before. That's judging the person unfairly.' JON

2.3.3.2. Sub-theme: Positive outcomes and emotions concerning the self

This sub-theme covers participants' perceptions of positive outcomes related to themselves resulting from serving in the military. Some of the participants reported that having been through difficult times in the military seems to contribute to their resilience. Jon said:

> 'I think I've got far more resilience now than I had when I was younger. But I think the experiences and the many experiences from operations that I've been through have probably contributed to my resilience.' JON

Emma mentioned her deployment to another country and the difficulties she had been through there. But, at the same time, she said that those challenges helped her

become a stronger person, which seems to play a protective role if she has been through similar challenges (*i.e., benefit-reminding*).

> 'For me, that very much increased my personal resilience, because there were some support mechanisms, and now I think if I can move to a different country and cope making a life for myself here then I can do anything. And I think that's really very encouraging, despite you might still have your moments of self-doubt. You have to remember, 'I can achieve everything'.' EMMA

Similarly, Andy said that he learned to deal with difficulties through his career in the military, because of which he can manage to cope with other challenges in his life actively.

> 'That was the most stressful time for me but the most rewarding without a doubt. Because you learn so much about yourself, you learn that when it comes down to it, you can, you can perform… It makes you realise when you've been under pressure, you think 'well hang on a minute, this shouldn't be happening, I need to be doing something about this'.' ANDY

He also explains how the military has made him more organised and confident, which then makes it easy to cope with the problems:

> 'You just gotta organise. If you've got problems, they've got to be sorted, so get them sorted, and if you can't sort them straight away, have a plan whereby in time, or on certain days, they will be sorted. The problem may not go away for two or three weeks, but the fact you've got a plan in place, so you know it will happen, you're not winging it on a prayer. You put in a plan, and that'll ease a lot of tension.' ANDY

Some veterans expressed being proud to serve their country, which might buffer the impact of negative experiences and memories of combat.

> 'I feel proud of what I've done. On November 11th, went down to the local town remembrance parade… I felt quite proud then, sort of had my medals on, and people were coming up and saying 'well done' and all the rest of it, and 'thank you', and asking me what the medals were for, and I thought, well, actually, that's very nice.' STEVE

> ‘I’m pleased I’ve served, served the country. I’ve got the medal, I’m proud.’ ADAM

Also, serving in the military and having all related experiences promoted pro-social behaviours for some veterans. For example, Emma says she is pleased as she’s working in a military charity and helping other veterans:

> ‘I realised that there is a reality around wanting to support your colleagues, that teamwork. I feel very privileged to be doing what I’m doing now, helping fundraise to support and provide welfare services for potentially people I served with or people who have served.’ EMMA

Jen talked about being a befriender for those who struggle is like paying back to the Armed Forces. She says:

> ‘It (serving in the Armed Forces) makes you want to go the extra mile to help somebody out… I’ve become a befriender as well – I find it very rewarding. Both my veterans are in their 90s. I visit them, and they really appreciate it. I want to carry on that.’ JEN

Discussion

Given the mental health benefits of positive interpretations of adverse experiences (e.g., Schok et al., 2008), one of the focuses of this study was to understand whether UK veterans report any positive outcomes of their military career and how these positive perceptions manifest. Many of the study participants reflected on their experiences and identified some benefits of serving in the military. The sub-themes outlined in the results section partially contain some domains in the territory of posttraumatic growth and expand it. For example, the ‘greater appreciation of life’, and ‘relating to others’ dimensions share some commonalities with the theme ’changes in outlook on the world and other people’, whilst the ‘positive outcomes

and emotions concerning the self' theme is aligned with the 'identifying new possibilities' and 'realising personal strength' domains of PTGI.

A recent qualitative study (Palmer et al., 2017) also examined how PTG takes form in a group of veterans following PTSD treatment (provided by a veteran charity, lasted six weeks and involved 15 one-to-one and 55 group sessions). Treatment focused on working on trauma memories related to military service. Themes described the lived experiences of PTG following trauma and were partially in line with my themes (e.g., connecting to others, acceptance of nuance in adverse events and emotions). However, it should be noted that their study participants' responses to the interview questions might reflect the perception of changes related to PTSD treatment rather than unique perceptions of PTG. Also, they pre-screened their participants based on their PTGI scores measured previously. They recruited the participants for the interviews if they had higher scores on the PTGI measure.

However, I was interested in how participants see their negative experiences and what positive meaning they assign to those experiences regardless of their past treatment. Also, I was interested in whether any aspects of posttraumatic growth naturally emerged from the interviews. Thus, my focus was on a greater picture of reflections of being a veteran, not specifically on PTGI domains. Nevertheless, findings indicated that UK veterans identify positive changes in line with the common PTG measures when reflecting back on their adverse experiences related to their military career.

In line with previous quantitative studies (Pietrzak et al., 2010a; Tsai et al., 2015; Murphy et al., 2017) and a systematic review (Mark et al., 2018; Habib et al., 2018), the findings of the current study showed that veterans report some forms of

posttraumatic growth and evaluate stressful experiences in positive terms. However, it is also essential to evaluate the function of such positive reappraisals. For example, in a systematic review of studies, Schok et al. (2008) found that veterans who appraised their combat zone experiences positively reported better psychological adjustment. Taking a positive outlook on negative experiences through positive reframing may prevent poorer mental health outcomes.

The findings within this theme also supported this argument to some extent. Veterans of this study were able to reframe the challenging situation to change their perspective on how they see the world, themselves and others. Some of them also reported that they have become stronger because of challenges in their career and mentioned that knowing 'how strong they currently are' helps them overcome daily stressors (i.e., benefit-reminding), indicating the importance of such self-enhanced perceptions. It is important to note that I do not argue that the presence of growth denotes the absence of distress. Still, some aspects of positive perceptions can go along with distress and, more importantly, may promote well-being, as evidenced in the literature (Schok et al., 2008).

Overall, this study indicated that subjective evaluations of the situations and self are vital to making sense of threatening events related to the military. The interviews and themes resulting from the IPA covered some of the negative appraisal processes which were also specified by the IMV. When reflecting back on the adverse experiences and their military career, the participants of this study also identified positive outcomes in alignment with the commonly reported aspects of PTG, such as perceiving a stronger self, and having better relationships with others.

2.3.4. Limitations

This study has several limitations. Firstly, some participants left the military service more than ten years ago and might have struggled to recall their military-related memories. Secondly, I used convenience sampling and recruited the participants through a military charity (e.g., RAFA) which presents potential limitations. Some of the veterans were working in the charity at the time of the interviews and were well-adjusted to their civilian lives. Research on veterans struggling with reintegration into their lives after leaving the military could be targeted to understand their lived transition experiences. Also, the mean age for the study participants was 57, whereas younger veterans who left the service recently are at the most risk for suicidal thoughts and behaviours (Kapur et al., 2009). I could not reach younger veterans since the members of the charity I was working with were mainly older veterans. This might be because the younger veterans are likely to feel more uncomfortable seeking care from veteran charities as they would feel not fitting into these organisations (Ouimette et al., 2011). Therefore, it is crucial for future research to examine how younger veterans evaluate and understand their challenging experiences and whether they assign positive meanings to those experiences. Furthermore, it is crucial for future research to explore negative self-appraisal in a veteran population with suicidal ideation. This might provide a clearer understanding of the experiences of defeat and entrapment and how suicidal thoughts are triggered by these appraisals.

2.4. Conclusion of the chapter

The current study explored how veterans make sense of the challenging experiences related to their military careers. Findings provided an understanding of the personal evaluations of the events and perceptions of positive outcomes of serving in the military.

The themes identified showed that veterans encountered many challenges, including adjustment problems and traumatic experiences. Some of them interpreted these adverse experiences negatively, triggering poorer mental health. Importantly, two out of eight participants (25%) reported past suicidal thoughts because of military-related experiences. To manage distress during and after the deployments, they used different coping strategies, with some perceiving positive changes, potentially resulting from a positive reinterpretation of the events and self-enhancement cognitions.

Despite the limitations (*e.g., older veterans, veterans without current suicidal ideation*), the present qualitative exploration showed that 1) negative appraisals of the self and others can be triggered by military-related stressor exposure and may influence mental health of veterans and 2) identified positive changes were aligned with the domains of PTGI.

Although the study participants did not report suicidal ideation at the time of the interview, our findings indicated that some of the IMV components seem relevant to this population when distressed, given the specific trauma exposure and its consequences (e.g., moral injury, self-blame). However, further qualitative research is needed to understand the temporal relationships between IMV components while

suicidal ideation is present. This might further clarify the suitability of this model in this population.

In addition, PTGI seems to be a suitable tool to measure and capture posttraumatic growth experience within the UK veteran populations. The following chapter will explore the role of posttraumatic growth through the IMV.

Chapter 3 Correlational Study with Veterans

3.1. Chapter Introduction

In the previous qualitative study, I explored the personal experiences of a group of UK veterans with operational deployment experience. I was particularly interested in exploring whether posttraumatic growth is reported within this sample and whether suicide risk factors are experienced due to their service in the UK Armed Forces. Although it was a relatively small sample size, two out of the eight veterans reported past suicidal thoughts due to their experiences while serving and since leaving the service. Furthermore, many participants also reported some suicide risk factors identified by the IMV (O'Connor & Kirtley, 2018), despite my focus not being on the IMV in the interviews. Some examples of these risk factors are experiencing highly challenging/traumatic life events, lack of social support after they left the military, sense of failed belonging in civilian life, pointing out the increased suicide risk within this population.

Besides, when asked to reflect back on past experiences related to their military career, veterans reported some degree of perceptions of posttraumatic growth, showing its relevance within this population.

Since identifying risk and protective factors for suicidal thoughts among veterans should be a priority for research (Levi-Belz & Zerach, 2018), theoretical models should be utilised to provide explanations for the underlying mechanism of risk and protective factors and their associations with suicidal thoughts and behaviours.

Given that perceptions of PTG are suggested as a protective factor for suicidal thoughts and behaviours among military personnel in past research (Bush et al.,

2011), it is now essential to explore the underlying mechanism of this relationship, as it was not uncovered in the past research. To explore this research gap, I used the IMV as a baseline for my research (*for the reasons previously stated in the Introduction chapter*) to explore the relationships between key variables in the IMV and PTG.

3.1.1. The aim of the current study and hypotheses

The current study investigates:

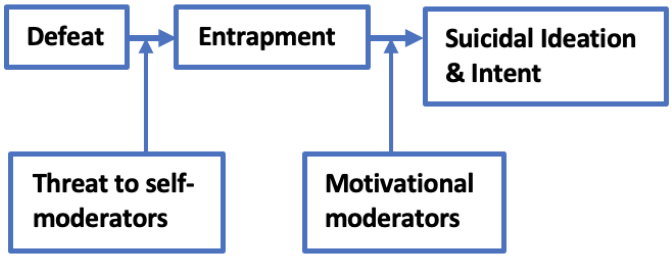
1) how IMV variables are related to each other in a group of deployed veterans

2) how perceiving posttraumatic growth as a result of past adverse experiences in the military is related to suicidal ideation within the context of the IMV.

According to the IMV, two types of moderators can influence and prevent the transition from defeat to entrapment and from entrapment to suicidal ideation (*Figure* 3.1*).* I argue that PTG could act as one of the moderators in this model. The idea for examining PTG as a protective moderator for suicidal ideation is strengthened through existing research indicating an inverse relationship between perceived PTG and suicidal thoughts (Yu et al., 2010; Bush et al., 2011) and the coping aspect of PTG (e.g., Taylor, 1983; Tennen & Affleck, 2002).

Figure 3.1

The motivational phase of the IMV



This study was planned to test the moderating effect of PTG within two populations: veterans and the general population. However, I could not reach a sufficient number of veteran participants to test the moderating effects. The main reason for failing to achieve the targeted sample size (*based on a priori power analysis*[4]) is the difficulty in reaching veterans through social media and online advertising. I had posted study details on many Facebook pages that veterans follow as well as some other local community Facebook groups. In addition, I contacted different charities, and some agreed to advertise my study on their social media channels, such as Twitter. Royal Air Force Association (RAFA) in Leicester played an essential role in promoting our study, through which many participants completed my study. Nevertheless, I could not reach enough participants to test the moderating effects.

[4] Power analysis (Faul et al. 2007) indicated that I needed 493 participants to test PTG as a threat to self moderator. Furthermore, 2619 participants would be needed to test PTG as a motivational moderator. Please see the OSF pre-registration for further information on power analysis. https://osf.io/nhtku/?view_only=d46ee0956f0249f696183e4f7305ef55.

3.1.2. Revised research questions and hypotheses:

Due to the recruitment problems mentioned above, we, as a research team, revised the research questions as follows:

1) What are the relationships between IMV variables in a veteran population?
2) What are the associations between perceptions of PTG resulting from past adverse experiences (while serving in the military) and three key components of the IMV, namely, defeat, entrapment, and suicidal ideation?

I expected to find the proposed relationships suggested by the IMV:

H1: There will be a significant positive relationship between defeat and entrapment.

H2: There will be a significant positive relationship between entrapment and suicidal ideation.

I also expect negative correlations between perceived PTG and IMV variables.

H3: There will be a significant negative relationship between perceived PTG and defeat, entrapment and suicidal ideation.

Depression and anxiety measures were included in the survey as they were planned to be added in the moderation analyses as covariates. However, since I revised my research questions, I will include these measures to examine their correlational relationships with other IMV variables as well as PTG.

H4: There will be significant positive associations between depression and anxiety and the IMV variables. Depression and anxiety will be inversely linked to perceived PTG.

3.2. Method

This study has a cross-sectional design where participants completed an online survey. The research questions, hypotheses, and analytical strategy were pre-registered on the Open Science Framework prior to data collection. The registration and the information about the project can be found through this link: https://osf.io/nhtku/?view_only=d46ee0956f0249f696183e4f7305ef55.

3.2.1. Participant recruitment

Inclusion criteria for taking part in this study were:

- Being a veteran from one of the UK military services.
- Experiences of active military duty as part of their service.
- Veterans that are aged 18 or over.

Participants were recruited via 1) opportunity sampling: posters, social media (Twitter, Facebook groups), and 2) external organisations, such as charities. Particularly, I had the full support of the Royal Air Force Association (RAFA) in Leicester to recruit our participants from their member database. RAFA acted as the gatekeeper by emailing/mailing the study information to members who have indicated to RAFA that they wish to be contacted about research opportunities. This allowed RAFA to safeguard its members' contact information. Interested participants have clicked the link in charities' advertisements and completed the survey. They were asked to contact the research team directly if they had any questions. Additionally, each participant had an anonymous code associated with their data. This allowed the researcher to identify participant's data if they wished to withdraw from the study.

3.2.2. Participants and Procedure

Overall, 102 veterans accessed the survey link; however, 34 (33.3%) had not answered any questions, indicating they had just opened the survey and closed the window without completing the questionnaire. The age range of the remaining 68 participants was between 33-84, with a mean of 54.76 (SD=13.32). The average time since they left the Armed Forces was 22 years ago (year range= 1957-2019; M= 2000, SD=15.23). Fifty-one participants identified as male (75%) and 17 as female. All participants self-identified as White (98.5%) except for one who identified as other – English/South American. 26 of the veterans left the service due to competition of engagement (38.2%), 19 due to voluntary early release (27.9%), 13 medically retired (19.1%) and nine due to other reasons (e.g., marriage, pregnancy).

3.2.2.1. Participant compensation

Participants were entered into a prize draw by writing their email addresses once they completed the study. To ensure the anonymity of the data and prevent linking the data to individuals' email addresses, I obtained email information in a separate survey in Qualtrics, which was accessed through the button at the end of the survey.

3.2.3. Ethical considerations

Ethical approval was obtained from the School of Psychology's ethics committee (S1179). Any veterans with deployment experience could take part regardless of whether they have had a mental health condition in the past or not. However, participants might have mental health conditions either in the past or at the time of the recruitment (depression, posttraumatic stress disorder), mainly due to their involvement in combat zones.

I took several steps to minimise the unexpected negative consequences of taking part in this study. Firstly, participants were explicitly informed in the information sheet (*see Appendix D for the materials*) and the recruitment letter that they would be asked potential stressful life event questions related to their experiences, i.e. previous or current suicide ideation. Secondly, the information sheet strongly emphasised the voluntary nature of participation in this study. Thirdly, at the end of the survey, I provided participants with a comprehensive list of support services (including the services recommended by RAFA) and an email of the researcher in case they wish to contact the researcher later. Samaritans' number was stated on each page of the survey. The researcher also sent the study materials to Rory O'Connor (Director of Welfare & Policy in RAFA) to ask for his feedback/advice on the materials (necessary arrangements had been made considering the feedback).

3.2.4. Materials

Participants completed the study online using Qualtrics, including these measures in the presented order:

Demographic form: collects demographic information, such as gender, age, marital and employment status.

Military-related demographic form: I collected military-related characteristics from every participant. These include the year they joined and left the service and why they left (e.g., medically retired, competition of engagement).

Defeat Scale: This scale assesses the sense of failed struggle and losing rank, with higher scores indicating greater feelings of defeat (Gilbert and Allan, 1998). An example item from the scale: 'I feel defeated by life'. Participants were asked to answer these questions considering the past year and responded on a five-point

Likert scale ranging from ‘never’ to ‘always’. The scale has an excellent Cronbach’s alpha reliability score of .97.

Entrapment Scale: This scale assesses perceptions of being unable to escape from an adverse situation (Gilbert and Allan, 1998). An example item from the scale: ‘I am in a situation I feel trapped in’. The questions asked whether participants experienced any of these perceptions during the past year on a five-point Likert scale, ranging from ‘not at all like me’ to ‘extremely like me’. Higher scores indicated greater feelings of entrapment during the past year. Reliability for this scale was high (α = .97)

Depressive Symptom Index – Suicidality Subscale (DSISS): This scale has 4-items in which frequency and intensity of suicide ideation and impulses are assessed. Higher scores indicate greater severity of suicide ideation during the past year (Joiner et al., 2002). Scores on each item range from 0 to 3 (e.g., "I do not have thoughts of killing myself" to "I always have thoughts of killing myself"). This scale’s reliability score was excellent (α = .93).

28 (41,2%) out of 68 participants reported at least some degree of suicidal ideation within the past year (i.e. DSISS scores are one or greater).

Posttraumatic Growth Inventory – Short Form (PTGI-SF): This 10-item scale (Cann et al., 2010) was used to assess perceived positive outcomes in response to the stressful events that veterans experienced while serving in the Armed Forces. Participants were asked to think about the most challenging experience during their time in the military service, and they responded to PTGI questions based on that experience. The PTGI-SF has 2-items on the following domains of PTG: personal strength, appreciation of life, relating to others, new possibilities and spiritual

change. Respondents answered each item on a six-point scale, ranging from (0) 'I did not experience this change as a result of the event' to (5) 'I experienced this change to a very great degree as a result of the event'. An example item from the scale includes: 'I have a greater appreciation for the value of my own life'. The scale's reliability score was .86.

Hospital Anxiety and Depression Scale: This scale[5] was used to assess symptoms of anxiety and depression (Zigmond and Snaith, 1983) on a 4-point scale, indicating the strength of agreement with each item (from 0 to 3). It consists of 14 questions, of which 7 correspond to the anxiety subscale (example item: 'Worrying thoughts go through my mind' with these possible answers: a great deal of the time, a lot of the time, from time to time- but not too often, only occasionally) and 7 correspond to the depression subscale (example item: 'I have lost interest in my appearance' with these possible answers: definitely, I don't take as much care as I should, I may not take quite as much care, I take just as much care as ever). The reliability score for the anxiety sub-scale was .92; for the depression sub-scale, it was .89.

3.2.5. Data Analytic Strategy

To explore the revised research questions, I conducted a partial correlational analysis to examine the associations between PTG and the IMV variables, defeat, entrapment, suicidal ideation while controlling for depression and anxiety scores. I

[5] These variables were included in the survey as they were specified as covariates in the planned moderation analysis. I did not run the moderation analysis, nevertheless, I included depression and anxiety in the correlation analysis to explore their relationships with PTG and other IMV variables.

was particularly interested in the relationship between PTG and suicidal ideation as well as two key risk factors for suicide according to the IMV, namely, defeat and entrapment.

As an exploratory analysis, I conducted a simple linear regression analysis to explore the predictive influence of the study variables on suicidal ideation, using bootstrapping approach set at 1000 samples. I included suicidal ideation as the outcome variable; defeat, entrapment, PTG, depression and anxiety as the predictors. All analysis was conducted in SPSS 28.

3.3. Results

3.3.1. Preliminary Analysis

The cut-off point for survey completion rate was determined as 75% (Wetherall et al., 2019), meaning that participants' data were excluded if they did not complete at least 75% of each scale. This resulted in excluding 34 (33.3%) of 102 participants' data before we ran the analysis. There were not any significant differences in age ($t(84) = .60$, $p = .992$), gender (χ^2 (1) = .034, p = .855) and ethnicity (χ^2 (1) = .260, p = .610) between the excluded data (N=34) and our data (N=68).

After removing those whose completion rate was below 75% for each scale, 0.73% of data were missing. The missing data patterns were checked against demographic characteristics. There was no systematic bias in the missingness of any of the measures, indicating that missingness is at random. Therefore, we applied the Expectation Maximisation (EM) technique to replace missing items in the scales (*see OSF registration*).

3.3.2. Correlations between variables

Pre-analysis checks were examined (linearity, outliers). Skewness and kurtosis values indicated that the data for entrapment, suicidal ideation and depression scales were not normally distributed. Since I did not recruit participants from clinical groups, our data in these scales were positively skewed (i.e. scores were closer to zero), which were not successfully corrected by either square root transformation or log transformation.

Therefore, I conducted correlation and regression analyses using a bootstrapping approach set at 1000 that deals with potential bias in the data, such as skewness. It is a robust method to handle assumption violations by resampling and drawing large numbers of smaller samples within the dataset (Field, 2017).

Partial correlations between study variables, while controlling for depression and anxiety scores, are presented in *Table* 3.1 below. As hypothesised, defeat was significantly correlated with entrapment (H1), and entrapment was significantly correlated with suicidal ideation with large effect sizes[6] (H2). PTG was negatively associated with defeat and entrapment with large effect sizes, while it was not significantly related to suicidal ideation (H3).

[6] Effect size interpretations were based on Gignac & Szodorai's (2016) categories of effect size.

Table 3.1

Correlations, means and standard deviation of defeat, entrapment, suicidal ideation and PTG

Variable	1	2	3	4
1. Defeat	-			
2. Entrapment	**.393**	-		
	[.186, .551]			
3. Suicide Ideation	.099	**.535**	-	
	[-.147, .315]	[.312 .725]		
4. PTG	**-.300**	**-.338**	-.035	-
	[-.493, -.078]	[-.543, -.136]	[-.286, .216]	
M	25.29	21.22	1.87	21.15
SD	14.00	17.65	2.50	10.18
Range	0-64	0-64	0-12	0-50

Note. Bootstrapped bias corrected and accelerated (BCa) confidence intervals are reported in brackets. N=68

To test whether the study variables predict suicidal ideation, I conducted an exploratory regression analysis. The overall regression model was statistically significant (R^2 = .66, F(5, 62) = 23.68, p<.001). I found that only entrapment and depression significantly predicted suicidal ideation, indicating that individuals with higher levels of depression and entrapment are more likely to think about suicide. PTG did not predict suicidal ideation (*see Table 3.2 for the regression findings*).

Table 3.2

Regression analysis on suicidal ideation with defeat, entrapment, PTG, depression and anxiety scores

Variable	*B*	SE	95% BCa
1. Defeat	-.031	.033	[-.104, .051]
2. Entrapment	.117	.020	**[.080, .156]**
3. PTG	.026	.021	[-.017, .060]
4. Anxiety	-.080	.088	[-.368, .009]
5. Depression	.280	.086	**[.108, .415]**

Note. Unstandardised parameter estimates are presented. Bootstrapped bias corrected and accelerated (BCa) confidence intervals are reported. N=68

3.4. Discussion

This study addressed two main research problems:

1) the associations between IMV variables in a group of UK veterans

2) the relationships between these variables and perceived PTG in this population.

The correlations between the IMV variables

To address the first research question, I examined the relationships between IMV variables: defeat, entrapment, suicidal ideation while controlling for depression and anxiety scores. Although I could not explore the dynamic relationships between these variables due to the design of the study (i.e., cross-sectional correlational study), the results supported the IMV's assumptions. IMV suggests that defeat will be related to entrapment. In the current study, we also found that defeat and entrapment are correlated with a large effect size (*r*=.39), indicating that individuals feeling defeated/humiliated by adverse life events are likely to feel trapped. These results are in line with past studies which found similar associations between these two variables (e.g., Dhingra et al., 2016; Russel et al., 2018)

In addition, the significant correlation between entrapment and suicidal ideation (r=.53) indicates that when one feels trapped because of adverse life circumstances, then one is likely to think about suicide, supporting past evidence (Dhingra et al., 2016, Wetherall et al., 2019).

Results showed that defeat was not associated with suicidal ideation, which strengthens IMV's assumptions regarding the mediating role of entrapment between defeat and suicidal ideation as supported by previous research (e.g., Dhingra et al., 2016; Wetherall et al., 2022). In addition, regression analysis indicated that not

defeat but entrapment predicted suicidal ideation, suggesting entrapment as proximal risk factor for suicidal thoughts. Overall, these results strengthen the mediating role of entrapment within the motivational phase of IMV, despite other research failed to support its mediating function (Ng et al., 2016, Tucker et al., 2016).

Correlations between perceived PTG and the IMV variables

To address the second research question, I examined the correlations between perceived PTG and IMV variables, defeat, entrapment, suicidal ideation, while controlling for individuals' depression and anxiety levels.

Correlational analysis revealed significant negative relationships between perceptions of PTG from a past adverse event and defeat and entrapment; while controlling for the influence of depression and anxiety scores. The effect sizes for these relationships were large, and the results indicated that veterans who perceive positives when reflecting on past adverse experiences are less likely to feel defeated and trapped. Thus, identifying positive outcomes resulting from adversity seems to be associated with less negative appraisals regarding the self, others and the negative situations. Veterans who perceive and interpret adverse events with positive terms can positively re-frame the challenging points in their lives (e.g., positive reappraisal), which is likely to help them cope with life struggles. Thus, they do not feel defeated or trapped because of those negative life circumstances. These findings may support the idea by Taylor (1983), who argues that self-enhanced perceptions about stressful experiences may aid recovery. Also, facilitating psychological resilience through using previous experiences as a resource for coping

(e.g., benefit reminding) may lead to enhanced well-being (Zoellner and Maercker, 2006) and reduced risk for defeat and entrapment appraisals.

The results indicated that PTG was not associated with suicidal ideation, however, the overall findings are significant because of several reasons. Firstly, defeat and entrapment are two key triggering factors for suicidal thoughts, according to the IMV. Evidence showed that defeat and entrapment predicted suicidal thoughts cross-sectionally (Wetherall et al., 2019) and longitudinally (Ng et al., 2016; Owen et al., 2018).

Specifically, Levi-Belz and Zerach (2018) found in their cross-sectional study with Israeli veterans that entrapment may serve as a significant suicide risk mechanism for this population. They found that moral injury experiences, particularly self and betrayal-based thoughts (e.g., I acted in ways that violated my own moral code or values), were significantly associated with entrapment, which subsequently associated with higher levels of suicidal thoughts and behaviours. In the previous qualitative chapter, some participants reported similar moral injury-related thoughts during the interviews. For example, Emma said, “The reality that you might have to use the weapon and potentially give them life-threatening injuries or kill them… I really struggled with that”. Given that such thoughts are common for veterans (e.g., Williamson et al., 2019) and may lead to entrapment appraisals (Levi-Belz & Zerach, 2018), it is crucial to understand what may prevent these individuals from experiencing entrapment.

Notably, I found a significant negative relationship between perceived PTG and entrapment, suggesting that such positive perceptions might decrease individuals feeling trapped. In other words, perceiving posttraumatic growth might play a role

as a coping effort and reduce the formation of negative appraisals, entrapment, thus reducing the suicide risk. If perceiving PTG from adverse military experiences weakens the impact of defeat and entrapment appraisals, it might be utilised for future suicide prevention interventions. However, the first step would be to understand the relationships between PTG, defeat, entrapment and suicidal ideation better.

Bush et al. (2011), for example, found that perceptions of PTG predicted suicidal thoughts, however, the underlying mechanism of this relationship was missing. Based on the current study results, one can speculate that PTG may reduce negative feelings, such as defeat and entrapment, in turn reducing the likelihood that suicidal thoughts emerge. However, based on these correlational relationships, it would not be possible to explore the exact role of PTG in the IMV since I was not able to examine its protective function within the IMV due to the small sample size.

Based on these findings, it has now become more critical to explore whether the protective influence of PTG is in the motivational phase of the model, given its association with defeat and entrapment. Further research with sufficient resources (e.g., time and finances) is needed to understand the relationship between IMV constructs and perceived PTG among veterans, which could provide information about the function of PTG in times of distress (i.e., when feeling defeated and trapped) for this at-risk population.

3.4.1. Limitations and strengths

This thesis chapter explored the associations between PTG and IMV variables within a veteran population. The first limitation of this study is the small sample size, because of which our planned moderation analyses could not be conducted. It is now

crucial to examine in a larger sample size whether perceptions of PTG interact with the key constructs of the IMV (e.g., defeat and entrapment). Examination of this could provide insight into the role of PTG and the underlying mechanism of the PTG-suicide ideation relationship, thus enlightening potential recovery strategies for those at suicide risk.

Another limitation of this study could be related to the characteristics of our veteran participants. Most participants have left the military and become veterans long ago (on average, 22 years ago). This might have made it difficult for them to remember past adversities when serving and caused recall bias. But this would not significantly impact PTG reports as we were interested in whether they could *perceive* positives rather than real pre-post trauma changes (i.e., Tedeschi & Calhoun, 2004), which would be a cognitively demanding task.

Furthermore, nearly all participants were White (98.5%), primarily male (75%). And the mean age of our sample was 55, which limits the generalise findings to the younger female veterans from different ethnic backgrounds. It is recently discussed that younger veterans who left the military a short time after joining are at more risk for mental health problems, particularly suicide risk (Kapur et al., 2009). Therefore, examining these relationships in a population of younger veterans who left the military at a young age is crucial.

Despite these limitations, the current study is informed by a previously validated suicide model (O'Connor & Kirtley, 2018) and demonstrates the importance of examining the protective function of PTG against suicide ideation, given the associations between PTG and key suicide risk factors.

3.5. Conclusion of the chapter

This thesis chapter explored the relationships between IMV variables within a UK veteran sample. I also examined the associations between perceptions of PTG and IMV variables: defeat, entrapment, suicidal ideation, depression and anxiety. I found significant negative associations between PTG and defeat and entrapment but not with suicidal ideation. This may indicate that perceptions of posttraumatic growth could decrease the risk for negative feelings about oneself or the situation (i.e., defeat and entrapment appraisals), reducing the risk for suicidal thoughts. However, given that this was a correlational study with a small sample size, further research is needed to explore the suggested moderating effect of PTG. The next chapter addresses this and examines the moderating effect of perceived PTG on defeat–entrapment and entrapment–suicidal ideation relationships with larger sample size.

Chapter 4

Moderating Role of PTG in the Motivational Phase of the IMV

The Method and Results sections of this chapter have been used from this article:

Yasdiman, M. B., Townsend, E., & Blackie, L. E. R. (2022). Examining the Protective Function of Perceptions of Post-traumatic Growth Against Entrapment and Suicidal Ideation. *Journal of Affective Disorders*, 300, 474-480.

https://doi.org/10.1016/j.jad.2021.12.118

4.1. Chapter Introduction

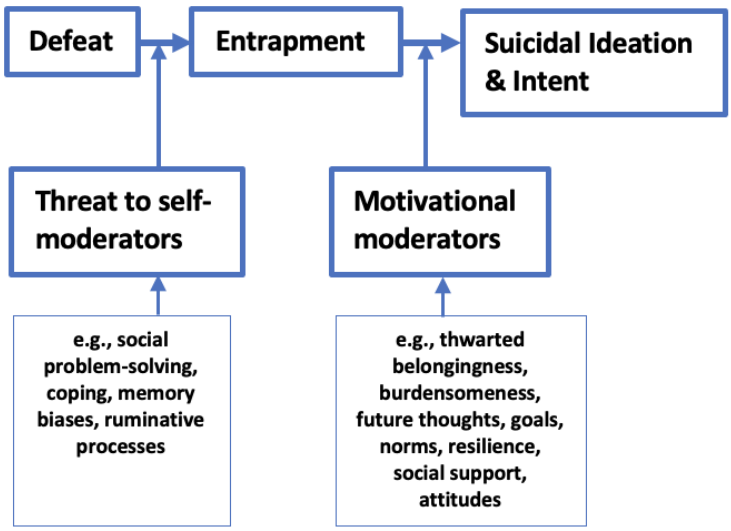
In the previous chapter, I examined the associations between perceived PTG and IMV components (e.g., defeat, entrapment, suicidal ideation) within a sample of UK veterans deployed to operational tours while serving in the military. I found that perceived PTG resulting from past adverse experiences during military service was negatively correlated with defeat and entrapment appraisals. As highlighted in the previous chapter, it is now critical to explore the moderating effects of PTG within the context of the IMV. Thus, we can examine if perceived PTG protects against the development of suicidal thoughts by influencing other known risk factors for suicide.

Exploring the moderating role of PTG within the IMV

The moderators specified by the IMV are suggested to strengthen or weaken the transition from defeat to entrapment and from entrapment to suicidal ideation. As mentioned in the Introduction chapter, Tucker et al. (2016) and Wetherall et al. (2019) examined the protective function of hope and resilience. These studies showed that hope and resilience acted as motivational moderators and weakened

the relationship between entrapment and suicidal ideation even at greater levels of entrapment due to stressful experiences. These studies' results indicated that resilient and motivated individuals to achieve their goals (i.e., a higher degree of hope) are at a lower risk of developing suicidal thoughts even when they feel trapped because of adverse life circumstances. These findings highlight the utilisation of the IMV in identifying and testing protective factors that may decrease the risk for the formation of suicidal thoughts. Continued research is now needed to enhance such findings through this theoretical framework to aid prevention efforts. Previous evidence revealed a significant relationship between PTG and less suicidal thoughts in a sample of military personnel (Bush et al., 2011; Strader, 2018) and college students (Sheline, 2013). However, as mentioned before, the critical problem with these findings is that it remains unclear how PTG can play a potential buffering role in decreasing the suicide ideation risk and how PTG relates to the key risk factors identified by the IMV, such as defeat and entrapment. Therefore, the current study aims to fill this gap by exploring the function of PTG through the motivational phase of the IMV in a group of community participants.

Figure 4.1 *The motivational phase of the IMV with the moderators*



4.1.1. The aims and hypotheses of the current chapter

As emphasised by O'Connor and Kirtley (2018), the IMV can be a starting point for the development of intervention since they address potential mechanisms that may cause suicidal ideation and behaviours. They suggested targeting examining some other factors within the motivational phase of the model to increase the likelihood of suicide interventions being effective. The present study followed this idea and aimed to examine the role of PTG within the motivational phase of the model.

Firstly, I will examine whether perceptions of PTG resulting from past adversity interact with defeat appraisals in predicting feelings of entrapment (i.e., threat to self-moderator). The idea of testing PTG as a 'threat to self moderator' was strengthened through past research that conceptualised PTG as a coping response (Jayawickreme & Blackie, 2014). It is also in line with the view that perceiving benefits may reduce the threat of challenging experiences on self-concept (i.e., feelings of defeat/humiliation) (Taylor & Brown, 1988). For these reasons, I argue that if an individual perceives and reports positive changes in their identity, relationships, their outlook on the world as a result of past adverse experiences (e.g., feeling stronger

than before), they are less likely to feel trapped even if they are feeling defeated because of the current negative challenges.

Secondly, considering past evidence that revealed a direct negative relationship between PTG and suicidal thoughts (Bush et al., 2011; Yu et al., 2010), I will also test PTG as a motivational moderator of the IMV to examine whether perceived PTG interacts with entrapment appraisals and weakens the transition from entrapment to suicidal ideation.

In contrast to the last two chapters that have focused on UK veterans, a general population will be utilised in the current and following chapters to examine the research questions, mainly due to difficulties in recruiting veteran participants.

Given that the IMV was developed to apply across various populations (O'Connor, 2011), and to our knowledge, this is the first study examining the role of PTG within the IMV, recruiting participants from a community sample well suited for the research purposes. Indeed, examining risk and protective factors within the community samples is also an essential target within the suicide field since some individuals experience suicidal misery often in silence (Jobes & Joiner, 2019) and do not seek treatment (e.g., Jollant et al., 2022). This has been illustrated with an iceberg metaphor, where the tip of the iceberg represents suicide deaths, the second observable part as individuals who presents to the clinical services due to suicidal and self-harmful behaviours. The below part of the iceberg that is hidden under the water represents suicidal and self-harmful thoughts and behaviours that occur within the community which do not receive professional treatment and remain unseen (e.g., Geulayov et al., 2018, Jollant et al., 2022), underlining the importance of suicide research in community settings to reduce suicide deaths.

In addition, general population samples are important in studying suicide because they provide a comprehensive representation of the population and allow for a broader understanding of suicide patterns and trends. Thus, findings revealed from general population samples may help to ensure that these findings are representative and can be generalised to the wider population, which is crucial when trying to understand the complex issues surrounding suicide and suicidal mind. Moreover, studying the general population helps to identify the factors that may be contributing to the high incidence of suicide in certain groups and to identify populations that are at high risk. This information can then be used to develop targeted prevention and intervention strategies and allocate resources where needed most.

Thus, understanding risk and protective factors within community samples becomes crucial to promoting evidence-based community prevention strategies.

4.1.2. Hypotheses of the study

In summary, given the calls for exploring suicide protective factors (e.g., O'Connor & Nock, 2014; Rabon et al., 2018), this thesis aims to advance the existing knowledge on the PTG-suicidal ideation relationship and fill the research gap regarding the protective role of posttraumatic growth against suicidal thoughts.

In the current chapter, I will examine whether perceiving PTG from past adverse experiences interacts with other known risk factors for suicide and acts as a motivational-phase moderator *(see Figure* 4.1 *above*) within a group of community participants. These are the hypotheses of the current study:

H1: I hypothesised that PTG would interact with defeat appraisals and hamper the transition from defeat to entrapment (*Figure* 4.2). In other words, individuals high in

PTG would report lower suicidal ideation even when they feel defeated and humiliated.

H2: I also examined an alternative hypothesis to determine if PTG interacted with entrapment appraisals to hamper the transition from entrapment to suicide ideation. In other words, individuals high in PTG would report lower suicidal ideation even when they experience feelings of entrapment (*Figure* 4.3).

Figure 4.2
Moderation Hypothesis: PTG as a Threat to Self-Moderator in the IMV

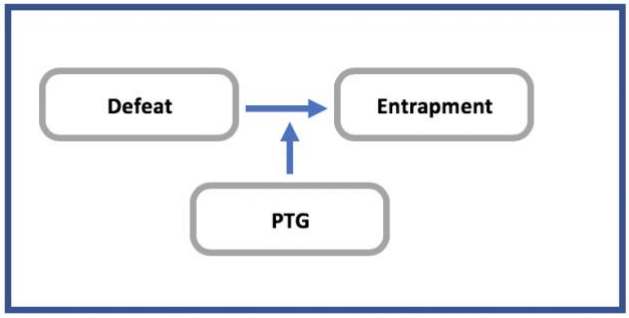
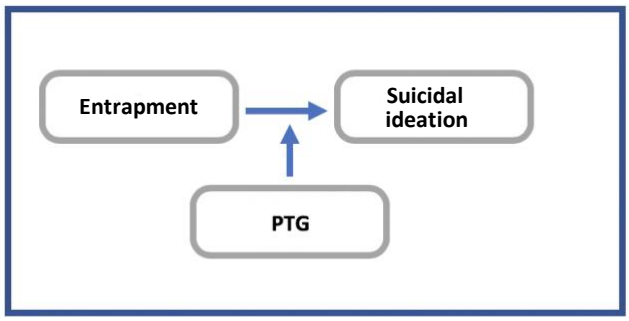


Figure 4.3
Moderation Hypothesis: PTG as a Motivational Moderator in the IMV



4.2. Methods

In order to follow a transparent scientific approach, the research questions, hypotheses, and analytical strategy were pre-registered on the Open Science Framework prior to data collection. The registration DOI is: 10.17605/OSF.IO/NHTKU

4.2.1. Participants

Non-clinical samples are widely employed as a proxy for clinical samples in model testing studies (Pelton & Cassidy, 2017), which is essential given the hidden nature of suicidal thoughts and the fact that most people who think about suicide do not seek treatment (Bruffaerts et al., 2011). As a result, I collected a large community sample for this study.

To examine the research questions in a methodologically rigorous manner, I conducted an *a priori* power analysis using G*Power (Faul et al., 2009) to determine the required sample size (*see the OSF registration*). The power analysis indicated that 493 participants were required to test the first hypothesis, and 2,619 were required to test the second hypothesis. I conducted the moderation analysis in line with our pre-registered hypothesis for the H2 (i.e., PTG interacts with entrapment and predicts suicide ideation); however, I note here that the analyses were underpowered, and caution should be applied when interpreting the theoretical significance of the findings for H2.

730 participants started the survey; however, 239 were excluded for the reasons stated in the 'data analytic strategy' section below (e.g., missing data). The remaining 521 participants consist of 315 females (60.5%) and 193 males (13 of whom did not identify as male or female), with an age range of 18-82, *M* = 30.4 years, *SD* = 13.6. Of the 521 participants, 445 identified as White, 40 as Asian, 17 as mixed race, ten individuals used the open-text option, and nine did not provide their ethnicity. A total of 309 participants (59.3%) reported at least some degree of suicidal ideation during the past year (i.e., suicidal ideation scores higher than zero).

4.2.2. Procedure and Materials

All data were collected through a cross-sectional questionnaire administered online using Qualtrics software. The study was advertised online, including Prolific, Reddit, and Facebook. Recruitment was not topic-blind; participants were informed that the survey contained some questions about suicidal thoughts. We highlighted that we were recruiting participants with or without mental health challenges. After participants had read the information sheet and given consent (*see Appendix D for the study materials)*, they provided their age, gender and ethnicity, followed by the questionnaires outlined in the next section and finished with a positive mood induction task. Participants recruited via Prolific were compensated with £1.70 (in accordance with prolific payment recommendations). Participants recruited through other platforms were offered the opportunity to be entered into a raffle to win one of the 16 Amazon vouchers (£20). Ethical approval was obtained from the authors' School Ethics Committee prior to data collection (S1179).

Participants completed the questionnaires in the order specified below:

Defeat Scale: The 16-item Defeat Scale developed by Gilbert and Allan (1998) was used to assess participants' feelings of failed struggle, losing rank, and defeat in the past year on a five-point Likert scale, ranging from 'never' to 'always'. Higher scores indicate greater feelings of defeat. A sample item from the scale is *"I've felt like I have lost important battles in life."* Cronbach's Alpha for the present sample was .96.

Entrapment Scale: The 16-item Entrapment Scale developed by Gilbert and Allan (1998) was used to assess participants' perceptions of being unable to escape feelings of defeat and rejection in the past year on a five-point scale, ranging from

'not at all like me' to 'extremely like me'. Higher scores indicate greater feelings of entrapment. A sample item from the scale is *"I have been in a situation I am trapped in."* Cronbach's Alpha here was .95. I should note here that a psychometric evaluation was initially conducted on this scale, and it was found to have two sub-components of entrapment: external and internal. External entrapment refers to feeling trapped by external factors such as difficult relationships or financial problems (e.g., I'm in a relationship I can't get out of), while internal entrapment refers to feeling unable to change negative aspects of oneself (e.g., I feel powerless to change myself). However, further use of the scale has shown conflicting results and it is now believed that entrapment may be a single, interconnected concept rather than two separate sub-components (Tucker et al., 2016; Taylor et al., 2011)

Suicidal Ideation: The Depressive Symptom Index – Suicidality Subscale (DSISS) measured the frequency and intensity of suicide ideation and impulses during the past year. Scores on each item range from 0 to 3 (e.g., "I do not have thoughts of killing myself" to "I always have thoughts of killing myself"). Higher scores indicate greater severity of suicide ideation during the past year (Joiner et al., 2002). Cronbach's Alpha here was .91.

Stressful Life Event: The Trauma History Screen (THS) was used to determine the most distressing and challenging life event participants had experienced in their lifetime (Carlson et al., 2011). Participants were asked to indicate whether the event in the 14-item checklist (e.g., a really bad car, boat, train or aeroplane accident) occurred ('*yes*' or '*no*'). They were then asked to think about the selected event and briefly describe what happened. Finally, participants were asked how much the event bothered them emotionally; ratings were from 1 ('*not at all*') to 5 ('*very much'*).

Examples of the events that participants reported included the sudden death of loved ones, sexual and physical abuse, car accidents with injuries, and suicide attempts.

Post-traumatic Growth: The 10-item Post-traumatic Growth Inventory – Short Form (PTGI-SF; Cann et al., 2011) was used to assess participants' perceptions of positive outcomes occurring in response to the distressing life event that they reported in the previous question (i.e., THS). The PTGI-SF has 2-items on the following domains of PTG: personal strength, appreciation of life, relating to others, new possibilities and spiritual change (Tedeschi & Calhoun, 1996). Respondents answered each item on a 6-point scale, ranging from (0) '*I did not experience this change as a result of the event*' to (5) *'I experienced this change to a very great degree as a result of the event*'. An example item from the scale includes: *'I have a greater appreciation for the value of my own life*'. Cronbach's Alpha here was .90.

Anxiety and Depression: The Hospital Anxiety and Depression Scale (HADS) was used to assess symptoms of anxiety and depression (Zigmond & Snaith, 1983) on a 4- point scale indicating the strength of agreement with each item (from 0 to 3). It consists of 14 questions, of which seven correspond to the anxiety subscale (*example item:* '*Worrying thoughts go through my mind' with these possible answers: a great deal of the time, a lot of the time, from time to time- but not too often, only occasionally*) and seven correspond to the depression subscale (*example item: 'I have lost interest in my appearance' with these possible answers: definitely, I don't take as much care as I should, I may not take quite as much care, I take just as much care as ever*). Cronbach's Alphas were .84 and .82 for anxiety and depression, respectively.

4.2.3. Data Analytic Strategy

All pre-registered analyses were conducted in SPSS 24. The cut-off point for survey completion rate was determined as 75% (Wetherall et al., 2019); thus, an individual's data were excluded if they did not complete at least 75% of each scale. Two hundred and eighteen participants (28.68%) out of 760 were excluded. There were not any significant differences in age ($t(688) = 1.32$, $p = .168$), gender ($\chi 2(2) = 2.15$, $p = .341$) and ethnicity ($\chi 2(5) = 8.99$, $p = .110$) between the excluded data (N=218) and retained data (N=542). I performed an Expectation Maximisation technique to replace missing items in the data for participants who met or exceeded the 75% threshold. After removing those for whom the completion rate was below 75% for each scale, 0.16% of data were missing. The missing data patterns were checked against demographic characteristics. There was no systematic bias in the missingness of the following measures; Entrapment Scale, PTGI-SF, DSISS, and HADS, indicating that missingness is at random. Therefore, we applied the Expectation Maximisation (EM) technique to replace missing items in these scales. This technique is an iterative way to approximate the set of data parameters when the data are not complete. We found that the missingness in the Defeat Scale was not missing at random; therefore, we did not impute data for the missing items (N=15, 0.17% of the whole observations of defeat measure) in the defeat scale.

Bivariate correlation analyses were conducted to test simple relationships between study variables. As can be seen in the correlations table below, defeat and entrapment were highly significantly correlated ($r = .84$). We ran our pre-registered analyses despite this high correlation, given the theoretical importance of the distinction between these two variables in the IMV. This analysis strategy is

consistent with other published research that has similarly found a high correlation (e.g., Tucker et al., 2016).

I used Hayes' PROCESS macro for SPSS (2012) to explore our primary and secondary moderation hypotheses to test the interaction between 1) PTG and defeat and 2) PTG and entrapment. The PROCESS macro uses regression to test moderation effects. This method calculated the conditional effect of defeat on entrapment at different values (-1 SD, +1 SD) of the moderator (i.e. PTG) with bootstrapping set at 5000 samples. Z-standardization was also performed to facilitate the interpretation of the regression weights (Hayes, 2018). I examined outliers and ensured the data met the regression assumptions required before conducting moderation analyses (i.e., normality of residuals, homoscedasticity, VIF scores and outliers). I identified outliers in the data by calculating Mahalanobis and Cook's distance and Leverage values (Cohen et al., 2013) and removed 21 participants' data that exceeded the cut-off scores for two or more of these values[7]. All regression assumptions were met except for homoscedasticity. I, therefore, report heteroscedasticity-consistent standard errors (HC4; Hayes & Cai, 2007) to account for this violation. I controlled for the influence of depression and anxiety in all analyses.

[7] We used numerous outlier indicators to balance removing a portion of our sample against the possibility that the discrepant data points have an undue influence.

4.3. Results

4.3.1. Correlations

Correlations between all variables are presented in *Table* 4.1*.* All variables were significantly associated with each other in the predicted directions. Suicide ideation was positively correlated with defeat, entrapment and anxiety with large effect sizes and depression with medium effect sizes (Gignac & Szodorai, 2016). PTG was negatively associated with defeat and suicide ideation with medium effect sizes, and it was negatively correlated with entrapment, anxiety and depression with small effect sizes (Gignac & Szodorai, 2016).

Table 4.1
Means, Standard Deviations and Correlation Coefficients of All Study Variables

Variable	1	2	3	4	5	6
1. Defeat	-					
2. Entrapment	.836**	-				
3. Suicide Ideation	.628**	.661**	-			
4. PTG	-.213**	-.163**	-.245**	-		
5. Anxiety	.636**	.712**	.506**	-.107*	-	
6. Depression	.718**	.669**	.470**	-.142**	.596**	-
M	28.85	26.91	2.73	17.84	10.17	6.89
SD	13.80	16.53	2.82	11.76	4.63	4.27
Range	0-64	0-64	0-12	0-50	0-21	0-21

Note. * p<.05, ** p<.01. N=521; N= 506 for defeat scale.

4.3.2. Main hypothesis testing

To examine the first hypothesis (H1) that PTG would moderate the relationship between defeat and entrapment, I conducted a moderated regression analysis using

model 1 of Hayes' (2012) PROCESS macro with defeat as the predictor variable (X), entrapment as the outcome variable (Y), PTG as the moderator (M) and depression and anxiety as the covariates (CZ). The overall regression model was significant (*F*(HC4) [5,500] = 435.224, *p*=.000, R^2=.756) accounting for 75.6% of the variance. However, PTG did not interact with defeat to predict entrapment (*p* = .366). The only significant predictors of entrapment were defeat (*B* = .739) and anxiety (*B* = .1.031), such that higher scores of defeat and anxiety predicted higher entrapment (*see Table* 4.2).

Table 4.2

Regression Analysis on Entrapment with Defeat, PTG, Anxiety and Depression scores

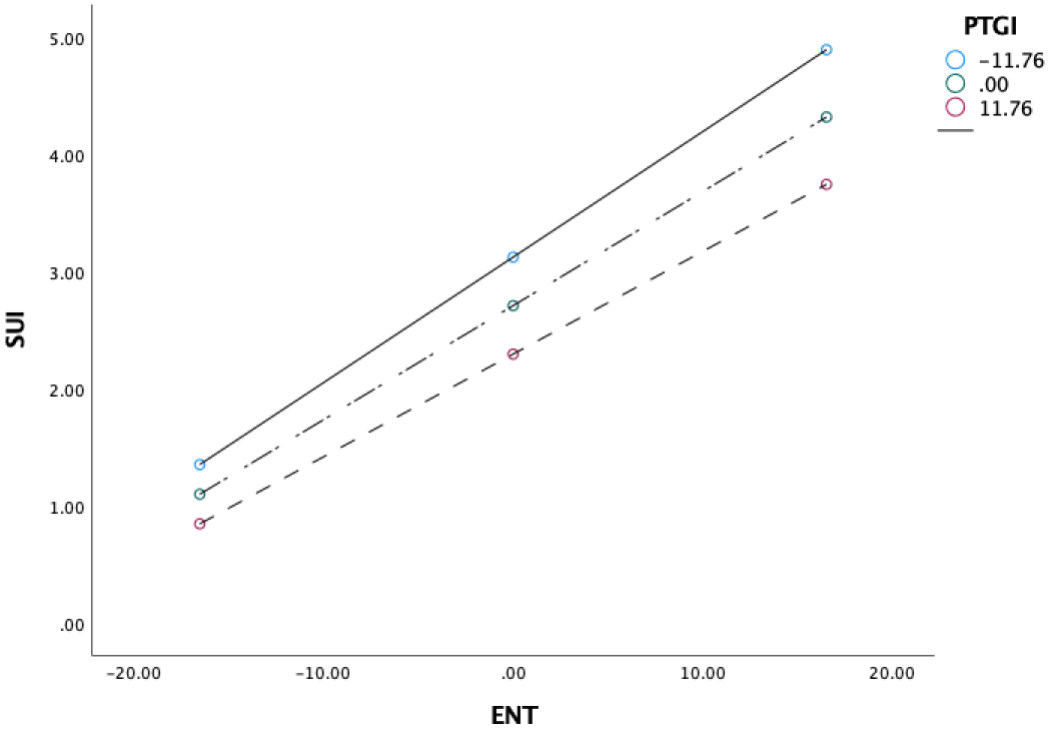
Variable	*B*	SE (HC4)	T value	P value	95% CI
1. Defeat	.739	.046	15.835	.000	[.6476, .8310]
2. PTG	.013	.033	.415	.678	[-.0516, .0793]
3. Defeat*PTG	.002	.002	.903	.366	[-.0025, .0068]
4. Anxiety	1.031	.126	8.170	.000	[.7834, 1,2794]
5. Depression	.225	.131	1.706	.088	[-.0340, .4840]

Note. Unstandardised parameter estimates are presented. HC4: Heteroscedasticity-consistent standard errors. N=506

Although underpowered, I examined our secondary hypothesis (H2) to explore whether PTG would moderate the relationship between entrapment and suicide ideation. I conducted a moderated regression analysis using model 1 of Hayes' (2012) PROCESS macro with entrapment as the predictor variable (X), suicide ideation as the outcome variable (Y), PTG as the moderator (M) and depression and anxiety as the covariates (CZ). The overall regression model was significant (*F*(HC4) [5,515] =

103.752, *p*=.000, R^2=.462) accounting for 46.2% of the variance. However, PTG did not interact with entrapment to predict suicidal ideation (*p* = .09) (see **Error! Reference source not found.** below for the conditional effects of entrapment on suicidal ideation at low, moderate and high levels of PTG). I found that PTG had a direct effect on suicide ideation (*B* = -.035), indicating that individuals with higher scores of PTG are less likely to report suicidal thoughts during the past year. Furthermore, entrapment predicted suicide ideation (*B* = .097), with higher entrapment associated with higher suicidal ideation (*see* Table 4.3*)*

Figure 4.4.
Conditional effects of entrapment on suicidal ideation at low (- 1 SD) and high levels (+ 1 SD) of PTG



Note. Depression and anxiety scores have been added as covariates in the moderation analysis.

Table 4.3

Regression Analysis on Suicidal Ideation with Entrapment, PTG, Anxiety and Depression scores

Variable	*B*	SE (HC4)	T value	P value	95% CI
1. Entrapment	.097	.009	10.344	.000	[.0789, .1159]
2. PTG	-.035	.008	-4.219	.000	[-.0516, -.0188]
3. Entrapment*PTG	-.000	.000	-1.707	.088	[-.0018, .0001]
4. Anxiety	.041	.028	1.476	.140	[-.0138, .0972]
5. Depression	.016	.037	.437	.662	[-.0577, .0907]

Note. Unstandardised parameter estimates are presented. HC4: Heteroscedasticity-consistent standard errors. N= 521

4.3.3. Exploratory Factor Analysis

In parallel with previous research (e.g., Tucker et al., 2016), I found a high correlation between defeat and entrapment. Indeed, there has been an ongoing debate on the conceptual relationship between defeat and entrapment; while some argue that they should be considered as a single construct (Griffiths et al., 2014), whereas others argue that they are separate suicide risk factors (O'Connor & Kirtley, 2018). To address this potential multicollinearity issue between defeat and entrapment scales, I assessed the structure of defeat and entrapment scales through exploratory factor analysis (EFA) on items of both scales (32 items). Firstly, I checked whether our data are suitable for an EFA. Bartlett's test confirmed that conducting an EFA was appropriate (χ^2 [496] = 13686.428, p = .000). Kaiser-Meyer-Olkin measure of sampling adequacy indicated an adequate participant:item ratio of 15.8:1 (KMO=.974). The first five initial eigenvalues were 17.590, 1.962, 1.257, 1.142, .744.

The decision about the number of factors to extract was based upon parallel analysis (PA; Preacher and MacCallum, 2003). PA creates random datasets with the same number of cases and variables as the actual dataset. An EFA is then performed on each dataset, and any factors within the actual dataset with eigenvalues that exceed those that emerge in less than 5% of PA datasets are defined as having not arisen due to chance variation within the data. I used the SPSS syntax provided by O'Connor (2000) to conduct PA. The first five eigenvalues for 95% of the thousand randomly generated datasets were equal to or less than 1.56, 1.48, 1.42, 1.38 and 1.33. Only the first two eigenvalues exceeded chance values (17.59, 1.96), suggesting two factors should be extracted.

As a further test, an EFA was conducted with forced two-factor extraction, using oblique rotation, assuming these two constructs were correlated. The forced two-factor solution indicated that defeat, internal and external entrapment (*see method section for the explanation of these sub-components of entrapment scale*) were highly related constructs.

Importantly, defeat items and internal entrapment items were loaded on Factor one, whereas external entrapment items were loaded on Factor two with loadings greater than .6 (*see Table* 4.4 *below*).

4.3.4. Exploratory Moderation Analysis

Previous research suggested combining the defeat and entrapment scales, but we only found evidence for internal entrapment items loading into Factor 1 with defeat items.

Table 4.4

Factor Loadings and Communalities Based on an EFA with Direct Oblimin Rotation and Two Factor Solution for Defeat and Entrapment Scales' Items

	Component		Communalities
Items	Factor 1	Factor 2	
Defeat 1	.747	.367	.558
Defeat 2	.664	.216	.462
Defeat 3	.838	.436	.703
Defeat 4	.630	.226	.409
Defeat 5	.762	.412	.581
Defeat 6	.730	.488	.551
Defeat 7	.778	.492	.618
Defeat 8	.796	.400	.634
Defeat 9	.633	.223	.414
Defeat 10	.826	.406	.682
Defeat 11	.826	.390	.683
Defeat 12	.811	.344	.664
Defeat 13	.814	.387	.663
Defeat 14	.808	.429	.653
Defeat 15	.781	.438	.612
Defeat 16	.779	.339	.611
Entrapment 1 (E)	.692	.720	.662
Entrapment 2 (E)	.713	.714	.677
Entrapment 3 (E)	.201	.653	.450
Entrapment 4 (E)	.624	.741	.631
Entrapment 5 (E)	.781	.609	.670
Entrapment 6 (E)	.598	.656	.525
Entrapment 7 (E)	.723	.654	.633
Entrapment 8 (E)	.428	.729	.535
Entrapment 9 (E)	.678	.780	.715
Entrapment 10 (E)	.489	.818	.676
Entrapment 11 (I)	.776	.557	.638
Entrapment 12 (I)	.798	.446	.639
Entrapment 13 (I)	.758	.516	.597
Entrapment 14 (I)	.773	.582	.645
Entrapment 15 (I)	.783	.514	.631
Entrapment 16 (I)	.840	.564	.731

Note. Principal Component Analysis with Direct Oblimin rotation. (I): Internal Entrapment items; (E): External Entrapment items. Communalities - extraction column: proportion of variance of each variable that can be explained by the factor

As an exploratory analysis, I replicated the moderation analyses with the combined defeat and internal entrapment scale to demonstrate whether the predicted moderation is found when this conceptual similarity is taken into account: I examined whether PTG moderated the relationship between 'combined defeat-internal entrapment' and 'suicidal ideation' relationship (H3).

The exploratory analysis revealed that the model is significant (F(HC4) [5,500] = 105.6235, p=.000, R^2=.463); however, PTG did not interact with defeat & internal entrapment in predicting suicidal ideation (*see Table* 4.5 *below*).

Table 4.5

Regression analysis on suicidal ideation with combined defeat & internal entrapment, PTG, anxiety and depression scores

Variable	*b* value	S.E (HC4)	T value	P value	95% CI
1.Defeat&internal entrapment	.078	.007	6.165	.000	[.0630, .0938]
2. PTG	-.029	.008	-3.679	.000	[-.0450, -.0137]
3.Defeat&internal entrapment*PTG	-.000	.000	-1.343	.179	[-.0012, .0002]
4. Anxiety	.079	.029	2.736	.006	[.0225, .1368]
5. Depression	-.030	.035	-.852	.394	[-.1011, .0399]

Finally, I ran another moderation analysis with the external entrapment scale to examine whether PTG moderated the relationship between the 'external entrapment' and 'suicidal ideation' relationship (H4).

Findings revealed that the model is significant (F(HC4) [5,515] = 85.612, p=.000, R^2=.421); however, PTG did not interact with external entrapment in predicting suicidal ideation (*see Table* 4.6 *below*).

Table 4.6

Regression analysis on suicidal ideation with external entrapment, PTG, anxiety and depression scores

Variable	*b* value	S.E (HC4)	T value	P value	95% CI
1. External entrapment	.119	.015	7.606	.000	[.0886, .1504]
2. PTG	-.040	.008	-4.769	.000	[-.0576, -.0240]
3.External entrapment*PTG	-.001	.000	-1.569	.117	[-.0031, .0004]
4. Anxiety	.091	.028	3.190	.001	[.0350, .1471]
5. Depression	.063	.038	1.662	.097	[-.0116, .1390]

4.4. Discussion

In the current thesis chapter, I investigated whether perceptions of PTG as a result of past adverse experiences function to reduce the saliency of suicidal ideation through interacting with defeat and entrapment appraisals. To my knowledge, the present study is the first exploration of the role of perceptions of PTG within the IMV and to examine the interaction between PTG and key suicide risk factors outlined in the IMV (i.e., defeat and entrapment). Contrary to the expectations, I did not find PTG to moderate the relationship between defeat and entrapment or entrapment and suicide ideation. However, I found that perceptions of PTG had a negative direct effect on suicidal ideation when controlling for entrapment, depression and anxiety.

The relationships between IMV variables

In parallel with the model's assumptions and the previous chapter's findings, I found significant positive correlations between defeat and entrapment, and entrapment and suicidal ideation with large effect sizes (*see Table* 4.1 *above*). Furthermore, regression analyses revealed that high levels of defeat predicted higher levels of

entrapment. This indicates that if one feels defeated by adverse life events, then one is likely to feel trapped. Also, higher scores on the entrapment scale predicted more severe levels of suicidal ideation during the past year, indicating that people who feel trapped because of adverse experiences are likely to think about suicide, supporting the assumptions of the IMV and other studies' findings (Dhingra et al., 2016; Wetherall et al., 2019).

The moderating role of perceptions of PTG

Based on the primary hypothesis, I expected that PTG would interact with defeat appraisals and predict lower levels of entrapment: Individuals who perceive benefits from their past adverse experiences would have reported less entrapment even when they feel defeated by negative life circumstances. I also hypothesised a significant moderating effect of perceptions of post-traumatic growth on entrapment and suicidal ideation relationship. However, I failed to support both hypotheses.

A possible theoretical explanation for the lack of moderation effects found in the primary hypothesis may be the conceptual relationship between defeat and entrapment which has attracted criticism in the literature. Some argue that they should be considered as distinct constructs (e.g., Williams, 1997; O'Connor & Kirtley, 2018), while others suggest considering two constructs as a single factor (e.g., Johnson et al., 2008; Griffiths et al., 2014). In line with the study in the previous chapter, I found a robust positive correlation between our predictor (defeat) and the outcome variable (entrapment). I decided to proceed despite the high correlation since this is the key assumption of the model I have been testing and the fact that

this has been a strategy used in previous studies (Dhingra et al., 2016; Tucker et al., 2016). However, this high correlation has implications for the conceptualisation of the key driving factors in the model and might have influenced the ability to detect the effect of PTG on the association between defeat and entrapment. Therefore, I conducted an exploratory factor analysis to address this. I found that defeat and internal entrapment items were loaded onto one factor while external entrapment items were loaded onto the second factor. One could explain this finding as the fact that both defeat and internal entrapment are guided by beliefs/thoughts about oneself while external entrapment reflects external factors not related to the self (Taylor et al., 2011). Indeed, Höller et al. (2022) investigated the associations between defeat, internal and external entrapment and suicidal ideation prospectively over 2 years in a group of 308 psychiatric patients in Germany. Their findings showed that defeat and internal entrapment was associated with each other and defeat predicted a change in not external but internal entrapment over time, highlighting the conceptual similarities between these two constructs. Although IMV does not differentiate internal and external entrapment in the motivational phase, I conducted exploratory moderation analyses considering the factor analyses and assessed the moderating role of PTG on the relationship between 1) combined defeat-internal entrapment scale and suicidal ideation and 2) external entrapment and suicidal ideation. Both analyses indicated non-significant moderation effects. This showed that although the high correlation and conceptual similarities between defeat and internal entrapment were considered, PTG still did not have a moderating effect within the IMV. Thus, it does not seem that the conceptual similarity between

defeat and entrapment can account for why PTG did not moderate the predicted relationships.

Another difference between this study and past research that has examined moderators in the IMV is the characteristic differences of the moderators. Previously tested moderators, such as resilience and perfectionism (Wetherall et al., 2019), hope (Tucker et al., 2016), and optimism (McLean, 2020), were measured as personality traits, while other moderators involve thought patterns (e.g., a sense of burdensomeness, rumination), perceptions/appraisals about the distressing situation (e.g., coping processes and PTG). It might be possible that personality traits, such as resilience, are stable patterns of adjustment following distressing events (Bonanno, 2012), while appraisal processes are influenced by one's social environment (Joseph & Linley, 2005), such as perceptions of available social support. It may be possible that perceptions of PTG can have a protective influence when other conditions also support and facilitate the appraisal process. For example, experiencing a great deal of distress without available resources may leave individuals unable to perceive PTG, thus influencing the role of PTG against negative appraisals about the self and the situation.

The direct negative effect of perceived PTG on suicidal ideation

I did not support the secondary hypothesis: PTG is not moderating the entrapment – suicidal ideation relationship. Although not significant, the effect was marginal, and the analysis was significantly underpowered. Thus, future research should explore this research question in a larger sample size. However, this moderation analysis revealed an important relationship between PTG and suicide ideation in a community

sample: PTG had a negative direct effect on suicide ideation, indicating that individuals with high perceived PTG are likely to experience fewer suicidal thoughts while controlling for depression, anxiety, and entrapment, supporting previous studies with different samples. For example, Bush et al. (2011) found a negative relationship between PTG and suicidal thoughts within a sample of US military personnel. Their results showed that lower scores in PTGI (those who are less likely to identify benefits from past adversities) predicted higher levels of suicidal ideation when controlling for a variety of suicide risk factors, such as PTSD, depression, combat exposure, and substance abuse.

Given this direct effect and the non-significant moderating effect of PTG within the motivational phase of the IMV, it could be argued that perceptions of PTG when reflecting on past adverse experiences may decrease the risk for developing suicidal thoughts by influencing other risk factors that we were not able to study here, such as a failed sense of belonging, feeling a burden. This idea is strengthened by the recent research where the authors (Blevins, 2019; McKinney et al., 2017) pointed out the role of perceived PTG in improving the perceptions regarding the sense of connectedness to others and social self-worth. For example, Blevins (2019) conducted a cross-sectional study with US veterans and explored the relationships between perceived PTG, thwarted belongingness and burdensomeness. The results of their research showed a negative direct effect of PTG on thwarted belongingness and perceived burdensomeness. These suggest that identifying post-traumatic growth resulting from combat-related traumas is likely to mitigate the suicide risk conveyed through the two key suicide drivers according to the suicide models, such as the IMV and IPT. These results indicate that the effect of PTG might be indirect by

affecting other risk factors in the IMV. However, this research utilised a cross-sectional design which could limit the interpretations of their results. Further research could use longitudinal designs to address this limitation to provide a more precise understanding of the role of perceived PTG within the context of suicide models by exploring its relation to other known suicide risk factors.

4.4.1. Limitations

It is important to note some of the limitations of the current study. Firstly, the second moderation analysis was underpowered as it required more than 2500 participants based on the a-priori power analysis. Because of financial and time constraints, I could not reach the required sample size. Still, it is crucial to examine perceived PTG as a motivational moderator of the IMV with a larger and sufficiently powered sample size.

Secondly, participants were asked how they have been feeling during the past year when answering the questions on defeat, entrapment and suicidal ideation scales and they answered PTG questions based on a lifetime adverse experience. It might be useful for future research to look at the influence of perceived PTG resulting from a recent stressor on the risk factors concerning participants' current feelings in order to reduce the impact of recall bias.

The correlational nature of the design would not allow me to conclude causal relationships between PTG and suicidal ideation within this population. Further research could utilise longitudinal design to understand whether perceiving PTG reduces suicidal ideation over time to understand its impact on suicidal ideation.

Finally, most of the sample consisted of individuals who identified as White, so exploring the research questions within a group of participants from diverse ethnic backgrounds would be another future research direction.

4.5. Conclusion of the chapter

The current study used a theoretical framework to examine the effect of PTG in a community sample since using a comprehensive model of suicide is vital to continue to move the field of suicidology forward. Perceptions of PTG were tested as a threat to self-moderator and a motivational moderator within the IMV. However, the analyses revealed non-significant moderating effects. Perceived PTG negatively affected suicidal ideation, indicating that individuals who identify benefits from past adverse experiences are less likely to report suicidal thoughts within the past year. Given that this relationship has been consistently found within different populations, it is crucial to understand the underlying mechanism. Based on the recent research (Blevins, 2019), it would be crucial to examine whether perceptions of PTG have an indirect impact on suicidal ideation through influencing other IMV moderators (e.g., sense of failed belongingness and burdensomeness) throughout the pathway. Examination of this longitudinally could provide insight into the role of PTG and the underlying mechanism of the PTG-suicidal ideation relationship. In the next chapter, I will address these relationships through a longitudinal design.

Chapter 5 Longitudinal examination of PTG on perceived burdensomeness and thwarted belongingness

The Method and Results sections of this chapter have been used from this article:

Yasdiman, M. B., Townsend, E., & Blackie, L. E. R. (2022). Examining the Protective Influence of Posttraumatic Growth on Interpersonal Suicide Risk Factors in a 6-Week Longitudinal Study. Frontiers in Psychology [under review].

5.1. Chapter Introduction

In the previous thesis chapter, I examined whether perceptions of posttraumatic growth played a moderating role within the motivational phase of the IMV (i.e., a threat to self moderator and motivational moderator) and found non-significant moderating effects. However, perceived PTG predicted lower levels of suicidal thoughts, indicating a potential protective role of PTG when controlling for depression, anxiety and entrapment.

Yet, it remains unclear how perceived PTG influences suicidal thoughts. It is, therefore, essential to further explore the relationship between PTG and suicidal thoughts using a theoretical model framework, IMV, to clarify the underlying mechanism of the protective influence of PTG. The current study builds on the previous chapter and examines whether PTG has a protective function on suicidal ideation indirectly by attenuating some of the interpersonal risk factors that strengthen the pathway between entrapment and suicidal ideation in the IMV.

As will be detailed in the following section, Blevins (2019) found a negative association between PTG and two motivational moderators in the IMV: perceived burdensomeness and thwarted belongingness. This suggests that PTG might reduce suicidal ideation by weakening the suggested entrapment-suicidal ideation pathway in the IMV. Before explaining the rationale for this assumption, first, I will describe three IMV motivational moderators: perceived burdensomeness, thwarted belongingness and hope, and include relevant evidence on how these constructs affect suicidal ideation. This will be followed by the rationale and aim of the current study.

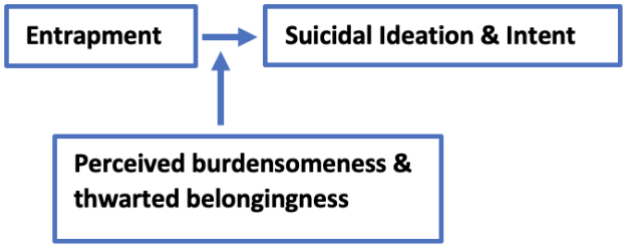
Perceived burdensomeness, thwarted belongingness and hope as moderators in the IMV

Perceived burdensomeness (PB) has been defined as perceiving oneself to be ineffective and incompetent, which leads to feelings of being a liability to other people (Joiner, 2005). Thwarted belongingness (TB) has been defined as an unmet need to belong, resulting in failed connectedness (Van Orden et al., 2012).

The IMV considers these factors as motivational moderators within the motivational phase (*see Figure* 5.1 *below*), strengthening the relationship between entrapment and suicidal ideation. For example, when an individual feel trapped and feels like a burden to others, the risk of formation of suicidal thoughts increases. Similarly, if an individual has a sense of failed connectedness to others, suicidal ideation risk increases in the presence of entrapment appraisals.

Figure 5.1

Perceived burdensomeness and thwarted belongingness as motivational moderators in the IMV



Currently, there is growing evidence examining these risk factors within the context of suicidal thoughts and behaviours. Van Orden et al. (2006) conducted a cross-sectional study with 343 psychology clinic outpatients in the US. Although they used a one-item measure for burdensomeness, they found that PB predicted numbers of past suicide attempts and suicidal thoughts above and beyond the levels of hopelessness, another strong predictor of suicide risk. In an online community sample with 480 participants, Forkmann and Teismann (2017) found that PB predicted suicidal ideation cross-sectionally, supporting other evidence (De Beurs et al., 2019; Donker et al., 2014). These studies emphasised the importance of including PB and TB when assessing suicide risk and argued that a sense of belonging and low levels of burdensomeness might protect against suicidal ideation. It should also be noted that these risk factors are perception-based (*misperceptions*) rather than a fact (Joiner et al., 2009) and thus can be altered through intervention strategies, such as psychotherapies (Levi-Belz & Aisenberg, 2021)

Hope has been defined by Snyder (2002) as setting goals, identifying strategies to achieve them and having the motivation to achieve one's goals. There has been an increased amount of research examining hope in relation to well-being and

particularly suicide. For example, Davidson et al. (2009) looked at the relationships between trait hope and interpersonal suicide risk factors and found a negative association, indicating that individuals with high hope tended to have lower levels of burdensomeness and thwarted belongingness. On the other hand, Tucker et al. (2016) examined the protective moderating role of trait hope through the IMV. They tested whether hope is a motivational moderator and found that entrapment and suicidal ideation were positively correlated at low levels of hope, whereas unrelated at high levels of hope, indicating a protective and buffering role of hope against suicidal ideation when entrapment levels were high.

In the following section, I will explain the relationship between these risk and protective factors and PTG and provide an explanation of their inclusion within the present study.

Posttraumatic growth, perceived burdensomeness, thwarted belongingness and hope

Recently, Blevins (2019) conducted a cross-sectional correlational study with 215 US veterans who experienced combat exposure in Iraq and Afghanistan. They hypothesised that perceived PTG (measured by PTGI) would be negatively associated with TB and PB. Their regression analysis results supported their hypothesis and revealed a negative direct effect of PTG on TB ($b=-2.56$, $p<.001$) and PB ($b=-2.59$, $p<.001$). These findings indicated that perceptions of PTG as a result of past military-related traumatic experiences predicted lower levels of negative perceptions regarding burdensomeness and belongingness. They concluded that posttraumatic growth could be an essential aspect of post-trauma suicide resilience since such

positive perceptions may mitigate the suicide risk triggered by these two thwarted interpersonal needs.

In other words, individuals who perceive benefits from adverse experiences might be protected from experiencing suicidal thoughts; as such positive perceptions may act as a coping strategy and influence the interpersonal risk factors. For example, perceiving posttraumatic growth as a result of a challenging event (e.g., a greater understanding of life, improved relationships with others) may enable individuals to flexibly change their perspective on their self-deprecating thoughts related to their relationships with others ('*I am not a burden*'). However, longitudinal work is needed to expand these cross-sectional findings and to examine if perceiving PTG decreases these interpersonal risk factor scores over time.

The rationale for the exploratory analysis for hope is based on the positive correlations between PTG and hope (e.g., Salloum et al., 2019) and the evidence that indicates trait hope as a motivational moderator in the IMV (Tucker et al., 2016). It might be possible that finding benefits from adversity and reminding oneself of these benefits when distressed might help individuals to cope with the difficulty (e.g., Tennen & Affleck, 2002) and thus lead to increases in one's state of hope (e.g., motivation to reach their goals) over time. Initially, hope was conceptualised as a personality trait, but it can also be depicted as a temporary state linked to current events and specific moments (Snyder et al., 1996; Martin-Krumm et al., 2015). To understand the influence of PTG on hope, I conceptualised hope as a state construct and used the State Hope Scale, as detailed in the methods section.

5.1.1. Current Study

In the current study, I aimed to expand Blevins' (2019) cross-sectional findings by investigating whether perceiving PTG from a recent stressful life event would decrease the levels of PB and TB and increase state hope levels over six weeks in a sample of individuals at-risk for suicidal ideation. In particular, I will examine whether perceived PTG mediates the relationship between burdensomeness levels at time 1 and time 2 (*see Figure* 5.2), between thwarted belongingness at T1 and T2 (*see Figure* 5.3) and between state hope at T1 and T2 (*see Figure* 5.4) while adjusting for depression and anxiety. I predict that wave 1 scores of these constructs will be highly correlated with the respective wave 2 scores, however PTG will mediate these relationships and reduce the strength of the relationships for PB and TB and increase the strength of the relationships for state hope.

I examined whether perceiving posttraumatic growth from recent stressful events during a national COVID-19 lockdown 1) reduced PB and TB levels 2) increased state hope levels across 6-weeks within an at-risk population of individuals living in economically deprived areas in the UK. This population has been chosen because the study investigates whether the activation of PTG thoughts could play a role as a coping mechanism when facing negative experiences and thus influence other suicide risk factors. In order to understand the temporal connections between PTG and burdensomeness, a group of participants who are more likely to experience stressors during the data collection would fit better with the current study's design and approach. Thus, we will be able to identify whether PTG perceptions resulting from the recent stressors influence negative appraisals of the burdensomeness over time.

Griffiths et al. (2014) also used a similar recruitment strategy and found that over half of their participants reported clinically relevant levels of psychopathology, indicating that individuals who live in deprived areas are a clinically meaningful group. This group has been further identified as a vulnerable and at-risk group during the COVID-19 pandemic (Gratz et al., 2020; Raj et al., 2021), indicating the importance of research examining factors supporting resiliency within this group.

A short-term longitudinal design (six weeks) was used within this thesis chapter since Riberio et al. (2016) emphasised the need for research with shorter timeframes from their meta-analysis of longitudinal studies on suicidality. It is possible for time-varying factors, such as perceptions of growth based on recent negative experiences to have a stronger impact over short intervals, and that impact may decrease over longer time periods because of the challenge of detecting a significant effect over a long period of time. The initial signal of PTG's influence may be obscured by the accumulation of other factors that could contribute to the outcome being studied, making it difficult to accurately identify the original signal. For these reasons, similar to Goldstein et al. (2012), a 6-week follow-up interval was chosen for the current study because it is believed to be a suitable time frame during which various psychosocial factors, potentially associated with suicidal thoughts and behaviours, may be exerting their effects (Goldstein et al., 2012).

Hypotheses:

H1: Perceptions of PTG from a recent stressor will reduce the strength of the relationships between T1 and T2 perceived burdensomeness scores over six weeks.

H2: Perceptions of PTG from a recent stressor will reduce the strength of the relationships between T1 and T2 thwarted belongingness scores over six weeks.

H3 (exploratory): Perceptions of PTG from a recent stressor will increase the strength of the relationships between T1 and T2 state hope scores over six weeks.

Figure 5.2

PTG mediating the relationship between perceived burdensomeness (PB) at T1 and perceived burdensomeness (PB) at T2



Note. Anxiety and depression were considered as covariates

Figure 5.3

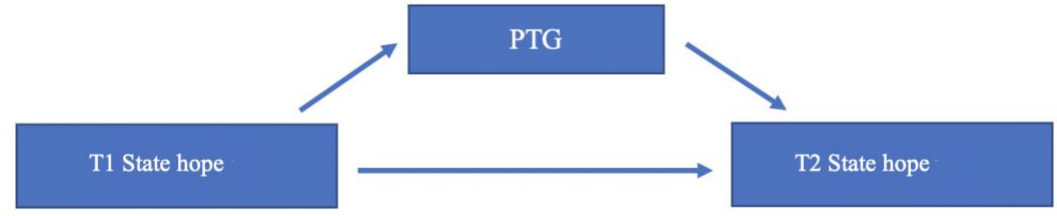
PTG mediating the relationship between thwarted belongingness (TB) at T1 and thwarted belongingness (TB) at T2



Note. Anxiety and depression were considered as covariates

Figure 5.4

PTG mediating the relationship between state hope at T1 and state hope at T2



Note. Anxiety and depression were considered as covariates

I should note here that the main objective of the thesis was to understand the relationship between post-traumatic growth (PTG) and suicidal ideation (i.e., not particularly testing the IMV model). In the previous chapter, a negative association was found between PTG and suicidal ideation, but no moderating effect of PTG was observed within the IMV model. To further understand the protective role of PTG against suicidal ideation, this chapter focused on examining its association with some other IMV's motivational risk factors based on the existing literature (Blevins, 2019), but did not include other key variables such as entrapment and suicidal ideation. The design and findings of this study are exploratory (at micro-level) and could provide a basis for future studies to expand and include other key IMV variables.

For example, if found significant, one could argue that perceiving PTG would influence the effect of these motivational moderators on entrapment, thus weakening the transition from entrapment to suicidal ideation. Therefore, future research could expand the current study and examine the longitudinal relationships between perceived PTG, burdensomeness, thwarted belongingness, hope, entrapment and suicidal ideation.

5.2. Method

I pre-registered the design, hypotheses, and data analytic plan on OSF. The URL can be accessed here:

https://osf.io/qhpd9/?view_only=b9a5783098ec4207b7a7d63043247232

However, I changed our hypotheses and adapted our data analytic plan accordingly after data collection. Initially, I had planned to examine the influence of PTG on moderators in the IMV, examining the relationship of PTG on PB, TB and hope while

controlling for baseline measures of PB, TB and hope. On reflection, I consider PTG as an active process and that the IMV can be used to explore temporal dynamics between risk and protective factors. Thus I decided to explore whether perceiving PTG reduces or increases the levels of some IMV moderators.

This longitudinal study with a revised analysis plan allowed us to test these hypotheses, albeit in a short timeframe, but within a context that reflects the temporal pathways specified in the IMV. The analyses should therefore be considered exploratory and will require further replication.

5.2.1. Design

This study employed a two-wave longitudinal design. Data were collected at wave 1 (T1) in October 2020 and 6-weeks later at wave 2 (T2) in December 2020 during national lockdowns in the COVID-19 pandemic. One hundred and seventy participants in some of the most income-deprived areas in the UK completed the T1 and T2 questionnaires.

5.2.2. Participants

Two hundred and twelve participants aged 18 or older were recruited from income-deprived areas in the UK[8] according to the Ministry of Housing, Communities, and Local Government (2019) on Prolific and were financially compensated according to Prolific payment guidelines. Included areas are Middlesbrough, Liverpool, Knowsley, Kingston upon Hull, Manchester, Blackpool, Birmingham, Burnley, Blackburn with Darwen, and Hartlepool. To recruit participants that live in these areas, I screened on

[8] These were some areas within Middlesbrough, Liverpool, Knowsley, Kingston upon Hull, Manchester, Blackpool, Birmingham, Burnley, Blackburn with Darwen, and Hartlepool.

the postcode of their current residency. Prolific does this screening automatically, with researcher parameters (*i.e., the researchers did not collect postcode information from participants*). To maximise the reliability and generalizability of the results, I employed attention check questions in our survey (Oppenheimer et al., 2009) (e.g., "Select 'I experienced this change to a very great degree' for this item", "Please select 'Very true for me' for this item"). Participants' data were excluded from analyses if they failed to follow half of the attention check questions. I also used this strategy as one of the inclusion criteria for the T2 survey to have only the participants who paid attention to the items in the T1 questionnaire. I informed participants about these questions in the information sheet.

The final sample consisted of 170 participants who completed both waves. The mean age of the sample was 37.65 (SD= 12.50, with an age range from 18 to 73). Most of the sample was female (N=91; 53.5%), and 86.5% (N=147) identified as White, 6.5% as Asian, 2.9% as Black, and 4.1% answered in the open-text box. Most of the sample were in full-time employment (N=99, 58.2%), while 27 were in part-time employment (15.9%). The remaining participants chose 'other' or 'unemployed and not seeking job' options. The mean scores of T1 PB and TB were 11.25 (6.66) and 28.41 (12.82), respectively. The mean scores of these two interpersonal risk factors are comparable to Cero et al. (2015) within a sample of psychiatric in-patients (i.e., 11.73 (11.33) for PB and 24.07 (13.61) for TB) and higher than the means Cero et al. reported for an undergraduate sample (i.e., 2.06 (4.31) for PB and 10.63 (9.40) for TB). This suggests that participants in this sample were an at-risk group with high levels of interpersonal suicide risk factors of PB and TB.

5.2.3. Power Analyses

I ran a Monte Carlo posthoc power analysis using the power estimator tool developed by Schoemann et al. (2020) because I deviated from our pre-registered data analytic plan, as justified above. These analyses were to find the power we had to observe mediation when including the covariates and with our set sample size of n = 170. The analyses showed we were sufficiently powered at 0.83 to detect the H1 mediation involving PB, but insufficiently powered at 0.25 to detect the H2 mediation involving TB and at 0.28 to detect H3 mediation involving hope.

5.2.4. Procedure and Materials

Ethical approval was obtained from the authors' School Ethics Committee prior to data collection (S1279). Participants were recruited via the UK Prolific website in exchange for financial compensation based on Prolific payment recommendations. The T1 survey was completed online via a Qualtrics survey link through Prolific. This online survey contained the information sheet, consent form (s*ee Appendix E for the study materials)*, and the T1 questionnaires (as outlined below). Participants were asked to provide their Prolific ID, which was used (i) to pay participants – it is a requirement that researchers ask for this and prolific uses this ID to ensure researchers only see anonymised data (ii) to invite them for the second wave, and (iii) if participants wish to withdraw their data from the study after participation, by emailing the researcher their Prolific ID. After six weeks, the same participants were invited to take part in the T2 Qualtrics survey via the Prolific website. At the end of both surveys, participants were presented with funny images to elicit a positive mood (Göritz, 2007), relevant UK support services, and the researchers' contact information.

Demographic information: Questions on age, gender, ethnicity, and employment status were collected.

Interpersonal Needs Questionnaire: This 15-item questionnaire assesses whether people are feeling a burden to others or experiencing a low sense of social belongingness (Van Orden et al., 2008) during the past few days. An example item from the burdensomeness (PB) sub-scale is '*These days, I think my death would be a relief to the people in my life*' and one from the belongingness (TB) sub-scale is '*These days, I feel disconnected from other people*'. Participants answered each item on a seven-point scale ranging from: (1) '*Not at all true for me*' to (7) '*very true for me'*. Cronbach's Alpha for the PB scale was .94 and for TB was .93 at T1 (and 94 and .92, respectively at T2).

State Hope Scale: This 6-item scale measures Snyder's cognitive model of hope which defines hope as "a positive motivational state that is based on an interactively derived sense of successful (a) agency (goal-directed energy), and (b) pathways (planning to meet goals)" (Snyder et al., 1996). Cronbach's Alpha for the state hope scale was .88 at T1 and .92 at T2.

Hospital Anxiety and Depression Scale (HADS): This scale was used in the T1 survey to assess symptoms of anxiety and depression (Zigmond & Snaith, 1983) on a 4- point scale (from 0 to 3) during the past week, with higher scores indicating greater symptoms of anxiety and depression. It consists of 14 questions, of which 7 correspond to the anxiety subscale, and 7 correspond to the depression subscale. Cronbach's Alphas were .85 and .82 for anxiety and depression, respectively.

Post-Traumatic Growth Inventory: This measure was used within the T2 survey because our hypotheses are about the potential beneficial value of

perceptions of PTG from adversity rather than if genuine PTG manifests over time. Participants were first asked to think about a stressful life event that had happened to them recently. They were given 15 seconds before proceeding to the next page. After that, they were presented with the 21-item PTGI measure and asked to answer questions referring to the recent stressor they thought about on the previous page. This scale assessed perceived positive changes as a result of stressful events on the following subscales: personal strength, appreciation of life, relating to others, new possibilities, and spiritual change (Tedeschi & Calhoun, 1996). Respondents answered each item on a 6-point scale, ranging from (0) '*I did not experience this change as a result of the event*' to (5) *'I experienced this change to a very great degree as a result of the event'*. An example item from the scale includes: *'I have a greater appreciation for the value of my own life'*. Cronbach's Alpha here was .94.

5.2.5. Ethical considerations

Since the participants were purposively sampled from the most deprived areas of the UK, they might experience mental health conditions during the data collection period or struggled with adverse life stressors. It should be noted that the data collection for the current study was completed during an ongoing COVID-19 pandemic. During the W1 and W2 data collection, the lockdown rules had been eased in the UK; therefore, people could socialise with their friends outside, and social and professional support was more available at the time of data collection[9].

[9] T1 data were collected in October 2020. There was a rule of six due to the COVID-19 pandemic: indoor and outdoor gatherings above six people was banned in England. T2 data were collected 6-weeks later in December 2020 after the second lockdown was ended. At the time of T2 survey, people live in the specified areas were able to meet with maximum of six others in the outdoor settings, such as parks. Shops and personal care businesses were open during the time of both data collection.

To minimise the potential unexpected negative consequences of taking part in this study, I took several steps, including an information sheet stating clearly what the nature of the study involves. Participants were explicitly informed in the information sheet that they would be required to think about a recent stressful experience that may lead to perceived growth (while completing PTGI) and answer questions related to their mental health state (e.g., depression, anxiety, feeling burden). Second, the information sheet strongly emphasised the voluntary nature of participation in this study and made it clear that participants could skip any question on the scales they did not want to answer. Third, at the end of the survey, I provided participants with a comprehensive list of support services and the researcher's email in case they wished to contact me later. In addition, the number of Samaritans was stated on each page of the survey for the people who left the survey early and did not see the other support services. Finally, I also included a mood booster task at the end of the surveys to enhance participants' moods.

5.2.6. Data Analytic Strategy

The analyses were conducted using SPSS 28 and the PROCESS macro plug-in on SPSS to test mediation (Hayes, 2012).

Data Preparation

Forty-two participants were either excluded (n = 14) or did not return to participate in wave 2 (n = 28). Participants were excluded if their ID at wave 1 and wave 2 could not be matched (n = 8) or if their completion rate was less than the *a priori* criterion of 75% of the full survey (n = 6; Wetherall et al., 2019). Item-level missing data were checked for each questionnaire, and there were no missing data issues. There were

no significant differences in the mean age between the retained sample (n = 170; *M* = 37.67, SD = 12.44) and the excluded sample (*M* = 34.92, SD = 12.19), *t*(197) = 1.066, *p*= .14. Nor were there any significant differences between the samples in gender, $\chi^2(1) = .315$, *p*= .574.

5.3. Results

5.3.1. Descriptive Statistics and Correlations

Table 5.1 reports the mean (M), standard deviation (SD), and Pearson correlations between PTG, T1 PB, T2 PB, T1 TB, T2 TB, T1 hope, T2 hope, depression and anxiety using bootstrapping set at 1000 samples, which is a robust method to deal with skewness in the data (Field, 2017). PB at T1 and T2 were significantly positively correlated with large effect sizes, indicating that higher perceptions of burden at wave 1 were also associated with higher perceptions of burden at wave 2. PTG was positively associated with PB at T1 with medium effect size and negatively associated with PB at T2 with a small effect size. PB at T1 and T2 were positively associated with depression and anxiety with large effect sizes. PTG was positively associated with hope at T1 and T2 with small effect sizes.

The effect size interpretations are based on Gignac & Szodorai (2016)'s categories of effect size (small: 0.10, medium: 0.20, large: 0.30).

Table 5.1

Means, standard deviations, and correlations coefficients between PTG, depression, anxiety, and burdensomeness

Variable	1	2	3	4	5	6	7	8	9
1. PTG	-								
2. Burden1	.226** [.088, .350]	-							
3. Burden2	-.155* [-.284, -.024]	.528** [.374, .684]	-						
4 Belong1	-.110* [-.277, .061]	.527** [.415, .643]	.528** [.420, .635]	-					
5 Belong2	-.141* [-.288, .014]	.425** [.271, .571]	.610** [.494, .717]	.832** [.772, .883]	-				
6 Hope1	.096* [-.058, .246]	-.388** [-.504, -.264]	-.442** [-.553, -.333]	-.611** [-.701, -.513]	-.479** [-.598, -.355]	-			
7 Hope2	.147* [-.013, .303]	-.235** [-.362, -.099]	-.409** [-.526, -.292]	-.394** [-.521, -.256]	-.390** [-.517, -.258]	.443** [.299, .581]	-		
8. Anx	.207** [.055, .357]	.355** [.219, .481]	.311** [.208, .425]	.449** [.312, .570]	.376** [.232, .511]	-.478** [-.601, -.313]	-.211** [-.358, -.077]	-	
9. Dep	.008 [-.153, .177]	.408** [.274, .542]	.381** [.225, .528]	.651** [.552, .738]	.514** [.396, .629]	-.657** [-.742, -.557]	-.313** [-.442, -.173]	.605** [.493, .694]	-
M	35.00	11.68	10.17	28.41	27.67	29.86	27.47	7.81	5.84
SD	22.46	6.68	6.14	12.82	13.13	8.42	9.76	4.15	3.98
Range	0-105	6-42	6-42	9-63	9-63	6-48	6-48	0-21	0-21

Note. *p<.05 **p<.001, Burden1 = Perceived burdensomeness at T1, Burden2= Perceived burdensomeness at T2, Belong = Thwarted belongingness, Hope = State hope, Anx= Anxiety, Dep= Depression. Bootstrapped confidence intervals are presented in brackets [lower CI, upper CI].

5.3.2. Mediation Analyses

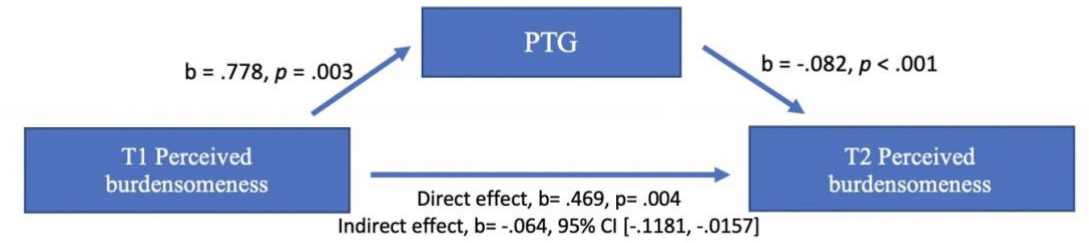
Before examining whether PTG mediated the relationship between PB at T1 and T2, I examined whether the data met the assumptions required for regression (e.g., outliers, normality and homoscedasticity). I did not identify any extreme cases that exceeded the cut-off scores when using a conservative strategy requiring cases to

exceed cut-off scores of at least 2 or more of these outlier statistics: Mahalanobis distance, Cook's distance and Leverage. Thus, no participants were excluded. I did identify violations of both the normality of the residuals and homoscedasticity assumptions. To correct these issues, I followed recommendations made by Field (2017) and used the bootstrapping procedure and reported the heteroscedasticity-consistent standard errors (HC4; Hayes & Cai, 2007) in the mediation.

I tested the H1 mediation using the PROCESS macro (Hayes, 2017; using model 4; 2000 resamples). I regressed PB at T1 (X) onto PTG (M) and PB at T2 (Y), entering anxiety and depression as covariates. As predicted, the direct effect of PB T1 on PB T2 (*Figure* 5.5) was significant and positive. The indirect pathway between PB T1 and T2 via PTG was significant (indirect effect, b = -.064, SE = .025, 95% BCa CI= [-.1181, -.0157]), therefore PTG did mediate the relationship between PB T1 and T2. As expected, the relationship between PB T1 and T2 remained significant (b = .405, *p* = .004, BCa CI = [.1298, .6799]) when PTG was entered into the regression, indicating partial mediation.

Figure 5.5

PTG mediating the relationship between T1 perceived burdensomeness and T2 perceived burdensomeness



Note. Unstandardised regression coefficient (b) values are reported. Depression and anxiety were controlled in the analysis. The indirect effect is not associated with a p value (see Hayes, 2017).

Although the power was not enough for conducting mediation analyses for thwarted belongingness and hope, I exploratory ran two analyses to test the H2 and H3. Results should be interpreted carefully due to the lack of power to conduct these mediation analyses.

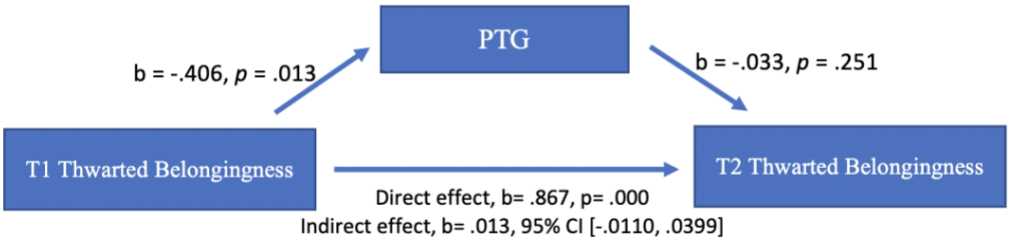
I tested the H2 mediation using the PROCESS macro (Hayes, 2017; using model 4; 2000 resamples). I regressed TB at T1 (X) onto PTG (M) and TB at T2 (Y), entering anxiety and depression as covariates. The direct effect of TB T1 on TB T2 (Figure 5.6) was significant and positive. The indirect pathway between TB T1 and T2 via PTG was not significant (indirect effect, b = .013, SE = .012, 95% BCa CI= [-.0110, .0399]), thus PTG did not mediate the relationship between thwarted belongingness T1 and T2.

Finally, I tested the H3 mediation using the PROCESS macro (Hayes, 2017; using model 4; 2000 resamples). I regressed Hope at T1 (X) onto PTG (M) and Hope at T2 (Y), entering anxiety and depression as covariates. The direct effect of Hope T1 on Hope T2 (Figure 5.7) was significant and positive. The indirect pathway between hope T1 and T2 via PTG was not significant (indirect effect, b = .030, SE = .025, 95% BCa CI=

[-.0144, .0863]), thus PTG did not mediate the relationship between hope levels at T1 and T2.

Figure 5.6

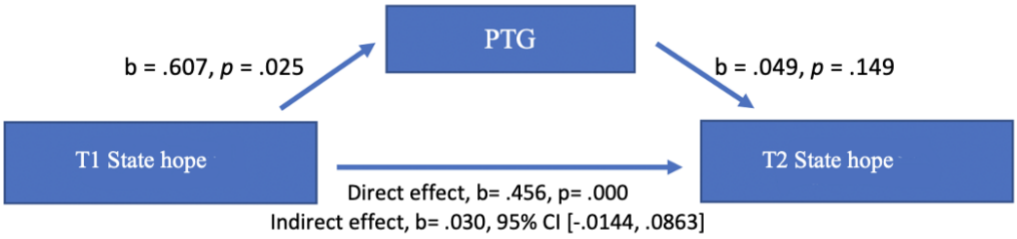
PTG mediating the relationship between T1 thwarted belongingness and T2 thwarted belongingness



Note. Unstandardised regression coefficient (b) values are reported. Depression and anxiety were controlled in the analysis. The indirect effect is not associated with a p value (see Hayes, 2017).

Figure 5.7

PTG mediating the relationship between T1 hope and T2 hope



Note. Unstandardised regression coefficient (b) values are reported. Depression and anxiety were controlled in the analysis. The indirect effect is not associated with a p value (see Hayes, 2017).

5.4. Discussion

The current study aimed to examine whether perceiving posttraumatic growth as a result of recent adversity during the COVID-19 pandemic influences the levels of

three motivational moderators in the IMV, namely perceived burdensomeness, thwarted belongingness and hope, across six weeks. It should be noted that I explored these relationships within a group of individuals who live in economically and socially deprived areas during an ongoing COVID-19 pandemic and lockdowns. Therefore, they were more likely to experience adverse life circumstances and at greater risk for suicide (Griffiths et al., 2014)

Given that the analyses for TB and hope were underpowered, I only interpret the results for PB here. However, with a sufficiently powered sample, the influence of PTG on TB and hope levels over time should be explored to examine whether reports of PTG influence changes in these IMV moderators.

Posttraumatic growth and perceived burdensomeness

Mediation analysis showed that perceiving posttraumatic growth from recent stressors partially mediated the levels of negative thoughts related to burdensomeness (e.g., I am a burden to others) over six weeks from T1 to T2.

According to the IMV (O'Connor & Kirtley, 2018), burdensomeness strengthens the relationship between entrapment and suicidal ideation as it acts as a motivational moderator. As expected, our analysis showed that burdensomeness at T1 was positively associated with burdensomeness at T2, however, PTG attenuated this positive association over time. The results of the present study supported the past evidence that indicated a negative association between PTG and burdensomeness (Blevins, 2019) and expanded it as I looked at these relationships longitudinally over six weeks. These findings also build on the previous chapter's findings, where I found a negative association between PTG and suicidal ideation but was not able to provide

an explanation for the underlying mechanism of this relationship. These results complement the previous chapter's findings and suggest that perceived PTG may not influence defeat-entrapment or entrapment-suicidal ideation relationships, but its protective influence might operate through other moderators, such as the motivational moderator of the IMV: perceived burdensomeness.

Furthermore, the mediation analysis revealed a positive association between T1 burdensomeness and PTG that was measured at T2. This finding is consistent with previous research, which showed a positive relationship between perceived PTG and distress (Shakespeare-Finch & Lurie-Beck, 2014). This suggests that individuals can use perceiving posttraumatic growth as a coping strategy when trying to manage high levels of distress from challenging experiences.

A potential explanation for the overall mediation analysis results could be summarised as follow: When individuals experience adversity and start to feel a burden to others, they try to cope with these negative feelings through identifying benefits and reminding themselves of these benefits (posttraumatic growth) to manage emotional distress. Since discovering benefits from adversity requires cognitive restructuring of the event, individuals may comfort themselves in challenging times by reframing their negative thoughts and thinking about the benefits (i.e., Tennen & Affleck, 2002; Taylor, 1983) instead of feeling like a burden. For example, learning about one's strength in the face of adversity as well as gaining insight into the meaning of life and the importance of relationships may buffer against negative feelings, particularly feelings concerning being a valuable member of society. Such perceived benefits thus may assist individuals in having a greater self-value.

5.4.1. Implications and Future Directions

Although this chapter represents exploratory findings, when supported by future research and different designs, these results could have clinical implications for suicide prevention efforts.

I should note here that burdensomeness cognitions have been found as a robust predictor of suicidal thoughts and behaviours while controlling for other risk factors, such as depression and hopelessness (Van Orden et al., 2006; Hill & Pettit, 2014; Hains et al., 2019). However, suicide models suggest that PB is a modifiable risk factor (Joiner, 2005; O'Connor & Kirtley, 2018) and, therefore, not stable and will vary over short time periods (Kleiman et al., 2017). If perceiving PTG from adverse experiences exerts a robust protective function on reducing burdensomeness, then it might inform psychosocial suicide interventions to reduce the risk by treating burdensomeness-related cognitions.

Van Orden et al. (2006) emphasised that these burdensomeness thoughts can be linked to cognitive distortion and include 'labelling' oneself without adequate facts to back it up. However, if one can cognitively reframe the adverse experiences and identify benefits/use these perceived benefits in times of difficulties, then feelings of burdensomeness could be lessened by making the 'label' less stable. Thus, such negative thoughts could be restructured and interpreted differently, such as 'I have been through difficult times, but I now have stronger relationships with others, and I actually contribute to the well-being of them'.

Once confirmed with further research, it may be an essential target for therapists to integrate some aspects of posttraumatic growth into the existing therapies (e.g.,

cognitive-behavioural therapy or emotion regulation psychotherapy; see Roepke et al., 2018), and these therapies have been found to be effective in decreasing the risk for self-harm repetition over time (Witt et al., 2021), which is a known risk factor for suicide (Guan et al., 2012; Hawton et al., 2003).

5.4.2. Limitations

Despite the promising findings within this chapter, the present study has some limitations that should be noted here. First, our analyses for thwarted belongingness and hope were underpowered and should be examined in a sufficiently powered sample. Secondly, the participant recruitment focused on individuals from economically deprived areas, thus, limited to generalising the results to other settings. Future studies could examine these relationships within the community samples and explore the relationship between PTG and PB. Furthermore, this study was conducted during an ongoing COVID-19 pandemic, therefore, it should be replicated in a non-pandemic climate where there are no national lockdowns. Finally, although I examined longitudinal and temporal relationships between PTG and burdensomeness, this does not reflect a causal relationship between the constructs. As emphasised by Rogers and colleagues (2017), experimental designs could be a helpful avenue in investigating how perceptions of burdensomeness might be influenced following emotion inductions. For example, inducing positive emotions about the negative experience to promote PTG might provide a further understanding of the impact of PTG on the reports of burdensomeness and the causal link between these variables. Thus, utilising an experimental design would expand the current longitudinal findings and help to clarify whether increases in the

reports of PTG following relevant experimental manipulation (i.e., positive reappraisal of the past event) would decrease burdensomeness thoughts.

Despite these limitations, this study revealed important results regarding the potential protective influence of PTG against suicidal thoughts in a group of participants living in some of the most income-deprived areas and at greater risk of suicide (Griffiths et al., 2014). Thus, if future research does replicate these findings, there could be significant advancements in researchers' understanding of suicide resiliency that could inform suicide interventions and prevention efforts.

5.5. Conclusion of the chapter

Given that previous research indicated negative associations between PTG and perceived burdensomeness and thwarted belongingness (Blevins, 2019), the current chapter of the thesis examined whether the protective function of perceived PTG on suicidal ideation is indirect through influencing perceived burdensomeness; an interpersonal risk factor for suicide act as a motivational moderator in the IMV. Mediation analysis revealed that perceived PTG partially mediated the relationship between levels of burdensomeness across six weeks from T1 to T2, indicating its potential protective role against suicide risk through influencing burdensomeness cognitions. These results may have important clinical implications, as discussed above; however, further research should examine the relationship between these two through an experimental design to address the current study's limitation concerning causality between these two constructs. The next chapter addresses this limitation where I examined the impact of positive reappraisals about a past adverse

experience on the changes in burdensomeness and thwarted belongingness levels from pre to post-measure.

Chapter 6 Experimental examination of positive reappraisal manipulation on perceived burdensomeness and thwarted belongingness

6.1. Chapter Introduction

In the previous thesis chapter, I investigated whether perceptions of PTG mediated the changes in the interpersonal suicide risk factors in the IMV over six weeks. Results showed that perceiving posttraumatic growth from a recent adverse experience mediated the relationships between perceived burdensomeness (PB) scores across six weeks, suggesting that identifying benefits from recent adversity may have a protective function against suicide risk through influencing burdensomeness cognitions. In the previous chapter, I discussed potential explanations of these findings and practical implications that may inform the IMV and suicide intervention efforts. However, it is essential to examine further the relationship between PTG and interpersonal suicide risk factors within an experimental setting to understand the function of PTG in the IMV and confirm previous study findings.

The current chapter investigates the relationship between PTG, PB and TB by manipulating participants' perceptions of a past stressful life event. I am particularly interested in the influence that positive reappraisals (i.e., positively reframing a past stressful experience and finding benefits from it) have on the perceptions of burdensomeness and thwarted belongingness. The previous chapter examined these relationships with a longitudinal design across six weeks, whereas this study will investigate whether positive reappraisal manipulation to induce PTG with an

experimental design can immediately change the perceptions of burdensomeness and thwarted belongingness.

Perceiving posttraumatic growth through reappraisals

Cognitive reappraisal

Cognitive reappraisal has been defined as construing and reframing an emotion-eliciting situation in a way that alters its emotional impact (Gross & John, 2003). It is one of the fundamental mechanisms for reporting posttraumatic growth (e.g., Nolen-Hoeksema & Davis, 2002). For example, in an experimental study, Orejuela-Davila and colleagues (2019) examined the role of two emotion regulation strategies, cognitive reappraisal and distraction, on PTG within a sample of 109 undergraduate students with a traumatic life experience. Participants completed the PTGI based on the traumatic experience within the past six months and took part in the emotion regulation choice (ERC) task (Sheppes et al., 2014). The task involves participants choosing to implement distraction (i.e., the disengagement of attention from negative emotions) or reappraisal (i.e., interpreting the meaning of emotional content of the stimuli) in response to 50 negative pictures (image intensity varied across low, moderate and high). Participants were first presented with the negative image, followed by a choice screen where they indicated which strategy (e.g., distract or reappraise) they would like to use to decrease the negative effect caused by the image. Results showed that when the intensity of negative stimuli increased, participants selected to use reappraisal more frequently, and the increased use of this strategy resulted in increased perceptions of PTG. This evidence indicates that

the reappraisal emotion regulation strategy is likely to support the reports of PTG when the negative valence of the stimuli increases.

Provided that cognitive reappraisal is a proactive emotion regulation strategy, individuals with stressful experiences can cognitively reframe their experiences, change their perspectives of the stressful event and reduce negative emotions related to the event by seeing the experience as an opportunity to grow, learn about themselves and the world, which may, in turn, facilitate PTG.

Positive reappraisal

Positive reappraisal is another aspect of cognitive reappraisal and refers to reframing a situation to see it in a *positive light* (Folkman & Moskowitz, 2000). It is a cognitive emotion regulation strategy that refers to a re-engagement with the stressor event (Garland et al., 2009) and attempting to construe the event more *positively*, which may result in identifying benefits, thus, posttraumatic growth. Indeed, a meta-analysis of 103 studies (Prati & Pietrantoni, 2009) examined the role of optimism, social support and coping strategies in contributing to posttraumatic growth and found that positive reappraisal produced the largest effect size compared to social support, optimism and spirituality, which had moderate effect sizes. A recent systematic review of 281 studies examined the factors that foster the emergence of posttraumatic growth (Henson et al., 2021). Some examples of the included studies' samples were firefighters, cancer survivors, refugees, veterans, homeless people, and natural disaster survivors living in a variety of countries such as the US, Australia, Japan, Poland, Germany, Portugal, and France (Henson et al., 2021). Their findings

supported the positive association between positive reappraisal coping and posttraumatic growth. In addition, they suggested that some factors might indirectly affect PTG, such as optimism and social support, while positive coping strategies, such as positive reappraisal, promote and influence PTG more directly.

Furthermore, experimental studies of positive reappraisal suggest that it is associated with subjective wellbeing. For example, Shiota and Levenson (2012) experimentally induced positive reappraisal[10] while participants watched negative video clips. They found that positive reappraisal tended to increase the ratio of positive to negative affect, leading to a more positive overall valence. This suggests that positive reappraisals might lead to positive emotion in the face of a distressing event, improving psychological wellbeing. Witvliet and colleagues (2010) examined the effect of benefit-focused reappraisals on subjective feelings within a sample of individuals with a past interpersonal offence experience. They asked participants to think about the adverse experience and reframe it as an opportunity to become stronger and learn[11]. They then measured subjective emotions, such as emotional valence, arousal, joy, and gratitude. Their findings showed that benefit-focused reappraisal manipulation increased positive valence, gratitude, and joy ratings.

[10] They asked participants to 'think about positive aspects' of what they are seeing.

[11] Their (Witvliet et al., 2010) instruction was: 'For the next two minutes, try to think of your offence as an opportunity to grow, learn, or become stronger. Think of benefits you may have gained from your experience such as self-understanding, insight, or improvement in a relationship. During your imagery, actively focus on the thoughts, feelings, and physical responses you have as you think about positive ways you benefited from your experience.'

These studies suggest that positively reframing a negative situation and focusing on the benefits may stimulate a positive emotional shift and decrease the negative effect of the adverse experience. However, the impact of the positive reappraisals has not been examined within the context of IMV and suicidal thoughts. Given the mental wellbeing benefits of cognitive and positive reappraisal (e.g., King & dela Rosa, 2019), individuals may perceive growth as a result of positive appraisal induction, thus managing negative emotions and cognitions (e.g., burdensomeness, lack of connectedness) caused by the event by positively reframing it. This may then lead to reducing suicide risk through influencing the burdensomeness-entrapment or thwarted belongingness-entrapment pathways in the IMV. Indeed, the previous chapter examined the PTG-interpersonal risk factors correlations with a longitudinal design and found that perceiving PTG reduced burdensomeness levels across six weeks. In the current study, I will examine the relationships through an experimental study where I will induce PTG-related thought processes when thinking about past adversity. Given the time and resources available for this PhD work, this initial work focuses on the immediate impact of positive reappraisal on the changes in interpersonal risk factors, PB and TB.

An exploratory examination of the influence of positive reappraisal on positive mental health and hope

In addition to the interpersonal relationship variables, I will examine the effect of positive reappraisal manipulation on state hope and positive mental health scores as exploratory analyses. As discussed in the previous chapter, it is possible that perceptions of PTG might have an influence on individuals' state hope levels across

time. However, I could not examine this suggested relationship in the previous longitudinal mediation study because of the lack of power. Therefore, in the current experimental study, I will examine whether the activation of PTG-related perceptions through positive reappraisals results in higher state hope levels in the experimental group after the experimental positive reappraisal manipulation.

Positive mental health refers to social, emotional, and psychological wellbeing (Keyes et al., 2002) and is measured by the Positive Mental Health Scale developed by Lukat et al. (2016). The main reason for including this construct within my exploratory analyses was to investigate whether perceived PTG through positive appraisals impacts positive mental health, which was recently found as a significant motivational moderator in the IMV by Teismann and Brailovskaia (2020). These researchers found a significant moderating effect of positive mental health on the entrapment and suicidal ideation relationship within an online community sample, suggesting a protective function: individuals with a low level of positive mental health are more likely to suffer from suicidal thoughts when they are experiencing entrapment appraisals compared to the individuals who have high positive mental health scores. Furthermore, given that PTG has been linked to mental wellbeing previously (e.g., Helgeson et al., 2006; Husson et al., 2017), I wanted to activate PTG-related thought processes in the experimental group through positive reappraisals about the past adverse experience and examine whether this manipulation has any influence on positive mental health, a significant motivational moderator within the IMV. For example, it could be argued that posttraumatic growth can promote positive mental health through perceptions of psychological resilience, support from

others, thus, helping individuals develop greater coping skills and providing them new perspectives for managing difficult life stressors.

6.1.1. The aim of the current study

This study has an experimental design with experimental and control groups. Participants in the experimental group will be asked to utilise positive reappraisals about a past adverse experience in order to activate PTG-related perceptions, while control group participants will be asked to describe the event.

The primary aim is to examine the associations between positive reappraisal manipulation and two motivational moderators in the IMV (i.e., moderating the pathway from entrapment to suicidal ideation): perceived burdensomeness and thwarted belongingness. Since I found that PTG mediated the relationships in PB levels across six weeks in the previous chapter, I hypothesise that being in the experimental group will be related to reporting less burdensomeness than the control group. Although there was no significant association between PTG and decreased TB in the previous chapter, this might have resulted from the lack of power, as discussed previously. Following Blevins' (2019) findings concerning the negative association between PTG and TB, I predict that inducing PTG through a positive reappraisal task will be associated with decreases in TB levels.

Similarly, given that I had not sufficient power in the previous longitudinal study to examine the influence of PTG on state hope levels across six weeks, I will explore the relationship between PTG and state hope within the current experimental study. As

described above, I will examine the effect of positive reappraisal manipulation on positive mental health scores as another exploratory analysis.

I consider the potential impact of the baseline levels of the outcome variables when conducting the analyses since participants' baseline levels of PB, TB, state hope and positive mental health scores might differ across groups and could influence the results. Therefore, I will add the pre-measures of the outcome variables as covariates to control the influence of the baseline levels. Depression will be controlled within all the analyses in parallel with previous suicide research (Wetherall et al., 2019).

All measures (both pre and post) will be placed within one online survey, including the experimental/control group task between the pre and post-measures. In the previous study, I examined the longitudinal influence of PTG on the outcomes across six weeks. In the current experimental study, I will explore whether experimentally inducing PTG has an immediate effect on the outcome variables.

I should note here that the current study does not measure entrapment and suicidal ideation, but instead focuses on understanding whether post-traumatic growth (PTG) is associated with motivational moderators. The study explores the association between four moderators in IMV and positive reappraisal intervention (to promote PTG), due to previous literature linking PTG with burdensomeness, thwarted belongingness, hope, and positive mental health. Future studies can consider including entrapment and suicidal ideation once the influence of PTG on motivational risk factors is better understood.

6.1.2. Hypotheses of the current study

6.1.2.1. Experimental manipulation check

As for the manipulation check analyses, I predict that there will be a significant difference in the reports of the current state of posttraumatic growth, with the experimental group reporting higher levels of current-standing posttraumatic growth as a result of positive reappraisal manipulation.

In addition, I predict that the control group will report increases in negative affect and decreases in positive affect from pre-test to post-test, while for the experimental group, the negative and positive affect will not be affected due to the positive reappraisal manipulation.

6.1.2.2. Main hypothesis[12]

H1: Being in the positive reappraisal group (vs control group) will be negatively associated with the perceived burdensomeness scores when controlling for depression and pre-measures of the burdensomeness scores.

H2: Being in the positive reappraisal group (vs control group) will be negatively associated with the thwarted belongingness scores when controlling for depression and pre-measures of the thwarted belongingness scores.

H3 (exploratory): Being in the positive reappraisal group (vs control group) will be positively associated with the state hope scores when controlling for depression and pre-measures of the state hope scores.

[12] Since I used bootstrapped regression analyses rather than ANCOVA due to the assumption violations, I used regression-related terminology while writing up the hypotheses, such as associations instead of group differences.

H4 (exploratory): Being in the positive reappraisal group (vs control group) will be positively associated with the positive mental health scores when controlling for depression and pre-measures of the positive mental health scores.

6.2. Method

This study was pre-registered on the Open Science Framework prior to data collection to follow a transparent scientific approach (the registration DOI is: 10.17605/OSF.IO/GRK28). The method, design and research questions remained as stated in the pre-registration. However, I deviated from the pre-registration concerning the main analyses since the data violated several ANCOVA assumptions. To improve the analysis and aid the interpretation of the results, I changed the analysis from ANCOVA to regression to use the bootstrapping technique, which is robust to assumption violations (Field, 2017), such as non-normal distribution of residuals[13].

6.2.1. Design

This experimental study has a mixed design with repeated measures of the outcomes in two groups (control and experiment). Participants were randomly assigned one of the two groups (positive reappraisal vs control) using Qualtrics' 'randomiser' feature. Participants completed one online questionnaire with the pre-measures, followed by

[13] Also, I did not run pre-registered regression analysis for positive future thinking; because the task I used within the survey (MacLeod et al., 1998, 2005) had not been used in an online anonymous setting before as it originally includes verbal interaction between the researcher and the participant (e.g., participants have verbally presented their responses and asked to rate each one on how likely they think it is to happen in the future).

the experimental phase, with the positive reappraisal or control group tasks (*detailed below*), and the post-measurement of the outcome variables.

6.2.2. Participants

6.2.2.1. Participant Recruitment

Due to the changes in the data analysis, I conducted a post hoc power analysis to examine whether the power is sufficient for the current regression analyses (*see pre-registration for the a-priori power analysis*). Post hoc power analysis was conducted using G*Power 2 (Faul et al., 2014), with a medium effect size of .15, an alpha of .01, a sample size of 231 and a total of 3 predictors (grouping variable, pre-test measure of the outcome variable and depression). As a result, statistical power achieved an appropriate level of .99.

In total, I recruited 267 participants who are 18 or older via (i) the Research Participation Scheme (RPS) of the University of Nottingham, School of Psychology; (ii) opportunity sampling, with recruitment posters and social media (e.g., Facebook groups); and (iii) snowballing, whereby participants were asked to pass on our contact information to friends they think may be interested and eligible to participate in the study. Some of the data were excluded, as explained in the data analytical strategy section. The mean age of the final sample (N=231) was 19.18 (SD= 1.95). 84.8% of the sample was female (N=196). 78.4% (N=181) of the sample were identified as White, 10.8% Asian, 3.9% Black, and 6.9% Other. Student participants gathered through the University of Nottingham Research Scheme programme were given one course credit point if they completed the study. Other participants (who

were not recruited through RPS) were entered into a prize draw to win one of the five Amazon vouchers (£10 each).

6.2.3. Materials

Participants were presented with the information sheet, followed by a consent form (*see Appendix F*). Also, I asked participants to create a unique code if they wish to withdraw their data from the study after participation by emailing the researcher (e.g., participants created a code by giving their month of birth, house, or flat number, and their current age). They then completed the questionnaire within the same Qualtrics survey. Participants were assigned to the groups randomly, using the random allocation feature of Qualtrics. The measures used in the questionnaire are outlined below.

Demographic Questions. I collected demographic information, including age and gender.

Patient Health Questionnaire (PHQ-8). This scale (Kroenke et al., 2001) measures the severity of depression on a 4-point scale ranging from '*not at all*' to '*nearly every day*'. An example item from the scale is: '*Feeling bad about yourself, or that you are a failure, or have let yourself or your family down*'. Cronbach's Alpha for the scale was .88.

Current Standing Post-Traumatic Growth Inventory (C-PTGI). This scale assesses individuals' current-standing posttraumatic growth experience regardless of past traumatic experiences (Frazier et al., 2009). Participants were asked to reflect

on their *current* feelings (rather than reflecting on past adversity) while answering each statement on a six-point scale ranging from (0) '*not at all*' to (5) '*very great degree'*. For example, retrospective measure of PTG (i.e., PTGI) has an item for 'changed priorities' domain: '*I changed my priorities about what is important in life'* for which participants are asked to think about past adverse experiences and answer this item referring back to that event. However, C-PTGI does not ask participants to think about past adversity, instead it asks participants their current thoughts about the items, such as '*I know my priorities about what is important in life'*. I used this scale as a manipulation check to examine if C-PTGI scores are higher after positive reappraisal manipulation in the experimental group. Since I examined the immediate impact of the positive reappraisal induction, using the current standing version of PTGI fit better considering the pre-post study design. Cronbach's Alpha for this scale was .91.

Interpersonal Needs Questionnaire. This 15-item questionnaire assesses whether people have feelings of a burden on the people and failed belongingness during the past few days (Van Orden et al., 2012). An example item from the perceived burdensomeness sub-scale is '*These days, I think my death would be a relief to the people in my life*' and from the thwarted belongingness sub-scale is '*These days, I feel disconnected from other people*'. Participants answered each item on a seven-point scale ranging from: (1) '*Not at all true for me*' to (7) '*very true for me'*. Cronbach's Alpha for the PB scale was .93 and for TB was .90 at pre-measure. At post-measure, they were .94 and .89, respectively.

State Hope Scale. This 6-item scale measures Snyder et al.'s cognitive model of hope (1996), which defines hope as "a positive motivational state that is based on an interactively derived sense of successful (a) agency (goal-directed energy), and (b) pathways (planning to meet goals)" (Snyder et al., 1996). Cronbach's Alpha for the state hope scale was .85 at the pre-test and .90 at the post-test).

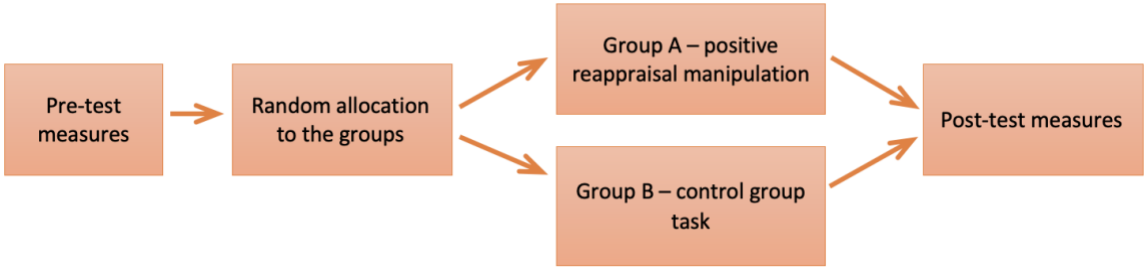
Positive Mental Health Scale. This 9-item unidimensional scale assesses emotional, psychological and social aspects of wellbeing (Lukat et al. 2016). Participants respond to statements such as '*I am often carefree and in good spirits', 'I am in good physical and emotional condition*' on a 4-point Likert scale ranging from (0) '*do not agree'* to (3) '*agree*'. Cronbach's alphas at pre and post-measures were .89 and .92, respectively.

The Positive and Negative Affect Scale (PANAS). This five-point Likert scale consists of ten positive and then negative words that reflect different emotions, such as interested, afraid, jittery, and irritable (Watson et al., 1988). This scale was placed before and after the experimental/control group task, where all participants indicated how they felt before and after the tasks, with higher scores indicating greater negative or positive affect. I used this scale as a manipulation check to examine whether participants' positive and negative affect scores differed across groups as a result of the experimental/control tasks. Cronbach's alphas for positive and negative affect were .90 and .91 at the pre-measure, respectively. They were .92 and .92 at the post-measure, respectively.

6.2.4. Procedure

Ethical approval was obtained from the authors' School Ethics Committee prior to data collection (S1250). Participants completed one online questionnaire with three blocks: 1) pre-test measures, 2) either experimental or control tasks and 3) post-test measures (*See Figure* 6.1 *The design of the study for the visualisation of the design and Table* 6.1 *for the pre and post measures of the study*). Since all three blocks were completed within one single survey, participants were presented with the experimental phase right after the pre-measure questions. Similarly, participants were presented with the post-measure questions right after the experimental/control group tasks. In the end, all participants were presented with a debrief sheet and the details of support services. As a positive mood induction, all participants were presented with short cartoons based on evidence that cartoons are particularly effective in eliciting a positive mood (Goritz, 2007).

Figure 6.1
The design of the study



Note. Participants completed these stages within one survey.

Table 6.1

Pre and post measures of the study

Pre-test measures	**Post-test measures**
Demographic Form	Current Standing - Post-Traumatic Growth Inventory
PHQ-8	Interpersonal Needs Questionnaire
Interpersonal needs questionnaire	State hope scale
State hope scale	Positive mental health scale
Positive mental health scale	
Pre-PANAS	Post-PANAS

Note. Participants completed these three blocks within one survey.

6.2.4.1. Positive reappraisal instructions for the participants in the experiment group (Adapted from Grisham et al., 2011; Troy et al., 2010):

Please give yourself enough time to think about a stressful life event you have experienced in the past, where you felt powerless to change things or aspects of yourself. To help keep your identity private, please do not share the names of people (including yourself) involved or any places or locations of where it happened.

Please briefly explain the situation below.

You just thought about a stressful life event. Even though a situation may be painful in the moment, in the long run, it might sometimes make us reflect on things about ourselves and our experiences that we find helpful in the future.

Now, we would like you to think about the stressful experience again, and this time, try to reframe the event by adopting a perspective that enables you to extract the positive aspects from the situation. The positive aspects could be lessons you have learnt that might help you in the future if the same situation was to arise, or it could be a positive change in how you view yourself, others, and situations from this point forward. For example, you might feel grateful or appreciative of certain aspects of your life as a result of overcoming this stressful experience.

In other words, try to think about the situation in a more positive light. Examine what you have learnt and think about any benefits you may have gained from your experience, such as self-understanding, insight, improvement in a relationship, or greater appreciation of life.

6.2.4.2. Control Group Instructions:

Rather than presenting a mundane control group task, such as asking about future plans, I asked control group participants to describe an adverse event that happened in the past. The main reason for this control group task choice is that I wanted to activate experimental group participants' PTG-related thought processes when thinking about an adverse event compared to the control condition where participants wrote solely about the facts of their adverse experience. Thus, I expected to examine the influence of perceptions of PTG resulting from positive reappraisals on suicide risk and protective factors when all participants were thinking about a negative experience and when such cognitive reappraisals are not activated in the control group participants.

The control task instructions are stated below:

Please give yourself enough time to think about a stressful life event you have experienced in the past, where you felt powerless to change things or aspects of yourself.

You just thought about a stressful life event. Now, we would like you to describe the event. Please tell us what happened, when it happened, and why this situation made you feel powerless. To help keep your identity private, please do not share the names of people (including yourself) involved or any places or locations of where it happened.

6.2.5. Data Analytical Strategy

All analyses were conducted using SPSS 28.

6.2.5.1. Data preparation and handling missing data

I followed a previously published paper's guide for missing data (Wetherall et al., 2019) and excluded one's data if one did not complete at least %75 of each scale (*N*=36). Thirty-five participants did not answer any questions within the survey, indicating they had started the survey and closed their windows without answering any survey questions. One participant did not answer any questions in the post-INQ questionnaire. In total, I excluded 36 participants' data from the dataset based on Wetherall et al.'s guide (2019), resulting in a sample of 231 participants. There was a significant difference in age ($t(241) = 7.754$, $p < .000$) between the excluded data (N=36) and retained data (N=231). The mean age for excluded participants (M= 25.20) was higher than the included participants' mean age (M= 19.18), suggesting

that student participants are more likely to complete the survey than community participants. There was not any difference in gender ($\chi^2(3) = .156$, $p = .692$) between the excluded and included participants. After excluding these participants' data, there were not any other item-level missing data. I then examined potential outliers in the data by calculating Mahalanobis and Cook's distance and Leverage values, which resulted in not excluding any data.

6.2.5.2. Statistical Strategy

Pre-registered manipulation check. Firstly, I conducted a two-way mixed ANOVA to examine the group*time interaction to see the changes in the pre and post-PANAS scores across groups (i.e., the effectiveness of positive reappraisal manipulation). I then assessed whether inducing positive reappraisal resulted in higher reports of PTG by looking at the differences in the current standing PTG mean scores between groups, using independent samples t-test.

Pre-registered correlation analyses: Secondly, I performed correlation analyses to examine the relationships between the grouping variable (experimental vs control), current state of PTG and the outcome variables: PB, TB, state hope and positive mental health.

Regression analyses: Deviating from the pre-registration, I conducted regression analyses with the grouping variable (control vs experimental) as the predictor and post-measures of PB, TB, state hope and positive mental health as the outcome variables. I examined the relationships between the predictor variable and the outcome variables through regression analyses with a bootstrapping method which

is a robust method to handle assumption violations by resampling and drawing large numbers of smaller samples within the dataset (Field, 2017). I included pre-measures of the outcome variables as covariates in each regression model to control for their baseline influence on the post-measure. Depression scores were used as a covariate variable in all analyses in parallel with other suicide research (Wetherall et al., 2019).

Through four separate multiple regression analyses, I tested whether inducing positive reappraisal to activate PTG-related beliefs about past adversity is associated with burdensomeness, thwarted belongingness, state hope and positive mental health. I dummy coded the grouping variable by recoding the control group as '0' and the experimental group as '1' to examine the predictive function of this categorical variable. Since I performed multiple regression analyses, I used a Bonferroni adjusted alpha level of .01 while interpreting the results to reduce the risk of increasing type 1 error.

i. Dependent/outcome variable: Perceived burdensomeness scores at post-test
   Independent/predictor variable: Grouping variable (experimental vs control)
   Covariates: Perceived burdensomeness scores at pre-test and depression
ii. Dependent/outcome variable: Thwarted belongingness scores at post-test
   Independent/predictor variable: Grouping variable (experimental vs control)
   Covariates: Thwarted belongingness scores at pre-test and depression
iii. Dependent/outcome variable: State hope scores at post-test
   Independent/predictor variable: Grouping variable (experimental vs control)
   Covariates: State hope scores at pre-test and depression
iv. Dependent/outcome variable: Positive mental health scores at post-test

Independent/predictor variable: Grouping variable (experimental vs control)

Covariates: Positive mental health scores at pre-test and depression

6.3. Results

There were no significant differences between groups in terms of participants' ages ($t(226)= 1.129$, $p= .130$) and gender ($\chi^2(3) = 2.064$, $p = .559$). Depression scores were also not significantly different across groups ($t(229)= .138$, $p= .445$).

6.3.1. Positive reappraisal manipulation effectiveness

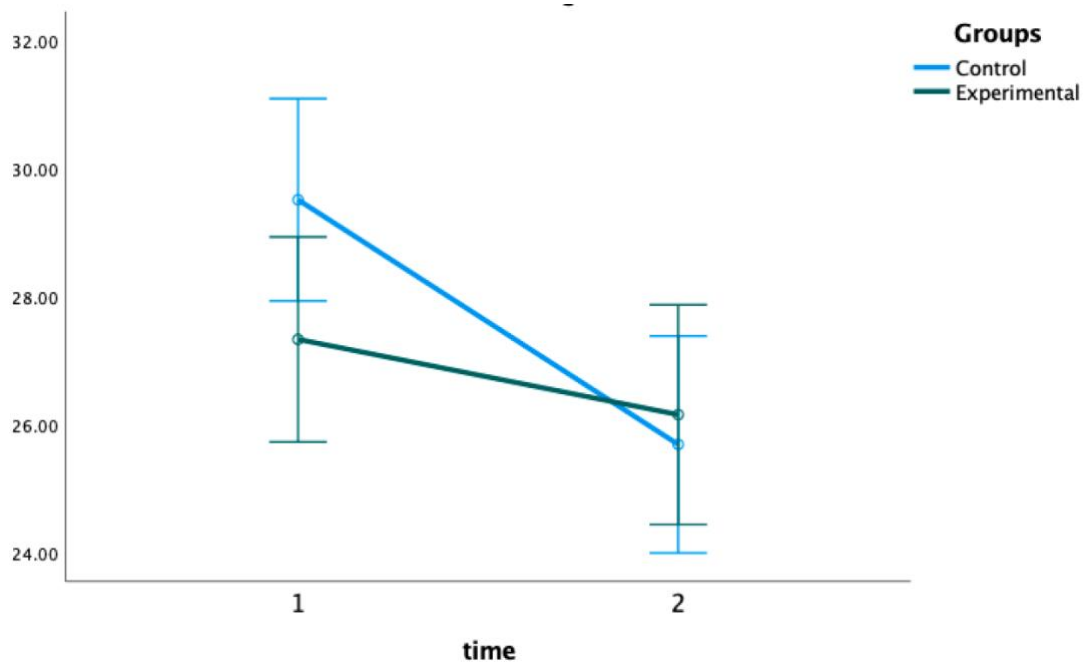
I used the Positive and Negative Affect Scale (PANAS) before and after the experimental phase to examine positive and negative affect changes as an experimental manipulation check. Differences between group changes over time (i.e., Group × Time) regarding positive and negative affect scores were tested through a mixed ANOVA where time was the within-subject variable, and the group was the between-groups factor. I was particularly interested in the interaction between time and group to examine if the positive reappraisal manipulation was effective and when its effect was significant (e.g., pairwise comparisons).

Mixed ANOVA resulted in a significant interaction between time and group for the positive effect ($F(1, 229) = 11.371$, $p< .001$). Pairwise comparisons showed that positive affect significantly decreased for the control group (pre_M= 29.504; post_M= 25.684; p< .001), whereas it did remain almost the same for the experimental group (pre_M= 27.325; post_M= 26.149; p= .05). This indicates stability in a positive mood when participants were told to use positive reappraisals about a past adverse experience when thinking about it. However, control group

participants' positive mood decreased when they were asked to describe the negative experience (*See Figure* 6.2 *below*).

Figure 6.2

Positive affect scores before and after the experimental/control group tasks across groups

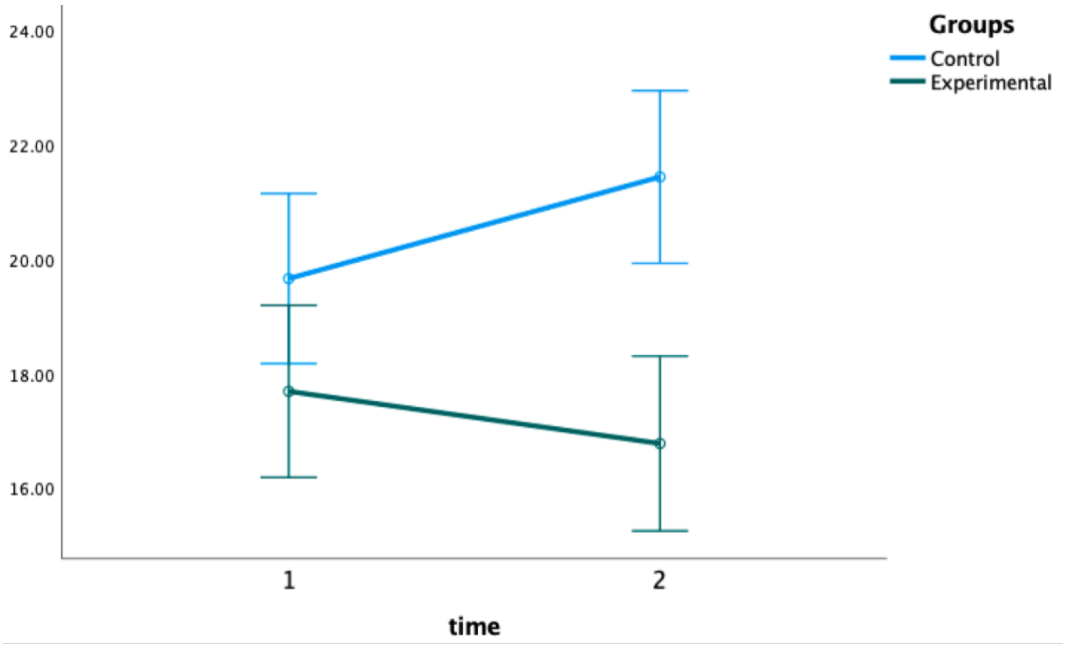


Note. Error bars were reported based on 95% confidence intervals. Positive affect score is the dependent variable.

There was also a significant interaction between time and group in terms of negative affect scores (F(1, 229) = 14.980, p< .001). Pairwise comparisons showed that negative affect significantly increased for the control group (pre_M= 19.667; post_M= 21.444; p<.001), whereas it did not significantly change for the experimental group (pre_M= 17.693; post_M= 16.781; p= .07). This indicates that participants in the experimental group preserves a positive mood when they think about past adversity and positively reappraise it, whereas control group participants' mood decreased when they were asked to describe the event without a positive reappraisal manipulation (*See Figure* 6.3 *below*).

Figure 6.3

Negative affect scores before and after the experimental/control group tasks across groups



Note. Error bars were reported based on 95% confidence intervals. Negative affect score is the dependent variable.

In addition, to examine if the positive reappraisal manipulation induced higher PTG in the experimental group, I compared the means of current-standing PTG scores across groups with an independent samples t-test. However, they were not significantly different between the experimental and control groups (t(229) =.630, p= .53) (*See Table 6.2 for the current standing PTG means and SDs*).

Table 6.2
Means (standard deviations) of the variables at post-test across groups

Variables	Control group (N=117)	Experimental group (N=114)
Current state of PTG	71.33 (15.12)	69.95 (15.20)
Burdensomeness	10.27 (6.35)	9.39 (6.41)
Thwarted belongingness	22.71 (9.99)	23.12 (11.27)
Hope	32.12 (8.09)	32.16 (8.06)
Positive mental health	28.81 (5.34)	27.50 (5.90)
Depression	8.57 (5.20)	8.44 (5.78)

6.3.2. Correlations

A point-biserial correlation with bootstrapping technique (set as 1000) was conducted to examine the relationship between grouping variable, post measures and positive and negative affect differences. The correlations between the group and the outcome measures were not significant (*See Table 6.3 below*, *p*s>.05). There was a negative correlation between the group and negative affect difference with a medium effect size (r = -.248); and a positive correlation between the group and positive affect (r = .217) with a medium effect size. This suggested that when participants were told to use positive reappraisal when reflecting on the past adverse experience, their 1) negative affect levels from pre to post will be less likely to increase, and 2) positive affect levels from pre to post are less likely to decrease when they were instructed to think about a negative event.

Current standing scores of PTG were highly and negatively correlated with T2 burdensomeness, T2 thwarted belongingness scores and depression with large effect sizes. Current state of PTG was positively correlated with T2 state hope and T2 positive mental health scores with large effect sizes (Gignac & Szodorai, 2016).

Table 6.3

Correlations, mean scores, standard deviations of the variables

Variable	1	2	3	4	5	6	7	8	9
1.Group	-								
2.PB2	-.068 [-.196, .067]	-							
3.TB2	.014 [-.110, .137]	**.588**** [.460, .692]	-						
4.Hope2	.002 [-.127, .132]	**-.568**** [-.656, -.462]	**-.590**** [-.682, -.482]	-					
5.PMH2	.059 [-.071, .192]	**-.639**** [-.710, -.548]	**-.650**** [-.743, -.549]	**.737**** [.660, .803]	-				
6.C-PTG	-.042 [-.167, -.184]	**-.608**** [-.690, -.512]	**-.679**** [-.758, -.581]	**.702**** [.609, .781]	**.779**** [.710, .837]	-			
7.Dep	-.009 [-.133, .109]	**.588**** [.465, .683]	**.465**** [.347, .575]	**-.580**** [-.682, -.470]	**-.681**** [-.749, -.588]	**-.507**** [-.612, -.385]	-		
8.N/Aff	**-.248**** [-.352, -.134]	-.043 [-.169, .081]	-.055 [-.173, .067]	.051 [-.069, .175]	.035 [-.094, .161]	.022 [-.085, .129]	-.056 [-.209, .094]	-	
9.P/Aff	**.217**** [.100, .324]	.109 [.008, .205]	**.163*** [.060, .273]	**-.140*** [-.255, -.019]	**-.133*** [-.243, .000]	**-.132*** [-.234, -.030]	**.138*** [.004, .255]	**-.331**** [-.468, -.195]	-
M	-	9.82	22.97	32.13	27.16	70.59	8.49	.45	-2.51
SD	-	6.37	10.63	8.05	5.61	15.13	5.48	5.43	6.09

Note. *p<.05, **p<.01. Group is categorised as 0 (control group) and 1 (experimental group). PB2= Perceived burdensomeness at T2, TB2= Thwarted belongingness at T2, Hope2= State hope at T2, PMH2= Positive mental health at T2, C-PTG= Current-standing score of posttraumatic growth measured at T2, Dep= Depression scores measured at T1, N/Aff= Negative affect; represents the negative affect difference between pre and post measure scores. P/Aff= Positive affect; represents the positive affect difference between pre and post-measure scores. Bootstrapped confidence intervals are presented in brackets [lower, upper].

6.3.3. Regression Analyses

Four separate multiple linear regression analyses were conducted to test the main hypotheses. As detailed in the data analytical strategy, bootstrapped linear regression analyses examined whether the group (participants were assigned

[experimental and control]) predicted PB, TB, state hope and positive mental health at post-measure while controlling for baseline levels of respective outcomes and depression scores[14].

Testing the predictive function of positive reappraisals on post-perceived burdensomeness scores

I conducted a multiple regression analysis with pre-burdensomeness, depression and the grouping variable as the predictors and the post-burdensomeness scores as the outcome variable.

The overall model was significant ($F(3, 230) = 266.01$, $p < .001$). Results showed that being assigned to the experimental or control group did not predict PB scores at post-measure, controlling for baseline burdensomeness levels and depression ($B = -.289$, $p = .493$) *(See Table* 6.4*)*. Depression was also not a significant predictor of post-burdensomeness scores (B= .033, p= .548)

Testing the predictive function of positive reappraisals on post-thwarted belongingness scores

I conducted another simple regression analysis with pre-thwarted belongingness scores, depression and the group variable as the predictors and post thwarted belongingness scores as the outcome variable.

The overall model was significant ($F(3, 230) = 265.68$, $p < .001$). Results showed that being assigned to the experimental or control group did not predict thwarted belongingness scores at post-measure, controlling for baseline belongingness levels

[14] I have included additional hierarchical regression analyses in Appendix G, where I entered the pre-test measures in the first step of the regression model; depression and group variable in the second step of the regression model in order to see the R^2 changes in the models.

and depression (*B* = -1.147, p = .085) (*see Table* 6.4). Depression was also not a significant predictor of post-thwarted belongingness scores (B= .062, *p*= .358)

Exploratory analysis: Testing the predictive function of positive reappraisals on state hope scores

I conducted a simple regression analysis with pretest scores of state hope, depression and the group variable as the predictors and post scores of state hope as the outcome variable.

The overall model was significant (F(3, 229) = 193.42, p < .001). Results showed that being assigned to the experimental or control group did not predict state hope scores at post-measure, controlling for baseline state hope levels and depression (*B* = .826, p = .156) *(see Table* 6.4*)*. Depression was also not a significant predictor of post state hope scores (B= -.080, p= .199)

Exploratory analysis: Testing the predictive function of positive reappraisals on post-positive mental health scores

Final regression analysis examined whether the group predicted post-positive mental health scores, with pre-positive mental health scores and depression added into the model. The overall model was significant (F(3, 230) = 345.30, p < .001). Results showed that being in the experimental or control group did not predict positive mental health scores at the post-measure, controlling for baseline positive mental health levels and depression (*B* = -.221, p = .500) (*see Table* 6.4). Depression was also not a significant predictor of post-positive mental health scores in the final model (B= -.068, *p*= .110).

Table 6.4

The summary of the separate multiple linear regression of post-test scores on pre-test scores, depression, and group variable

		Outcome variables							
		Post perceived burdensomeness		Post thwarted belongingness		Post state hope		Post positive mental health	
		B	CI	B	CI	B	CI	B	CI
Predictors	Depression	.033	[-.078, .145]	0.62	[-.069, .188]	-.080	[-.202, .037]	-.068	[-.152, .020]
	Pretest scores of the variable	.861	[.689, .992]	.913	[.846, .979]	.861	[.736, .965]	.950	[.871, 1.030]
	Group	-.289	[-1.123, 496]	-1.147	[-2.576, .137]	.826	[-.335, 1.975]	-.221	[-.852, .397]

Note. Group is the primary predictor and represents the grouping variable that participants were assigned. It is dummy coded: 0 as control, 1 as experimental. Bootstrapped unstandardized coefficients and confidence intervals were reported in the table.

6.4. Discussion

The current study examined whether inducing positive reappraisals to activate perceptions of PTG was associated with perceived burdensomeness and thwarted belongingness levels, state hope, and positive mental health scores. Results revealed non-significant relationships between being assigned one of the conditions (i.e., engaging with positive reappraisals vs control group task) and the outcome measures: Positive reappraisal of the past adverse experience did not predict perceived burdensomeness, thwarted belongingness scores, state hope and positive mental health scores. I discussed the interpretations of the individual findings below and potential explanations for the null findings.

Positive reappraisal manipulation and perceived PTG

I examined the manipulation effectiveness using pre and post-PANAS. Results indicated that participants in the control group reported decreases in the positive affect scores, whereas there were not any significant changes in the participants' positive affect scores in the experimental group. This finding is in parallel with past research that examined the effect of positive reappraisal on positive affect in HIV patients (Lee et al., 2014; Finkelstein-Fox et al., 2020; Siegel et al., 2007) or in a group of adolescents with challenging experience (Rood et al., 2012), suggesting the adaptive function of positive reappraisals in increasing positive affect. Also, as expected, participants in the control group reported increases in the negative affect scores from pre-test to post-test, while experimental group participants' negative affect scores did not change from pre to post-measure, indicating that positively reframing past negative experiences preserved participants' mood. Indeed, this finding supports Garnefski et al.'s findings (2002). Their experimental study looked at the use of emotion regulation strategies within two samples: adults from a clinical population (people with high levels of depression and anxiety) and matched controls. They found that positive reappraisal was reported significantly more often within the matched control group than in the clinical group, which suggests that positive reappraisal may protect against the onset of mood-related disorders characterised by intense experiences of negative affect (Garnefski et al., 2002).

On the other hand, unexpectedly, the positive reappraisal manipulation did not result in significant changes in the C-PTGI scores across groups, indicating that positive reappraisal induction caused changes in mood across groups but not in the reports of current standing levels of posttraumatic growth. This is an important issue

in the present study since the main aim was to induce PTG through promoting positive reappraisals.

One explanation might be related to the choice of the PTG measure. I used the current standing measure of PTGI (Frazier et al., 2009) to examine if the activation of PTG-related thought processes results in a higher current state of PTG in the experimental group compared to the control group. However, since I asked participants to think about a past adverse experience and positively reframe the situation that happened in the past, it may be possible participants' perceptions of the past adversity were affected by the experimental manipulation (i.e., perceived PTG about past adversity) but not the current state of PTG thoughts (i.e., measured by C-PTGI). Future research with a similar design might consider using PTGI and compare how participants' perceptions of past adversity concerning PTG are different across groups.

Another explanation might be related to the nature of the control group's task, where participants were asked to describe an adverse experience that happened in the past, which had been used by other researchers. For example, in their experimental study Stanton et al. (2002) randomly assigned 60 cancer patients into three groups where participants were asked to write about 1) their deepest thoughts about being diagnosed with cancer, 2) positive emotions and thoughts related to their cancer experience, or 3) facts of their cancer experience (control condition). However, I did not check if the participants in the control group used positive reappraisal while describing the adverse experience. It may be possible that these participants are using cognitive reappraisal strategies to cope with the negative emotions that arise from the adversity while only describing the event, even though

I did not ask them to do so. Further research might include a neutral control condition where the participants do not think about a past negative experience.

In addition, running one single online survey with a post-test immediately completed following the experimental task might have caused a failure to induce PTG for the participants in the experimental group. In my study, I asked participants in the experimental group to think about a past adverse experience and positively reframe it. They then reported the current standing levels of the PTG experience. However, finding benefits just after the positive reappraisal instructions might be challenging for some. For example, individuals may not have the motivation or ability to accurately complete this cognitive task (Gower et al., 2022), particularly when they are given a short time to reflect on these benefits. For example, some positive reappraisal interventions include an hour-long training with the researcher who teaches participants how to apply reappraisal instructions to their personal experiences and to complete the tasks (Pogrebtsova et al., 2017) and some other interventions involve 2 weeks (Lancastle & Boivin, 2008) or 4-8 weeks of practice (e.g., Michell & Heads, 2015).

Or some participants might have experienced some barriers to identifying PTG from the recent adverse experience within a short-term period that we could not control. For example, some underlying factors might influence participants' ability to find benefits from recent stressors from pre-measure to post-measure within the same survey. Sears et al. (2003) studied the relationship between positive reappraisal coping, mood, identifying benefits and posttraumatic growth in a group of women living with breast cancer. They found that benefit finding (i.e., identifying benefits from the adverse situation), positive reappraisal coping, and posttraumatic growth

are related but distinct constructs, with identifying benefit as a non-significant predictor of PTG and positive reappraisal coping being a significant predictor of PTG. Authors argued that regular use of benefit-related information as a coping strategy (i.e., positive reappraisal coping) reflects more intentional attempts to achieve positive outcomes. In contrast, simple identification of benefits does not require such an effortful process and is more likely to be a passive expectancy of the positive outcomes. It is therefore possible in our study that participants in the experimental group only identified some benefits from their adverse experiences but did not engage in an effortful process of actively trying to derive meaningful benefits from those experiences, which, in turn, might have resulted in similar scores in current standing PTG across groups.

Positive reappraisal and interpersonal suicide risk factors

I found that assigning people into the experimental group and telling them to use positive reappraisals of the recent adversity did not predict decreases in the PB and TB scores while controlling for depression and the pre-measures of these outcomes. Although I found that PTG reduced the reports of burdensomeness after six weeks in the previous chapter, and Blevins (2019) found negative associations between PTG and burdensomeness in their cross-sectional study, I did not support and extend these findings in the current experimental study. One main explanation might be related to the failure to induce higher reports in the current state of PTG in the experimental group (*as discussed above*). Yet, there are several other explanations for these null results that future research may address and consider so that they can advance the research into the influence of PTG on these risk factors.

Firstly, although the current research followed the idea by Hill and Pettit (2014), who emphasised the importance of developing large-scale prevention-based programs (such as internet-based interventions to reach a larger and more varied sample size) to reduce PB and TB cognitions by focusing on cognitive restructuring or problem-solving strategies, examining the effect of a brief positive reappraisal intervention on two suicide risk factors in a non-clinical population might need further consideration. More precisely, studying clinical variables (i.e., PB and TB) in a mainly student sample might have caused a floor effect in the current study. It is possible that relationships that involved TB and PB were attenuated due to the lower levels of these constructs experienced within my sample (*see Table* 6.3 *for the mean scores for these variables*). Secondly, our participants participated in the pre and post-measure within one online survey. It might be possible that assigning participants into different groups did not create a difference in post-measures of the PB and TB across groups because of the short-time period. Although PB and TB levels highly fluctuated even within 15 minutes across studies with high-risk populations (Kleiman et al., 2017; Parrish et al., 2021), no research, to the author's knowledge, has found such short-time fluctuations in non-clinical groups.

Also, giving instructions through an online survey may have resulted in not greatly engaging with the reappraisal task. It is possible that some participants struggled to identify benefits from their recent adverse experiences with an online positive reappraisal induction, which may consequently prevent decreases in the misperceptions about the inter-personal relationships (i.e., perceiving self as a burden, sense of failed belonging), particularly during an ongoing pandemic, when the PB and TB levels were expected to be higher (Gratz et al., 2020) due to lockdowns

and social distancing rules. Therefore, an extension to the intervention length, as well as a longer gap between pre and post-measures, would be useful to advance the theoretical and practical understanding of the suggested relationships.

6.4.1. Limitations

I discussed some of the limitations above while interpreting the results, such as the nature of the control group's task and the gap between pre and post-measures. There are a couple of other limitations that should be noted here.

First, most of the sample was university students, which is not representative of at-risk populations. Replications should include people who are at risk for suicide (e.g., who have higher levels of PB and TB) to clearly understand the influence of positive reappraisal induction on these two risk factors. Indeed, the initial recruitment plan has been revised because of the COVID-19 pandemic. I initially targeted individuals who have mild to moderate levels of depression (PHQ scores between 5-14) to obtain a sample with a wide range of life experiences, particularly more stressful life circumstances that are likely to increase the risk of exposure to adversity. However, recruiting individuals with mild to moderate depression scores (i.e., initial recruitment plan) online would raise ethical issues since the study task (e.g., asking details about past adversity) could influence individuals' mood during an ongoing pandemic and a lockdown during which the support services might not available as usual (Tromans et al., 2020). Future research could explore these relationships within at-risk populations to give more insight into these suggested associations.

Also, I initially planned three separate phases for the current study (e.g., baseline: pre-measures; 1 week later: experimental phase; 1 week later: post-measures),

however, given the COVID-19 pandemic and lockdown rules, I had to conduct this study online rather than in-person testing and through one single survey. A similar design with an in-person experimental setting with multiple sessions with the participants, thus with an extended gap between pre-intervention and post-intervention, would advance the theoretical and practical understanding of the suggested relationships.

Although using a repeated measures design is a strength of this study, longitudinal studies with more extended time between assessments are needed to further understand the temporal relationships between positive reappraisals, posttraumatic growth, PB, TB, hope and positive mental health.

6.5. Conclusion of the chapter

This thesis chapter examined the influence of positive reappraisals of a past stressor on the reports of burdensomeness and thwarted belongingness. Although positive reappraisal induction resulted in mood differences across experimental and control groups, there was no difference in the current state of PTG scores between the groups, indicating positive reappraisal task did not result in perceiving posttraumatic growth in the experimental group. It should be noted that since I could not find any significant differences in C-PTGI scores (as a result of positive reappraisal induction) across groups, findings and potential explanations for the null findings should be interpreted carefully.

The main hypotheses were also not supported since being in the experimental group did not predict decreases in misperceptions related to burdensomeness and belongingness and increases in state hope and positive mental health scores.

Although I did not replicate/extend the previous chapter's findings, the theoretical importance of our research question should not be ignored. A better explanation of our findings would only be possible after improving the design and replicating the study in multiple sessions and in-person experimental settings. Replication with an improved design to address the issues discussed would offer an opportunity to answer our questions which would contribute new knowledge to the literature on PTG, burdensomeness and thwarted belongingness. Also, such research could inform the IMV and where PTG could be placed in the motivational phase of the model. If our hypotheses are confirmed with improved experimental design findings, this could inform intervention and prevention strategies.

Chapter 7 General Discussion

Although research into suicide risk factors has yielded key findings for potential clinical applications (e.g., Berman, 2017; Turecki et al., 2019), this approach seems one-sided. As emphasised by de Beurs et al. (2019), protective factors have been poorly researched, albeit they can offer potential opportunities for suicide prevention. To address this research gap, more studies have begun examining protective factors to inform suicide prevention strategies to respond to the call for assessing suicide resiliency factors (de Beurs et al., 2019; Franklin et al., 2017; Holman & Williams, 2022; Wingate et al., 2006).

7.1. Overview of thesis aims

Yu et al. (2010), Bush et al. (2011), and Gallaway et al. (2011) addressed an important new avenue for suicide resiliency research: the potential protective role of PTG against suicidality, as they found a negative association between PTG and suicidal ideation in a group of earthquake survivors and military service members. For example, Bush et al. concluded that higher levels of PTG might be protective against suicide among military service members, since perceiving PTG based on past adverse experiences may make them more suicide-resilient.

As discussed in Chapter 1, perceptions of PTG can function as a form of self-enhancement cognition. Taylor (1983) argued that individuals can employ cognitive reappraisal strategies to hold positive views about themselves, which may then help them to maintain and bolster self-esteem and self-worth (Taylor et al., 2000; Park & Boals, 2021), thus aiding psychological adaptation following challenging events.

Perceiving growth as a function of self-enhancement thoughts can dampen the impact of the adverse experience on negative appraisals of the self and the situation. This might be one explanation for the mechanism behind the association between PTG and suicidal thoughts. However, this explanation is only speculative and not guided by a theoretical or empirical approach. Therefore, additional research into this relationship utilising theoretical models was required to explore the link between the two constructs.

To address this gap in suicide resiliency research and expand previous findings on this topic (e.g., Bush et al., 2011), this thesis examined whether PTG has a protective function against suicidal thoughts as specified in the IMV. Utilising a theoretical framework of a well-validated suicide model (the IMV), I conducted five empirical studies with qualitative and quantitative methodologies.

I will briefly summarise each chapter's key findings first, followed by the theoretical, methodological and clinical implications. In the final part, I will provide suggestions for future research and evaluate the strengths and limitations of the studies conducted within this thesis.

7.2. Summary of thesis findings

The table below contains a summary and conclusion for each chapter (*Table* 7.1). The initially targeted population of the current thesis was UK veterans who have experienced operational deployments while serving in the military. It was intended to explore the potential protective role of PTG against suicidal ideation within this population, as discussed in Chapter 2. Before undertaking a quantitative investigation of the research questions, I decided to explore personal experiences

within this population related to suicidal thoughts, triggers, and PTG. To provide an understanding of these unique experiences, I conducted face-to-face interviews with eight war veterans. Utilising IPA (Smith et al., 2009), the findings showed that PTG is reported by veterans when they reflect on the adversities in the military service.

These findings supported Palmer et al.'s (2017) study, which indicated that the qualitative reports of PTG are very similar to the domains of PTGI, aligned with the existing literature. Notably, several suicide risk factors were also reported by eight participants, with two of whom reported past suicidal thoughts due to adverse experiences related to their service experience. Overall, the findings indicated that PTGI is a suitable questionnaire to examine PTG experiences within this population, and some of the reported risk factors were specified within the IMV, showing that it is a relevant model to be utilised within this population.

Given that veterans reported some aspects of PTG and are at greater risk for suicide due to adverse experiences in the military (e.g., Bullman & Scneiderman, 2021), I proceeded to examine the potential protective role of PTG within this population in Chapter 3. The rationale for the studies in this thesis is based on past cross-sectional correlational research that assessed the PTG-suicide relationship (e.g., Bush et al., 2011; Strader, 2019). I aimed to expand those findings to provide an understanding of the function of PTG within the context of the IMV (O'Connor & Kirtley, 2018). I hypothesised perceived PTG being either a 'threat to self moderator or 'motivational moderator in the motivational phase of the IMV. However, given the small sample size, I looked at the correlations between key suicide risk factors in the IMV (e.g., defeat, entrapment, suicidal ideation) and perceptions of PTG.

I found that PTG was negatively correlated with defeat and entrapment with large effect sizes. Although negatively associated, the relationship between PTG and suicidal ideation was not significant. These findings suggested that perceiving PTG might interact with key pathways within the motivational phase of the IMV, such as defeat and entrapment, thus protecting against the development of suicidal thoughts by dampening the impact of these risk factors, which is an area needing further exploration.

Chapter 4 examined PTG as a moderator within the motivational phase of the IMV with a larger dataset (N = 521) collected from a community sample, in order to achieve the required sample size for statistical power. The results showed no significant interactions between PTG and defeat in predicting entrapment; or between PTG and entrapment in predicting suicidal ideation. It should be noted here that I achieved a sufficiently powered sample size to assess whether PTG is a threat to self moderator in the IMV, but not for testing PTG as an motivational moderator in the model (which would require a sample size of 2619 participants). Therefore, it is possible that the interaction between PTG and entrapment was not significant due to the lack of power. However, I found a negative direct association between PTG and suicidal ideation, supporting past evidence indicating a potential protective function of PTG against suicidal ideation (e.g., Bush et al., 2011; Gallaway et al., 2011).

Overall, these findings suggested that PTG may not have a moderating role within the motivational phase of the IMV. Given the null moderating findings, I shifted my focus onto the other risk factors within this phase (e.g., other moderators) through which the influence of PTG on suicidal thoughts may emerge. Specifically, Chapter 5

examined the influence of PTG on perceived burdensomeness (PB) and thwarted belongingness (TB) (motivational moderators in the IMV) in a longitudinal design, based on existing cross-sectional research that showed a negative association between PTG and these two interpersonal risk factors (Blevins, 2019). I conducted a six-week longitudinal study and found that perceiving PTG from stressful experiences reduced the strength of association between burdensomeness at T1 and T2 in a group of people who live in the most financially deprived areas in the UK (and who are thus at greater risk of suicide). This finding indicated that the protective influence of PTG might be through reducing the impact of negative self-appraisals, such as feeling oneself to be burden.

Following the longitudinal study findings (i.e., that PTG mediated the decreases in burdensomeness levels over time), I tested the relationships in an experimental setting, as reported in Chapter 6 I presented experimental group participants with positive reappraisal instructions while thinking about a past adverse experience, whereas control group participants were only told to describe the event. I then looked at the post-measure scores of PB and TB. In contrast to the findings in Chapter 5, I failed to replicate the longitudinal study findings in an experimental setting, potentially because of the design issues detailed in Chapter 6.

Table 7.1

Summary of the key findings

Chapter	Design	Key findings
1	Literature review	There is a need to investigate protective factors by utilising suicide models to inform suicide prevention efforts. Given the negative association between PTG and suicidal thoughts found in past studies, PTG needs to be examined as a protective factor within the context of a suicide model to clarify its protective function.
2	Qualitative (IPA) study with UK veterans	UK veterans deployed to operational tours are at greater risk for suicide because of the adverse experiences and triggers that still exist after many years, such as losing friends during combat and transition problems after leaving the service. The study participants also identified some benefits from their military experiences perceiving PTG, which supported existing research.
3	Cross-sectional correlational study with UK veterans	I examined the correlations between the key risk factors and PTG. I found that PTG was negatively associated with defeat and entrapment with large effect sizes and not significantly correlated with suicidal ideation.
4	Cross-sectional moderation study in a community sample	PTG did not act as a threat to self moderator in the IMV unexpectedly. However, it predicted lower levels of suicidal ideation, consistent with previous findings, indicating a potential protective role against developing suicidal thoughts.
5	A short-term longitudinal study using mediation analyses in an at-risk sample	Perceiving PTG from a recent stressor during the COVID-19 pandemic mediated the levels of perceived burdensomeness from T1 to T2 over six weeks in a group of people who live in the most financially and socially deprived areas in the UK.
6	Pre-test post-test experimental study in a community sample	Positive reappraisal manipulation resulted in higher positive affect within the experimental group compared to the control group; however, the current-standing PTG scores were not different, indicating a failure in inducing PTG in the experimental group. Being in the experimental group was not associated with burdensomeness, thwarted belongingness, at post-test.

7.3. Theoretical implications

The present thesis yielded two broad results:

(1) Perceived PTG was negatively correlated with some of the key risk factors of suicide in the IMV, such as defeat, entrapment, and suicidal ideation (e.g., see

Chapters 4 and 5). However, PTG did not act as a threat to self or motivational moderator in IMV but predicted lower levels of suicidal ideation in a community sample, confirming past research findings in different populations (e.g., Gallaway et al., 2011; Sheline, 2013, Strader, 2019).[15]

(2) Perceptions of PTG reduced burdensomeness thoughts over time, suggesting that the protective influence of PTG against suicidal ideation may be through these negative appraisals. These longitudinal results supported the findings of a cross-sectional study by Blevins (2019), which showed a negative association between PTG and burdensomeness.

I expected PTG to play a role within the motivational phase of the IMV as a moderator, since there are conceptually similar constructs suggested to be the moderators within this phase, such as coping, hope, resilience and optimism. Assessment of these moderators in the IMV yielded important and significant results, affirming previous studies (e.g., McLean, 2020; Tucker et al., 2016; Wetherall et al., 2019). However, reflecting on the nature of these protective moderators in the IMV, I noticed that they are measured as personality traits, and are therefore likely to be stable over time. Perceiving PTG is an appraisal-based coping strategy; self-enhancement cognitions are activated when confronting with distress to maintain psychological adjustment (Taylor, 1983). Consequently, this may influence other

[15] It should be noted here that the analysis for PTG as a motivational moderator was underpowered, therefore future research should examine this with a larger sample size, to see whether PTG acts as a motivational moderator in the IMV.

negative self-appraisals (e.g., burdensomeness), raising the question of whether IMV is the most appropriate suicide model to test the protective influence of PTG.

After I critically reflected on the broader findings, I considered the possibility of testing the role of PTG through the SAMS as a recommendation for further research. As mentioned in Chapter 1, SAMS (Johnson et al., 2008) built on the CoP model (Williams, 2001) to facilitate therapeutic advances for patients with psychotic symptoms and focuses on the appraisal systems. According to the SAMS, positive self-appraisals (appraisals of one's ability to cope with emotions) and negative self-appraisals (low self-worth) directly impact the situation appraisal system. Specifically, positive self-appraisals reduce the negative influence of stressful life events on suicidality outcomes, whereas negative self-appraisals increase the impact of stressful experiences on suicide risk. Given that the core of perceiving PTG requires positive appraisals about oneself, it can be categorised as another aspect of positive self-appraisal.

In addition, in the current thesis, I suggested that PTG may influence other negative self-appraisal systems (e.g., I am a burden to others). Therefore, a model that focuses on appraisals could be an alternative model to test the function of PTG. Indeed, in similar research, Johnson et al. (2010) tested the SAMS model within a non-clinical student population with at least some degree of past or present suicidality, and found that for students with high or moderate levels of positive resilience appraisals (e.g., 'I can usually find a way of overcoming problems'), increased levels of stressful life events did not lead to increases in suicidality, indicating a protective function of positive self-appraisals. One can speculate that perceiving PTG from stressful life

events acts like resilience appraisals and would buffer the impact of the influence that adverse events on suicidality.

However, some points should be noted here that limit the utilisation of SAMS to test the role of PTG. Firstly, SAMS argues that positive self-appraisals confer resilience in the face of stressful situations, suggesting that positive self-appraisals hinder the negative appraisal of the traumatic experience (e.g., feeling defeated). However, it does not explain the mechanisms by which positive self-appraisals may have their impacts on these negative situation appraisals (Johnson et al., 2010), such as defeat and entrapment.

Secondly, this model was initially developed to aid interventions for psychosis patients. Although Johnson et al. (2010) tested this model within the student population, risk factors and therapeutic implications were initially explained within the context of psychotic disorders (Johnson et al., 2008), which may limit its utilisation for the general public or other clinical groups.

Thirdly, the IMV was developed after the SAMS, and subsumes its core assumptions, such as those relating to defeat and entrapment, and some self-appraisal constructs, such as burdensomeness and positive future thinking.

Taken these reflections together, SAMS would benefit from being expanded to become a more comprehensive model, explaining how stressful events and appraisals interact to influence other suicide risk factors established by prior research. Although some of these points can be addressed by future research, the IMV still appears to be the most appropriate model to test the function of PTG, since it uncovers potential interactions between event-related appraisals, self-appraisals, other risk and protective factors.

Nevertheless, more research is needed on whether appraisal-based protective factors can be integrated within IMV as moderators and interact with the key risk factors (defeat and entrapment) within the motivational phase. If protective factors are found to be indirectly influencing suicidal ideation by affecting other self-appraisals, the authors of the IMV (O'Connor & Kirtley, 2018) should address this separately, to point out potential theoretical applications of the model for assessing protective factors. Indeed, recent research suggested that suicide protective factors are more likely to influence suicidal ideation indirectly through negative appraisals and cognitions, such as PB.

Oakey-Frost et al. (2022) conducted a cross-sectional network analysis,[16] and examined the interrelations between protective factors (e.g., optimism, meaning in life, hope, social support), risk factors (e.g., suicide cognitions, negative affect), and suicidal ideation within a sample of 557 undergraduate students with a history of suicidal ideation. One of their findings was that increases in the trait hope results in decreased suicide cognitions (e.g., 'the world would be better without me'), which suggested that protective factors may decrease the risk for the activation of the suicidal belief system, such as burdensomeness cognitions. Given that I found that PTG mediated decreases in burdensomeness over time, the effect of PTG might be similar to that of the trait hope on suicide cognitions reported by Oakey-Frost et al. (2022), which suggests that perceiving PTG is not a moderator in the IMV's

[16] Network analysis provides the direct and indirect relationships and strengths of the relationships between nodes (as constructs and factors included in the study), which act within a broader network and influence other constructs within the network (de Beurs et al., 2019). The significant relationship between the nodes means that their relationship holds even after controlling for other specified nodes within the network.

motivational phase, but it may protect individuals through buffering against the activation of negative self-cognitions.

It should be noted that predicting suicide is a complex and challenging task, as there is no single cause for suicidal thoughts and behaviours. As argued by some of the suicide researchers, theories that attempt to explain why suicides occur might be considered simplistic, while suicide is a complicated and fluid concept and is affected by biological, psychological, environmental and social factors (e.g., Hjelmeland & Knizek, 2019; Paniagua et al., 2010). A critical meta-analytic review by Franklin and colleagues (2017) targeted to provide a summary of examined risk factors by reviewing 365 longitudinal studies from the past 50 years that attempted to predict suicide-related outcomes. Their findings revealed an unexpected finding: existing risk factors weakly and imprecisely predict suicidal thoughts, and behaviours and the predictive ability has not improved in the last 50 years. Furthermore, most studies had very long follow-up periods (over 5-10 years), but even longer intervals did not result in better predictive ability. These results indicate that the precise prediction of suicide risk will need a complicated combination of factors, potentially more than 50 (Franklin et al., 2018), with many of them being variable over time. These findings highlight the need for developing specific algorithms to determine suicide risk, as there is no universal algorithm for predicting suicide risk precisely (Franklin et al., 2017).

Nock and colleagues (2019) also support this approach and argue that small sets of risk factors within the suicide theories do not perform well in predicting suicide risk. They explain that these risk factors are sensitive but lack specificity about who is at most risk why and when, since not everyone experiencing suicide risk factors (e.g.,

hopelessness, depression, acquired suicide capability and suicidal thoughts) ends up dying by suicide.

In sum, although suicide theories are essential to further develop suicide research as they target to provide an understanding of the suicidal mind, they seem to be incomplete. One could expand the existing findings by focusing on risk algorithms (i.e., rather than focusing on a single risk/protective factor; Franklin et al., 2017) guided by validated suicide theories, thus, may provide a greater understanding of the combined effect of the risk and protective factors on suicide risk. For instance, the protective influence of PTG perceptions on negative appraisals could be examined through network analyses, as applied by Oakey-Frost et al. (2022). Thus, the role of PTG within a broader network could reveal further knowledge on its associations with other factors within a broader network.

7.4. Methodological implications

Since I measured PTG retrospectively, I conceptualised it as *perceptions* of change resulting from illusory self-enhanced cognitions, rather than as a *genuine* change following adversity. Considering this conceptualisation when interpreting the findings, one can speculate that perceptions of growth through self-enhancement might help individuals to feel confident about themselves and maintain self-esteem (Park & Boals, 2021; Taylor et al., 2000), thus reducing burdensomeness cognitions. In other words, challenging life events may threaten individuals' self-esteem and self-confidence and thus may result in feeling a burden to others. However, if one uses cognitive reappraisal strategies and reframes the adverse event in a more positive light using positive illusions, this will then increase the chance of recovery (e.g.,

Taylor, 1983), and protect them from negative evaluations of burdensomeness. Thus, perceiving growth following challenging experiences might prevent the development of suicidal ideation by interrupting the cycle of negative thoughts related to burdensomeness and relationships with others. To illustrate, one can perceive having a more significant and deeper connection with others because of the past challenging experience (i.e., PTG). These self-enhanced perceptions (e.g., 'I now have great friends who care about me') may prevent this person from thinking they are a burden and liable to them.

Indeed, Dufner et al.'s (2019) meta-analytic review examining the function of self-enhancement concerning well-being revealed that when people view themselves in an unrealistically positive light, this benefits their adjustment and psychological well-being, supporting Taylor's (1983) claim related to its protective function to support psychological functioning. Furthermore, Dufner et al. (2019) found that self-enhancers are likely to report higher levels of life satisfaction, positive affect (i.e., subjective experience of positive mood), and lower levels of depressive symptoms, emphasising the beneficial side of self-enhanced cognitions on mental well-being.

There is further evidence that shows some functional value in perceiving PTG from adverse experiences, even when the changes are not genuine and only reflect positive illusions (Greenberg et al., 2021; Helgeson et al., 2006). These findings are promising: even if people just *believe* that they have changed following adversity, this appears to maintain psychological functioning in the presence of threatening situations. However, further longitudinal research is crucial to understand when *perceiving* positive changes is adaptive and protective against negative self-appraisals, such as feelings of burdensomeness.

7.4.1. Perceptions of growth – are they always adaptive?

There has been increased research now showing that actual change and perceived change are not associated with each other (as discussed in Chapter 1), claiming that they are separate constructs and different responses to challenging events, as they are differently related to psychological adjustment (e.g., Boals et al., 2018; Boals & Schuler, 2018, 2019; Frazier et al., 2009; Maercker & Zoellner, 2004), or that they are not related at all (Park & Sinnott, 2018). For example, Frazier et al.'s (2009) longitudinal study showed that genuine PTG[17] was associated with decreased distress, while perceived PTG was related to both positive coping strategies and increased distress. Boals et al. (2019) followed a similar methodological approach and reached similar conclusions, finding that PTG perceptions were associated with increases in distress and with higher levels of avoidance coping, while actual PTG was related to decreases in distress and was unrelated to coping.

I previously suggested that perceiving growth following adverse experiences may promote well-being and decrease suicide risk through influencing negative appraisals in the IMV, given its promotion of positive reappraisals and self-enhanced cognitions. However, one may argue that PTG perceptions are associated with cognitive avoidant strategies and make individuals not think about the adversity, serving the function of denial and suppression. However, it may also serve as an active and ongoing coping effort to reduce acute stress through avoidance and denial (Maercker & Zoellner, 2004). Although denial, avoidance, and suppression have been

[17] They measured PTG prospectively using current-standing version of PTGI, whereby they recruited participants with a traumatic experience between baseline measure and T2 measure (the study was explained in the introduction chapter in detail).

categorised as ‘maladaptive coping strategies’ in the broader emotion regulation literature (Aldao, 2013), they may serve adaptive functions depending on the context.

To illustrate, Sheppes et al. (2012) found in their experiments that when the intensity of the emotional stimuli was high, individuals tended to choose an early disengagement strategy, whereas the intensity was low, and individuals tended to choose a later-stage disengagement strategy. From this perspective, one’s perceptions of PTG resulting from adverse experiences can act as an active continued coping process with the stressor and result in enhanced illusory cognitions, which may serve as disengagement from the stressor. Indeed, the key aspect of emotion regulation and coping is that healthy adaptation to the stressor requires flexibly choosing the regulation strategy in order to respond to changing situational demands. As emphasised by Bonanno and Burton (2013, p. 605), categorising emotion regulation strategies as beneficial or maladaptive is due to a ‘fallacy of uniform efficacy’, since ‘flexibly adapting one’s behaviour across different stressor situations is equally if not more important than the ability to use any single strategy’. However, caution is still needed when interpreting our broader results when clinical applications are considered. The studies within this thesis were the initial step to understanding PTG and suicide relationship, but longitudinal research with retrospective measures of PTG is needed to conclude the protective influence of perceived PTG on negative self-appraisals over time (i.e., longitudinal study with three or more time points), to understand when and where perceiving PTG influence the temporal pathways to suicide.

7.5. Clinical implications

As mentioned in the previous section, our findings are initial examinations and require further exploration and replication. Once we ensure that perceiving PTG from challenging life events is adaptive and beneficial for mental well-being (e.g., assessing through longitudinal and experimental studies), then clinical services might utilise these findings. This section firstly focuses on the existing positive psychology interventions and then evaluates potential clinical applications that can utilise the current thesis' findings.

7.5.1. Existing positive psychology interventions

PTG is one of the concepts within positive psychology. It would be helpful to discuss the existing positive psychology interventions to provide a context for the potential clinical applications of the thesis' findings.

There has been a growing interest in suicide resiliency factors and interventions recently that focus on modifying some suicide protective factors to decrease the suicide risk. For example, gratitude (i.e., noticing and appreciating the positive in life) has been consistently linked to lower levels of suicidal thoughts and behaviours among college students (Kaniuka et al., 2021a), adolescents (Rey et al., 2019), sexual minority groups (Kaniuka et al., 2021b), veterans with mental illness, and students with PTSD (Umucu et al., 2022).

Huffman et al. (2014) conducted an important feasibility study with an inpatient sample of suicidal patients using different positive psychology exercises to determine their impact on patients' hopelessness and optimism. For instance, participants were asked to recall a kind act from others and write a letter to describe their feelings of gratitude. For the personal strength intervention, participants were asked to reflect

on their personal strengths and select one strength (e.g., perseverance) to be deliberately used within the next 24 hours. They were then asked to write about how they used this strength and the outcomes.[18] For 'counting blessings', participants recalled three events within the past week for which they were grateful and recorded these events in detail.

Huffman et al. (2014) found that using gratitude letters and reflecting on the strengths was associated with reductions in hopelessness and increases in optimism from pre- to post-test. In addition, they concluded that positive psychology exercises were well accepted by suicidal inpatients and were associated with improvements in clinically relevant short-term outcomes. However, this newly integrated 'positive psychology and suicide intervention' research is in its infancy, and needs more RCTs and longitudinal studies. Nevertheless, Hirsch et al. (2018) discussed these issues in detail, and concluded that Huffman et al.'s (2014) exploratory work is key in the 'positive psychological approach to suicide' field, showing the feasibility of such positive psychology interventions to decrease suicide risk.

7.5.2. Can PTG be integrated into suicide interventions?

The findings of this thesis showed that perceived PTG may be one of the protective factors in suicide interventions, and its influence might be through influencing burdensomeness cognitions.

[18] Given that greater appreciation and realising personal strength are two aspects of PTG, I should note here that these brief interventions are very relevant to potential clinical implications of the thesis findings, considering the perceptions of posttraumatic growth as benefit finding and benefit reminding.

I should note here that PB has been found to be a robust suicide risk factor, as numerous studies have claimed that the feeling of being a burden to others is the most critical mechanism when it is included with TB in multivariate or path analyses (de Beurs et al., 2019; Hill & Pettit, 2012; Van Orden et al., 2008). In their prospective study with psychiatric inpatients, Forkmann et al. (2020) found that only PB had a significant main effect on suicide attempts within the 12-month interval when TB was also included in the regression analysis. Thus, particularly PB appears to be a vital component for clinicians working in suicide prevention. Once the current thesis' findings are confirmed, suicide prevention strategies can consider the integration of some aspects of PTG into the existing therapies to reduce PB-related thoughts, thereby reducing suicide risk.

In the experimental study reported in Chapter 6, I attempted to induce PTG by manipulating participants' appraisals about past adverse experiences, but the experimental manipulation did not promote perceptions of PTG among the experimental group participants. One explanation could be that inducing positive reappraisals of a past adverse experience with a brief experimental task might not be sufficient to promote PTG. Consequently, more detailed and long-lasting PTG interventions are needed to induce PTG and see its effect on PB.

Considering Huffman et al.'s (2014) findings related to the benefits of gratitude letters and reflecting on personal strengths, written interventions could promote PTG and its relevant aspects. For example, two domains of the PTGI are appreciating each day more and realising personal strength, so individuals could be asked to write about an adverse experience and reflect on some positive aspects of the event through similar interventions to those deployed by Huffman et al. (2014), such as

gratitude letters, counting blessings, and reflecting on personal strength. The effect of such training then could be examined based on the pre- and post-intervention PB scores. Although the thesis chapters included individuals from different populations, future pilot intervention research could utilise a group of participants who are at-risk for experiencing negative life events, such as people with low socio-economic status (e.g., Griffiths et al., 2014). PTG interventions could encourage those individuals to reflect on their negative experiences and help them to reframe the event as a challenge that they have overcome, thus provide a source of personal growth, strength, and resilience. Thoughts of posttraumatic growth might then reduce the reports of burdensomeness.

Importantly, Roepke (2014) conducted a meta-analysis of studies to examine whether existing psychosocial interventions promote PTG and revealed that interventions including CBT and written exposure foster increased PTG, although they do not directly target PTG as a primary outcome. Although this meta-analysis did not differentiate whether the outcome is perceptual or genuine PTG, it showed that written interventions and cognitive restructuring can enable individuals to identify PTG.[19] After assessing the benefits of PTG intervention on PB thoughts in individuals with negative life experiences, the second step would be the transition of such PTG intervention into the existing suicide prevention therapies.

Specifically, a well-supported treatment framework, the Collaborative Assessment and Management of Suicidality (CAMS), mainly focuses on preventing suicide

[19] However, as Roepke and Zikopouolos (2021) highlighted, more research is needed to understand the circumstances under which these PTG-oriented interventions may or may not be helpful.

through working with the client to understand the driving factors for suicidal thoughts and behaviours (Jobes, 2012). In this Assessment, clients complete some quantitative ratings of theoretically derived suicide risk factors, such as adversity, psychological pain and negative self-appraisals. Throughout the treatment, the clinician and the client work together on identifying and treating suicidal drivers to reduce their impact on the client. It aims to deeply understand the suicidal drivers and explore alternative and adaptive ways of coping with the pain and negative self-appraisals (e.g., PB).

PTG exercises through the afore-mentioned techniques (e.g., gratitude letters) can be utilised at this point as one of the adaptive ways of coping and provide the client with a different perspective to look at their negative thoughts about PB. Indeed, the CAMS treatment framework is supported by a range of randomised controlled trials (e.g., Ellis et al., 2017; Jobes et al., 2017), and has been found to be superior to other treatments (e.g., treatment as usual) in reducing suicidal ideation, distress, and hopelessness levels by a recent meta-analysis (Swift et al., 2021). Promoting PTG-related appraisals as a coping mechanism within this treatment framework may point to exciting new possibilities to reduce PB cognitions and thus suicide prevention.

However, I should note here again that these clinical implications can be examined only if our findings are confirmed with further longitudinal and experimental research. Once we clearly understand the function of the PTG within the IMV and its relationship with the negative self-appraisals, the next step would be to think about its clinical utility in the existing and well-validated intervention strategies, such as CAMS (Jobes, 2012).

7.6. Future directions

Although promising, the findings resulting from this thesis should be confirmed with further research. One potential idea for further research on this topic could be testing the relationship between perceived PTG and PB through a longitudinal design with more than two time points (i.e., three or four), to examine whether identifying PTG from adverse experiences consistently improve individuals' well-being through decreasing the PB thoughts over time. Such long-term longitudinal designs could help to track changes in suicidal thoughts over time (e.g., in a year) and understand the relationship between PTG and changes in the severity of suicidal thoughts.

Another possibility would be testing these relationships through an experimental design with multiple groups, where some participants will receive PTG training similar to the interventions used by Huffman et al. (2014), while others are in a control condition. Exploring the long-lasting effect of PTG training on PB with three or more time points could provide a detailed context for the function of PTG perceptions over time. This research can be conducted within non-clinical groups; once confirmed, its feasibility and application to clinical groups could be evaluated through qualitative focus group research with suicide intervention experts and therapists.

In addition, some study hypotheses were not tested reliably because of the lack of statistical power. The effect sizes of the previously tested moderators in the IMV were quite small. Since I based my power analyses on past relevant research, an unrealistically large sample size would be required relative to the time restrictions and resource limitations of this postgraduate research project. Bigger research projects that have sufficient financial resources could examine whether PTG acts as

a motivational moderator in the IMV (Chapter 4), and/or whether they reduce the TB levels over time (Chapter 5). If such research reveals significant findings, then it may have theoretical implications, as it may inform the IMV.

7.7. Strengths and limitations

One of the key strengths of the thesis is testing the protective function of PTG through a comprehensive and well-evidenced suicide model (e.g., Dhingra et al., 2016; Wetherall et al., 2019), which identifies key risk factors and moderators that influence the pathways that lead to suicidal ideation (O'Connor & Kirtley, 2018).

The second strength is related to focusing on suicide *resiliency* as opposed to suicide *vulnerability*. The identification of risk factors has been prioritised in past research (Franklin et al., 2017); however, research into protective factors is also essential to improve suicide prevention strategies (Rabon et al., 2018). To address this research gap, I examined PTG as a potential protective factor and found some promising results which require further examination.

Thirdly, the studies within this thesis followed a transparent and robust research approach, using large sample sizes, Open Science Framework pre-registrations and power analyses calculations strengthened the designs and the conclusions reached.

Nevertheless, the studies conducted within this thesis include some limitations that should also be considered, which are specified and analysed within each constituent chapter. The following discussion explains some broader limitations that future research could consider.

As is typical in psychology research, the questionnaires used in this thesis to measure suicidal ideation and other risk factors were retrospective, thus there is an intrinsic

likelihood of recall bias when answering the survey questions. Recent improvements in data collection and analysis, such as ecological moment assessments (EMA) (Kleiman et al., 2017) could be utilised to improve the research on the relationships between PTG, PB, and suicidal ideation. Repeatedly collecting data at high frequencies can reduce recall bias, increase the reliability (due to repeated measurements) and ecological validity as data collection occurs within a natural environment (Hufford, 2007). The approach would enable real-time investigation of how an individual's thoughts of burdensomeness evolve over time, and whether perceptions of growth increase to cope with these negative thoughts.

Another limitation of the studies in this thesis is using a PTG measure, PTGI, that only includes positive items. Some PTG researchers argued that measures with items that are positively worded, and response scales that only contain reporting of positive changes might increase the risk of over-reporting PTG (Boals & Schuler, 2018; Boals & Glidewell, 2023). Therefore, it is crucial for further research to conduct more empirical research in this area, to ensure the protective function of PTG before these findings are translated into suicide intervention treatments.

Since this thesis is the first to test the role of PTG in the IMV, the studies undertaken utilised mainly community samples to examine the research questions. Future research could replicate these findings within at-risk populations and clinical samples utilising longitudinal designs to examine causal relationships.

Finally, I had not assessed the nature and impact of the events that participants considered when responding to PTGI questions. It might be possible that some recently experienced events had been very impactful, which would make perceiving PTG more challenging when asked. Further research can examine the relationships

in a group of individuals who have been through a similar challenging experience to control for the nature and impact of the event.

7.8. Conclusions

Perceiving PTG from stressful life experiences appears to be a potentially protective factor against suicidal ideation, since existing evidence has consistently found a negative association between PTG and suicidal outcomes in various populations. Therefore, PTG requires particular attention in suicide resiliency research. Although the research within this thesis was an initial exploration of PTG within the IMV and requires further replications, it provided a thorough investigation of PTG within the context of a well-validated suicide model. The results supported existing evidence, and showed that PTG was negatively linked to suicidal ideation in a community sample, and further suggested that the protective influence could be through negative self-appraisals, such as burdensomeness-related thoughts. Further research needs to examine these relationships longitudinally with a sufficiently powered sample; but also utilising a theoretical framework, such as IMV and following a transparent research approach as illustrated within the studies conducted in this thesis. Once confirmed with longitudinal and experimental research, then this knowledge could be translated into clinical interventions.

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Appendices

Appendix A: Interview Questions

Primary interview question	Sample probing questions
Why did you decide to join UK Armed Forces (AF)?	What was it about the AF that made you want to join? How did you feel after you made the decision? Do you think you would make the same decision about joining the AF now?
What your transition to being active personnel involved?	What did you find the most difficult or challenging thing to adjust to when you first started in AF? Was it particularly challenging to leave your home and join the AF. How did you feel at that time? Can you tell me what your average day involved?
What did you find as particularly challenging about your experiences during deployment?	Did you experience any combat injuries? Did you witness any particularly difficult situations? Is there a particular occasion while in active duty that stands out in your memory? How this event affected you emotionally? Sometimes, the impact of such an event might not change over time. Does this memory still have a significant impact on you now?
What did you do to try and cope with these experiences [or the memories of these experiences?	Did you ever try to cope using ways that you or other people thought were extreme or risky? Did you ever think about hurting yourself or about taking your own life? Did you get any kind of support to help you cope with these experiences/memories?
Do the memories of your time in active service still affect you today?	Have you ever had thoughts of suicide or self-harm because of challenging events/memories.
What was your experience of leaving the service and returning to civilian like for you?	Since leaving the service, do you feel differently about any aspects of your life? Are there any lasting negative changes to your life since leaving the service?
What you have found positive or rewarding from your time in AF?	What kinds of things do you like about being a veteran? What value does being a veteran add to your life now?
Have you learnt anything positive about yourself, others and the world because of your experiences in the military?	Do you think your personality and how you see yourself has changed? Has your outlook on life changed? Have your relationships with other people changed? improved in any meaningful way?
Do you think about the positive lessons you have taken from your negative experiences when you feel low or upset?	Do you find it helps you cope with your emotions?

Appendix B: Chapter 2 - Study Materials

Information Sheet

What are the Mental and Physical Health Challenges Encountered by Veterans?

Ethics Approval Number S1094/S1112/S1146

Researchers: Meryem Betul Yasdiman, *meryem.yasdiman@nottingham.ac.uk*

Evie Horsley, *lpyeh6@exmail.nottingham.ac.uk*

Supervisors: Prof Ellen Townsend, *ellen.townsend@nottingham.ac.uk*

Dr Laura Blackie, *laura.blackie@nottingham.ac.uk*

What is this study about?

This is an invitation to take part in a research study that explores the mental and physical health challenges experienced by veterans during active military service and since leaving the service. We are interested in understanding the extent to which these challenges negatively impact on the quality of your life, and what you do to try and manage these challenges.

Before you decide if you wish to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully.

What does this study involve?

In this study, we are interested in understanding whether veterans' experiences while they were in active combat duty have affected their mental and physical health since their return from service. In addition, we are interested in what kind of coping strategies veterans have found effective in managing issues associated with their war memories. In short, we are interested in the transition you made from active service to civilian life and how you have coped with any challenges experienced during this transition.

If you participate, you will attend an interview with the researcher lasting approximately between 60-90 minutes in which you will be asked questions related to your experience as military service personnel. The researcher will ask you questions about your time in the military, including any significantly distressing mental and/or physical health challenges you may have experienced during deployment in active military service or since leaving the military. We are interested in this research project in exploring the transition you made from active military service to civilian life and how you have coped – or continue to cope - with any challenges you may have encountered. Please note that the questions will cover some sensitive topics, such as the extent to which you have thought about or acted on thoughts of self-harm and/or suicide as a result of your experiences in active military service or since leaving the military.

We understanding that discussing these topics may be sensitive and potentially distressing and we would like to reassure you now that you are under no obligation to participate. You may withdraw from the study at this point now by informing the researcher. If you wish to participate, we would like to reassure you that you can withdraw at any time during the interview without receiving a penalty and you not have to answer any question you do not wish to answer.

With your consent, this interview will be audio-recorded in order to allow the researcher to produce a transcript which will then be analysed by the researcher. The audio recording will be transferred to a password protected computer accessible only by the research team after the interview, at which time the audio recording will be deleted from the portal recording device. We will protect your identity by storing the recording under a random ID number, not by anything related to your personal identity. The audio recording will be deleted entirely once the research team have transcribed your interview into written form. During which time, the research team will delete any potentially identifiable information, such as names of people or places from your transcript. You can request for your interview data to be removed from analysis up until the transcription process has taken place and the original audio recording has been deleted.

The whole interview procedure will last approximately 60-90 minutes. If any disclosed information that might put you at risk of harm is foreseen, this will be discussed with you and a plan will be made for you to find a suitable support services. The researcher may also be required to disclose this information to the appropriate agencies.

Who is eligible to participate?

We aim to speak to around 50 veterans. Eligible participants must meet the following criteria:

a) identify yourself as having been a veteran from one of the UK military services,
b) have been deployed and experienced active military duty.

Do you have to participate?

Participation in this study is totally voluntary and you are under no obligation to take part. If you do decide to take part, you will be given this information sheet to keep and be asked to sign a consent form. You are free to withdraw at any point before or during the study with no penalty. If you decide you wish to withdraw your interview data, please email the named researcher on the email given on the first page. However, it is only possible for us to identify your interview while we have the audio recording. The audio recording is deleted with any information linking the interview to your identity after transcription has taken place.

You will be compensated with £20 in cash to contribute towards your travel costs and your time.

How will my data be used and stored?

All information which is collected about you during the course of the research will be kept on a password protected computer and is strictly confidential and used for research purposes only. The actual audio-recording will be destroyed after transcribed. Access to the interview transcript will be limited to the research team involved in this project. Any information about you which leaves the research unit will have your name and address removed during transcription; so that you cannot be recognised from it. Any summary of the interview content, or direct quotations from the interview, that are made available through academic publication or other academic outlets will be anonymized so that you cannot be identified, and care will be taken to ensure that other information in the interview that could identify yourself is not revealed. A separate privacy statement will be given to you to outline how the research team will store and protect your data in accordance with GDPR regulations.

What will happen to the results of the research study?

We aim for the results from this research study to be published in an academic journal and it might also be presented as a paper at academic conferences. We will anonymise all the interviews before this happens so that nobody will be able to personally identify you.

If you have any questions or concerns please don't hesitate to ask now. We can also be contacted after your participation at the above address.

If you have any complaints about the study, please contact:
Stephen Jackson (Chair of Ethics Committee)
stephen.jackson@nottingham.ac.uk

Consent Form

What are the Mental Health Challenges Encountered by Veterans?

Ethics Approval Number S1094/S1112/S1146

Researchers: Meryem Betul Yasdiman, *meryem.yasdiman@nottingham.ac.uk*
Evie Horsley, *lpyeh6@exmail.nottingham.ac.uk*
Supervisors: Prof Ellen Townsend*, ellen.townsend@nottingham.ac.uk*
Dr Laura Blackie, *laura.blackie@nottingham.ac.uk*

The participant should answer these questions independently:

Have you read and understood the Information Sheet?	YES/NO
Have you had the opportunity to ask questions about the study?	YES/NO
Have all your questions been answered satisfactorily?	YES/NO
Do you understand that you are free to withdraw from the study? (at any time and without giving a reason)	YES/NO
I give permission for my data from this study to be shared with other researchers provided that my anonymity is completely protected.	YES/NO
I understand that the interview will be audio-recorded and I give permission for the recording.	YES/NO
I give permission to the extracts from the interview are to be published in academic conferences or papers provided that my anonymity is protected.	YES/NO
I understand that the information about me will be kept in a secure database. If data is transferred to others it will be made anonymous. Data will be kept for 7 years after the results of this study have been published.	YES/NO
I agree to take part in the study.	YES/NO

"This study has been explained to me to my satisfaction, and I agree to take part. I understand that I am free to withdraw at any time."

Signature of the Participant: Date:

Name (in block capitals)

I have explained the study to the above participant and he/she has agreed to take part.

Signature of researcher: Date:

Demographic Questions

1. Age (in years): _____

2. Gender (circle one):

1) Male
2) Female
3) Other
4) Prefer not to say

3. Ethnicity:

1) Black African
2) Black Caribbean
3) Pakistani
4) Bangladeshi
5) Chinese
6) Indian
7) White British
8) White European
9) Other (please specify): _____
10) Prefer not to say

4. Religion:

1) No religion or belief
2) Atheism
3) Christianity
4) Judaism
5) Buddhism
6) Islam
7) Hinduism
8) Sikhism
9) Other (please specify): _____
10) Prefer not to say

5. Marital Status:

1) Single, never married
2) Married
3) Co-habiting
4) Widowed
5) Divorced
6) Separated

6. Employment Status:

1) Employed
2) Not employed - looking for work
3) Not employed - not looking for work
4) Not employed - retired
5) Other (please specify): _____

7. What is the highest level of education you have completed? (i.e. high school, undergraduate, postgraduate, doctoral degree)

_____

8. Do you have any of the following?

□ Hearing impairment
□ Visual impairment
□ Physical or mobility impairment
□ Learning or intellectual impairment
□ Long-term illness or physical health condition
□ Mental health condition
□ Other (please specify) : _____

9. Are you currently serving in the armed forces?

1) Yes
2) No

10. Are you a veteran?

1) Yes
2) No

11. If yes, when did you serve? Year of joining _____
Year of leaving _____

12. How old were you when you joined the service?

_____

13. Please give details about your deployments.

_____

14. Why did you leave the armed forces?

1) Completion of engagement
2) Voluntary early release
3) Administrative discharge
4) Medically retired
5) Other (please specify): _____

Experimental Debrief Information

Name of Researchers:	**Email of Researchers:**
Meryem Betul Yasdiman	meryem.yasdiman@nottingham.ac.uk
Evie Horsley	lpyeh6@exmail.nottingham.ac.uk
Name of Supervisors:	**Email of Supervisor:**
Prof Ellen Townsend	ellen.townsend@nottingham.ac.uk
Dr Laura Blackie	laura.blackie@nottingham.ac.uk

What are the Mental Health Challenges Encountered by Veterans?

Thank you for your participation.

Thank you for taking part in this research study and telling us about your experiences of being a veteran. We appreciate your help in our research study, which explores the mental and physical health challenges veterans face, and the extent to which these challenges may lead some veterans to think about or act on thoughts of self-harm and/or suicide. We intend for these findings to contribute to the existing body of research aimed towards therapeutic treatment for veterans in distress.

We aim to analyse these interviews after transcription while keeping your identity anonymised. The results of this study might be published in academic journals and in the researcher's PhD thesis.

We have compiled a list of national organisations you can contact for further support below. You are always welcome to contact the researcher, Meryem Betul Yasdiman, for any advice on accessing more local services or further signposting via email:

meryem.yasdiman@nottingham.ac.uk

If as a result of participating in this research study you felt distressed about any aspects of your life, there are a number of support services you may contact:

- Royal Air Force Association Welfare Support https://www.rafa.org.uk
- British Red Cross https://www.redcross.org.uk/
- Let's Talk Well-Being is based in Nottinghamshire, Derbyshire, & Leicestershire and provides assessment and treatment for mental health conditions. http://www.nottinghamshirehealthcare.nhs.uk/letstalkwellbeing
- Samaritans has a National Help Line that is open 24 hours. Tel: 116 123

If you have any complaints about the study, please contact:

Stephen Jackson (Chair of Ethics Committee)

stephen.jackson@nottingham.ac.uk

Appendix C: Transcription Protocol

	Explanation	Format
Person speaking	Person speaking is indicated by their initials at the start of the sentence. In capitals, followed by a full stop. Interviewer: I Participant: P	I. P.
Overlapping Speech	Both parts of speech will be indicated by square brackets at the point of overlap	[…overlapping speech…]
Emphases	Used to indicate where a word has been stressed. Italicized. Capitalised where the greater volume is used	*Stressed word* CAPITALS
Dubious Transcription	Used when the transcriber cannot hear recording or when the transcriber does not understand what has been said. Words are interpreted and bolded, italicised and underlined.	***….Dubious transcription….***
Gaps in recording	Used where material has not been taped (NR). Parenthesis with approx. length of time. *(Participant might want to take a break or not being recorded at some point.)*	{3:42 NR}
Verbal fillers	Used when some fillers have been used.	Erm. Er. Mm. mm-hm
Laughing, coughing	Used when the interview is interrupted by laughs, coughs etc.	((laughs)) ((coughs)) ((general laughter)) when multiple speakers laughing at once.
Spoken Abbreviations	When someone speaks an abbreviation	RAF etc.
Short Pauses		(.)
Long Pauses		((pause))

Appendix D: Chapter 3 and 4 – Study Materials

Information sheet for veteran population

Understanding Mental Health in Veterans

Ethics Approval Number S1179

Researcher: Meryem Betul Yasdiman, *meryem.yasdiman@nottingham.ac.uk*
Supervisors: Prof Ellen Townsend, *ellen.townsend@nottingham.ac.uk*
Dr Laura Blackie, *laura.blackie@nottingham.ac.uk*

What is this study about?

This is an invitation to take part in a research study that explores how veterans cope with significant challenges in their lives as the result of their military service and the extent to which these challenges might causes negative consequences for mental health, including suicidal thoughts. We are interested in understanding the risk factors that may lead to mental health challenges and the protective factors involved in supporting people. Before you decide if you wish to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully.

What does this study involve?

If you choose to participate, you will be asked to complete a demographic information sheet that will collect some information about you (e.g., age, gender) and your military experience (e.g., which military service, length of service). You will then be asked to complete a number of questions that ask about whether you have experienced any negative thoughts and feelings in the past year, including the extent to which you have experienced symptoms of depression or suicidal thoughts. We will also ask you questions about how you typically try to cope with challenges. Some questions will ask how you cope with challenging experiences and or memories related to your deployments once you face them and now and whether you have identified any positive changes to your personality or lifestyle related to your military experience. The whole procedure will last approximately 30-40 minutes. We would like to invite you to answer all questions as honestly as possible. There are no right or wrong answers, so answer intuitively and do not spend too much time pondering. You do not have to answer any question if you do not wish to answer.

Who is eligible to participate?

You do not need to experience mental health issues to take part. Eligible participants must meet the following criteria:

a) identify yourself as having been a veteran from one of the UK military services
b) have been deployed and experienced active military duty
c) aged 18 or over

Do you have to participate?

Please note that the questions will cover some sensitive topics, such as the extent to which you have thought about suicide as a result of your experiences. However, participation in this study is totally voluntary and you are under no obligation to take part. You are free to withdraw at any point before, during or after the study with no penalty. If you decide you wish to withdraw your data, please email the named researcher on the email given above stating your anonymous code you will write at the beginning. You will be entered into a prize draw to win 1 of 16 Amazon gift cards (£20).

How will my data be used and stored?

You do not provide your name at any point of the research, however, you will be asked to provide your email address in order to enter the prize draw. This information will be collected through different survey which is not linked to your survey responses. Other information which is collected about you during the course of the research (e.g., age) is strictly confidential and used for research purposes only. Only the research team will have access to the data and at will be stored in compliance with the Data Protection Act. Post-analysis data may be made publicly available to the wider scientific community and this data will be anonymised, and non-identifiable. A separate privacy statement will be presented to outline how the research team will store and protect your data in accordance with GDPR regulations. As an online participant in this research, you should be aware there is always the risk of intrusion by outside agents, i.e., hacking, and therefore the possibility of being identified.

What will happen to the results of the research study?

We aim for the results from this research study to be published in an academic journal and it might also be presented as a paper at academic conferences. If you have any questions or concerns please don't hesitate to ask now. We can also be contacted after your participation at the above address. If you have any complaints about the study, please contact: Stephen Jackson (Chair of Ethics Committee) stephen.jackson@nottingham.ac.uk

Information Sheet for general population sample

Understanding Mental Health

Ethics Approval Number S1179

Researcher: Meryem Betul Yasdiman, *meryem.yasdiman@nottingham.ac.uk*

Supervisors: Prof Ellen Townsend, *ellen.townsend@nottingham.ac.uk*

Dr Laura Blackie, *laura.blackie@nottingham.ac.uk*

What is this study about?

This is an invitation to take part in a research study that explores how people cope with significant challenges in their lives and the extent to which these challenges might causes negative consequences for mental health, including suicidal thoughts. We are interested in understanding the risk factors that may lead to mental health challenges and the protective factors involved in supporting people. Before you decide if you wish to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully.

What does this study involve?

If you choose to participate, you will be asked to complete a demographic information sheet that will collect some information about you (e.g., age, gender). You will then be asked to complete a number of questions that ask about whether you have experienced any negative thoughts and feelings in the past year, including the extent to which you have experienced symptoms of depression or suicidal thoughts. We will also ask you questions about how you typically try to cope with challenges. Some questions will ask how you cope with challenging experiences and or memories related to stressful life events once you face them and now and whether you have identified any positive changes to your personality or lifestyle related to these stressful events.

The whole procedure will last approximately 30-40 minutes. We would like to invite you to answer all questions as honestly as possible. There are no right or wrong answers, so answer intuitively and do not spend too much time pondering. You do not have to answer any question if you do not wish to answer.

Who is eligible to participate?

You do not need to experience mental health issues to take part. Eligible participants must meet the following criterion:

a) Aged 18 or older.

Do you have to participate?

Please note that the questions will cover some sensitive topics, such as the extent to which you have thought about suicide as a result of your experiences. However, participation in this study is totally voluntary and you are under no obligation to take part. You are free to withdraw at any point before, during or after the study with no penalty. If you decide you wish to withdraw your data, please email the named researcher on the email given above stating your anonymous code you will write at the beginning.

You will be entered into a prize draw to win 1 of 16 Amazon gift cards (£20).

How will my data be used and stored?

You do not provide your name at any point of the research however you will be asked to provide your email address in order to enter the prize draw. This information will be collected through different survey which is not linked to your survey responses. Other information which is collected about you during the course of the research (e.g., age) is strictly confidential and used for research purposes only. Only the research team will have access to the data and at will be stored in compliance with the Data Protection Act. Post-analysis data may be made publicly available to the wider scientific community and this data will be anonymised, and non-identifiable. A separate privacy statement will be presented to outline how the research team will store and protect your data in accordance with GDPR regulations.

As an online participant in this research, you should be aware there is always the risk of intrusion by outside agents, i.e., hacking, and therefore the possibility of being identified.

What will happen to the results of the research study?

We aim for the results from this research study to be published in an academic journal and it might also be presented as a paper at academic conferences. If you have any questions or concerns please don't hesitate to ask now. We can also be contacted after your participation at the above address.

If you have any complaints about the study, please contact: Stephen Jackson (Chair of Ethics Committee) stephen.jackson@nottingham.ac.uk

GDPR Statement for both studies

School of Psychology GDPR Statement

Research Participant General Data Protection Regulation (GDPR) Privacy Notice

For information about the University's obligations with respect to your data, who you can get in touch with and your rights as a data subject, please visit:

https://www.nottingham.ac.uk/utilities/privacy.aspx

Why we collect your personal data

The University of Nottingham is collecting your personal data for research purposes, as outlined in the participant information sheet. The legal basis for processing your personal data on this occasion is Article 6(1a) consent of the data subject. The basis for processing your sensitive personal data on this occasion is Article 9(2a) the data subject has given explicit consent to the processing.

How long we keep your data

The University may store your data for up to 25 years and for a period of no less than 7 years after the research project finishes. The researchers who gathered or processed the data may also store the data indefinitely and reuse it in future research. Measures to safeguard your stored data were described in the participant information sheet under the heading "How your data will be used and stored".

Who we share your data with

Anonymised extracts of your data may be disclosed in published works that are posted online for use by the scientific community, and with other researchers. Your data may also be stored indefinitely on external data repositories (e.g., the UK Data Archive) and be further processed for archiving purposes in the public interest, or for historical, scientific or statistical purposes. It may also move with the researcher who collected your data to another institution in the future.

Consent Form for both studies

Study Title (veteran or general population)

Ethics Approval Number S1179

Researcher: Meryem Betul Yasdiman, *meryem.yasdiman@nottingham.ac.uk*

Supervisors: Prof Ellen Townsend*, ellen.townsend@nottingham.ac.uk*

Dr Laura Blackie, *laura.blackie@nottingham.ac.uk*

Please read the following information carefully before deciding if you wish to participate:

- I have read and understood the Information Sheet.
- I have been provided with the email addresses of the researchers and had the opportunity to ask questions about the study.
- If I have asked questions they have been answered satisfactorily.
- I understand that I am free to withdraw from the study at any time and without giving a reason.
- I give permission for my data from this study to be shared with other researchers provided that my anonymity is completely protected.
- I have read and understood the privacy statement that outlines how my data will be stored and protected according to GDPR regulations.

"This study has been explained to me to my satisfaction, and I agree to take part. I understand that I am free to withdraw at any time."

Do you agree to participate in this research study?

□ YES: By ticking this box I authorize that I agree with the statements above and that I agree to take part. I understand that I am free to withdraw at any time by closing my browser window.

□ NO: I do not agree to take part in this survey.

If you have any concerns or complaints about the study, please contact: Stephen Jackson (Chair of Ethics Committee)

stephen.jackson@nottingham.ac.uk

Debrief Statement for the veteran sample

Understanding Mental Health in Veterans

Researcher: Meryem Betul Yasdiman, meryem.yasdiman@nottingham.ac.uk
Supervisors: Prof Ellen Townsend, ellen.townsend@nottingham.ac.uk
Dr Laura Blackie, laura.blackie@nottingham.ac.uk

Thank you for your participation.

Thank you for taking part in this research study and telling us about your experiences. We appreciate your help in our research study. In this study, we were focused on understanding the factors that may protect veterans from experiencing suicidal thoughts. We are examining whether there are specific coping styles and patterns of thinking that help veterans maintain a healthy mental state. We intend for these findings to contribute to the existing body of research aimed towards therapeutic treatment for veterans in distress.

None of the responses you have provided will be used to identify you as an individual; data collected from all veterans will be analysed together. The results of this study might be published in academic journals and in the researcher's PhD thesis.

We have compiled a list of national organisations you can contact for further support below. You are always welcome to contact the researcher, Meryem Betul Yasdiman, for any advice on accessing more local services or further signposting via email: meryem.yasdiman@nottingham.ac.uk

If as a result of participating in this research study you felt distressed about any aspects of your life, there are a number of support services you may contact:

Royal Air Force Association Welfare Support https://www.rafa.org.uk British Red Cross https://www.redcross.org.uk/

Samaritans has a National Help Line that is open 24 hours. Tel: 116 123

Other useful organisations: www.time-to-change.org.uk/what-are-mental-health-problems/mental-health-help-you/other-useful-organisations

If you have any complaints about the study, please contact: Stephen Jackson (Chair of Ethics Committee) stephen.jackson@nottingham.ac.uk

Debrief Statement for the general population sample

Understanding Mental Health

Researcher: Meryem Betul Yasdiman, meryem.yasdiman@nottingham.ac.uk
Supervisors: Prof Ellen Townsend, ellen.townsend@nottingham.ac.uk
Dr Laura Blackie, laura.blackie@nottingham.ac.uk

Thank you for your participation.

Thank you for taking part in this research study and telling us about your experiences. We appreciate your help in our research study. In this study, we were focused on understanding the factors that may protect people from experiencing suicidal thoughts. We are examining whether there are specific coping styles and patterns of thinking that help people maintain a healthy mental state. We intend for these findings to contribute to the existing body of research aimed towards therapeutic treatment for people in distress.

None of the responses you have provided will be used to identify you as an individual; data collected from all participants will be analysed together. The results of this study might be published in academic journals and in the researcher's PhD thesis.

We have compiled a list of national organisations you can contact for further support below. You are always welcome to contact the researcher, Meryem Betul Yasdiman, for any advice on accessing more local services or further signposting via email:

meryem.yasdiman@nottingham.ac.uk

If as a result of participating in this research study you felt distressed about any aspects of your life, there are a number of support services you may contact:

- British Red Cross https://www.redcross.org.uk/
- Samaritans has a National Help Line that is open 24 hours. Tel: 116 123
- Other useful organisations: www.time-to-change.org.uk/what-are-mental-health-problems/mental-health-help-you/other-useful-organisations

If you have any complaints about the study, please contact: Stephen Jackson (Chair of Ethics Committee) stephen.jackson@nottingham.ac.uk

Appendix E: Chapter 5 – Study Materials

Information Sheet for T1 measure

Stressful life experiences and well-being

Ethics Approval Number S1279

Researcher: Meryem Betul Yasdiman, *meryem.yasdiman@nottingham.ac.uk*

Supervisors: Prof Ellen Townsend, *ellen.townsend@nottingham.ac.uk*

Dr Laura Blackie, *laura.blackie@nottingham.ac.uk*

What is this study about?

This is an invitation to take part in a research study that will investigate stressful life experiences and their impact on individuals' well-being. Before you decide if you wish to take part, it is important for you to understand why the research is being done and what it will involve. Please take the time to read this information carefully and ask any questions you may have before choosing whether to participate. You may email the researcher directly if you have questions using the email address provided at the top of this page.

What does this study involve?

We are interested in understanding how stressful life events can affect individuals' mental health. Our research mainly aims to understand how the experience of stressful life experiences influences how we think about the future, how close and connected to others we feel, and how we set and reach our goals.

If you choose to participate in this study, you will be asked to answer demographic questions (e.g., age, gender, and ethnicity) and questions about your well-being, including symptoms of depression and anxiety. Other questions ask about the quality of your relationships with others, how you feel when you think about the future, and how you set and meet your goals. In the end, you will be presented a debriefing sheet where you will be informed about the nature of our study, available support services should you require, and some exam howlers to lighten your mood.

Your participation in the study will last around 10 minutes. We would like to invite you to answer all questions as honestly as possible. There are no right or wrong answers, so respond intuitively and do not spend too much time pondering. You do not have to answer any question if you do not wish to answer. *Please note that some of these questions will ask about potentially sensitive topics (as described above), and you can choose to leave blank any question you do not wish to answer without providing us with a reason.*

If you complete this study, you will be compensated £0.90 for your time. In line with payment procedures of Prolific *you must submit your **completion URL** at the end of the survey in order to be compensated.*

After four weeks, we will invite you to participate in the second phase of our study, which is very similar to this one, but there is no obligation for you to participate in both studies. *Please note that there are some questions inside the survey that will check you are paying attention to instructions. If you fail to answer these questions correctly you will not be invited to the second part of our study and your responses will not be included in our analysis.*

Who is eligible to participate?

Eligible participants must be:

(a) Aged 18 or older,
(b) Living in one of these areas: Middlesbrough, Liverpool, Knowsley, Kingston upon Hull, Manchester, Blackpool, Birmingham, Burnley, Blackburn with Darwen, and Hartlepool. This information is determined based on information that you have given to Prolific. We have set prolific to advertise this study only to people that live in one of these areas.

Do you have to participate?

Please note that the questions will cover some sensitive topics, such as the extent to which you experience depression and anxiety symptoms and unpleasant feelings, such as the feeling of being a burden to others. Participation in this study is voluntary, and you are under no obligation to take part. You are free to skip or refuse to answer any question in the questionnaires without providing us with a reason. You are free to withdraw at any point before or during the study without providing us with a reason. However, please note that we may still analyse the data you have provided before you withdrew. If you decide you wish to withdraw your data after participation, please email the named researcher (either via prolific) or on the email given above, stating your Prolific ID, and your data will be removed.

How will your data be used and stored?

We will not ask you to provide your name; however, you will be asked to write your Prolific ID which will help the research team to find your responses if you request for your data to be removed from the analysis. Please note that this can be done up until the point where we delete your Prolific ID (*approximately within eight to nine months after your participation*) to ensure the data is fully anonymised.

Why we collect your personal data?

The University of Nottingham is collecting your personal data for research purposes, as outlined in this participant information sheet. The legal basis for processing your personal data on this occasion is Article 6(1a) consent of the data subject. The basis for processing

your sensitive personal data on this occasion is Article 9(2a) the data subject has given explicit consent to the processing.

How long we keep your personal data?

For information about the University's obligations with respect to your data, who you can get in touch with and your rights as a data subject, please visit:

https://www.nottingham.ac.uk/utilities/privacy.aspx

The University may store your data for up to 25 years and for a period of no less than 7 years after the research project finishes. The researchers who gathered or processed the data may also store the data indefinitely and reuse it in future research.

If participants (i) complete the following wave/s of the study, (ii) would not like to take part in the following phase, or (iii) request to withdraw their data, their Prolific ID information will be removed from the data to ensure anonymity.

By this point, all personal information which is collected about you during the research (e.g., age, gender, and ethnicity) is strictly confidential and is used for research purposes only. Only the research team will have access to the data, which will be stored in compliance with the Data Protection Act (1998). Post-analysis data may be made publicly available to the wider scientific community, and this data will be anonymised, and you will not be identifiable. As an online participant in this research, you should be aware there is always the risk of intrusion by outside agents, i.e., hacking, and therefore the possibility of being identified.

What will happen to the results of the research study?

We aim for the results of this research study to be published in an academic journal, and it might also be presented as a paper at academic conferences. If you have any questions or concerns, please don't hesitate to ask now by using the email provided for the lead researcher at the top of this page. We can also be contacted after your participation at the above addresses.

If you have any complaints about the study, please contact: Stephen Jackson (Chair of Ethics Committee), stephen.jackson@nottingham.ac.uk

Information Sheet for T2 measure

Stressful life experiences and well-being

Ethics Approval Number S1279

Researcher: Meryem Betul Yasdiman, *meryem.yasdiman@nottingham.ac.uk*

Supervisors: Prof Ellen Townsend*, ellen.townsend@nottingham.ac.uk*

Dr Laura Blackie*, laura.blackie@nottingham.ac.uk*

What is this study about?

This is an invitation to take part in the second phase of a research study investigating how individuals' appraisals of stressful life experiences affect their well-being. You are eligible to take part in this study since you participated in the first phase of this study four weeks ago. If you have any questions about this study or the previous one you participated in, please email the researcher with the email address above. Before you decide if you wish to take part, it is important for you to understand why the research is being done and what it will involve. Please take the time to read this information carefully and ask any questions you may have before choosing whether to participate.

What does this study involve?

In this study, we are interested in understanding whether how you interpret and appraise recent stressful life events affects how you feel about your future, goals, and relationships with others. If you choose to participate, you will be asked to think about a recent stressful experience and answer some questions referring to that event. It is possible that some people might feel distressed while thinking about a negative experience. Please note that you can withdraw at any time if you feel uncomfortable while answering these questions or skip any questions if you do not wish to answer them, without providing us with a reason. After this questionnaire, you will be asked to complete other questions related to your future and the quality of your relationships with others and setting goals. In the end, you will be presented a debriefing sheet where you will be informed about the nature of our study and available support services, and you can enjoy some exam howlers to lighten your mood.

Your participation in the study will last around 10 minutes. We would like to invite you to answer all questions as honestly as possible. There are no right or wrong answers, so respond intuitively and do not spend too much time pondering. You do not have to answer any question that you do not wish to answer. If you complete this study, you will be compensated £0.90 for your time. In line with payment procedures of Prolific *you must submit your **completion URL** at the end of the survey in order to be compensated.*

Who is eligible to participate?

Eligible participants must be:

(a) Aged 18 or older.
(b) Participants from the first online study who paid attention to our study instructions

Do you have to participate?

Please note that the questions will cover some sensitive topics, including your experiences of difficulties, and unpleasant feelings (e.g., feeling like a burden to others). Participation in this study is voluntary, and you are under no obligation to take part. You are free to skip or refuse to answer any question in the questionnaires without providing us with a reason. You are free to withdraw at any point before or during the study without providing us with a reason. However, please note that we may still analyse the data you have provided before you withdrew. If you decide you wish to withdraw your data, please email the named researcher (either via prolific) or on the email given above, stating your Prolific ID.

How will your data be used and stored?

We will not ask you to provide your name; however, you will be asked to write your Prolific ID, which will help the research team to find your responses if you request for your data to be removed from the analysis. Please note that this can be done up until the point where we delete your Prolific ID (*approximately within eight to nine months after your participation*), to ensure the data is fully anonymised.

If participants (i) complete all the waves of our study or (ii) request to withdraw their data, their Prolific ID information will be removed from the data to ensure anonymity.

By this point, all personal information which is collected about you during the research (e.g., age, gender, and ethnicity) is strictly confidential and is used for research purposes only. Only the research team will have access to the data, which will be stored in compliance with the Data Protection Act (1998). Post-analysis data may be made publicly available to the wider scientific community, and this data will be anonymised, and you will not be identifiable. As an online participant in this research, you should be aware there is always the risk of intrusion by outside agents, i.e., hacking, and therefore the possibility of being identified.

Why we collect your personal data?

The University of Nottingham is collecting your personal data for research purposes, as outlined in this participant information sheet. The legal basis for processing your personal data on this occasion is Article 6(1a) consent of the data subject. The basis for processing your sensitive personal data on this occasion is Article 9(2a) the data subject has given explicit consent to the processing.

How long we keep your personal data?

For information about the University's obligations with respect to your data, who you can get in touch with and your rights as a data subject, please visit:

https://www.nottingham.ac.uk/utilities/privacy.aspx

The University may store your data for up to 25 years and for a period of no less than 7 years after the research project finishes. The researchers who gathered or processed the data may also store the data indefinitely and reuse it in future research.

What will happen to the results of the research study?

We aim for the results from this research study to be published in an academic journal, and it might also be presented as a paper at academic conferences. If you have any questions or concerns, please don't hesitate to ask now. We can also be contacted after your participation at the above address. If you have any complaints about the study, please contact: Stephen Jackson (Chair of Ethics Committee) via email: stephen.jackson@nottingham.ac.uk

Consent Form for Both Measures

Stressful life experiences and well-being

Ethics Approval Number S1279

Researcher: Meryem Betul Yasdiman, *meryem.yasdiman@nottingham.ac.uk*

Supervisors: Prof Ellen Townsend, *ellen.townsend@nottingham.ac.uk*

Dr Laura Blackie, *laura.blackie@nottingham.ac.uk*

Please read the following information carefully before deciding if you wish to participate:

- I have read and understood the Information Sheet.
- I have been provided with the email addresses of the researchers and had the opportunity to ask questions about the study.
- If I have asked questions, they have been answered satisfactorily.
- I understand that I am free to withdraw from the study at any time and without giving a reason.
- I give permission for my data from this study to be shared with other researchers provided that my anonymity is completely protected.
- I understand how my data will be stored and protected according to GDPR regulations.

"This study has been explained to me to my satisfaction, and I agree to take part. I understand that I am free to withdraw at any time."

Do you agree to participate in this research study?

□ YES: By ticking this box, I authorise that I agree with the statements above and that I agree to take part. I understand that I am free to withdraw at any time by closing my browser window.

□ NO: I do not agree to take part in this survey.

Debriefing Sheet for T1 survey

Researcher: Meryem Betul Yasdiman, meryem.yasdiman@nottingham.ac.uk
Supervisors: Prof Ellen Townsend, ellen.townsend@nottingham.ac.uk
Dr Laura Blackie, laura.blackie@nottingham.ac.uk

Thank you for taking part. We appreciate your help in our first study, asking questions about your well-being, future thoughts, and your relationship with others. This will help us to see the long-term changes in these aspects when you to take part in the next survey, to which you will be invited in four weeks, if you are eligible based on the criteria outlined in the study information sheet. This second phase of our study will be again conducted online, and you will receive an invitation via Prolific. We intend for the findings of our research to contribute to the existing body of research aimed towards therapeutic treatment for people encountering challenging life events. None of the responses you have provided will be used to identify you as an individual; data collected from all participants will be analysed together. The results of this study might be published in academic journals and the researcher's PhD thesis.

We have compiled a list of national organisations you can contact for further support below. You are always welcome to contact the researcher, Meryem Betul Yasdiman, for any advice on accessing more local services or further signposting via email: meryem.yasdiman@nottingham.ac.uk

If as a result of participating in this research study, you felt distressed about any aspects of your life, there are a number of support services you may contact:

- In an emergency: Dial 999 for emergency services
- Samaritans has a National Help Line that is open 24 hours. Tel: 116 123 or email jo@samaritans.org to be connected to professionally trained staff.
- HOPELineUK (PAPYRUS): https://papyrus-uk.org/ If you are a young person (under 35 years) at risk of suicide or are worried about a young person at risk of suicide use the Hopeline: 0800 0684141 or send a text message to 07786 209697 or emailpat@papyrus-uk.org to be connected to professionally trained staff.
- Kooth (online counselling service for young people): https://kooth.com/
- Mind https://www.mind.org.uk/ There is a yellow "I need urgent help" button at the top of the page, which is a tool for people who need urgent help.
- Sane http://www.sane.org.uk/what_we_do/support/helpline SANEline is a national out-of-hours mental health helpline offering specialist emotional support, guidance and information to anyone affected by mental illness, including family, friends and carers.
- The Mix (essential support for under 25s) https://www.themix.org.uk/get-support Call 0808 808 4994 (4-11 pm every day), email, messenger and chat also available.
- Other useful organisations: www.time-to-change.org.uk/what-are-mental-health-problems/mental-health- help-you/other-useful-organisations

If you have any complaints about the study, please contact: Stephen Jackson (Chair of Ethics Committee) stephen.jackson@nottingham.ac.uk

Debriefing Sheet for T2 Survey

Researcher: Meryem Betul Yasdiman, meryem.yasdiman@nottingham.ac.uk
Supervisors: Prof Ellen Townsend, ellen.townsend@nottingham.ac.uk
Dr Laura Blackie, laura.blackie@nottingham.ac.uk

Thank you for taking part in the second phase of our research study and telling us about your experiences. We appreciate your help in our research, which explores the impact of stressful life events on people's well-being. We are interested in examining individual differences in how people interpret stressful life experiences and the influence this has on people's mental health. In particular, we asked about both the risk factors and the protective factors that are associated with developing (or protecting against) suicidal thoughts, such as a low sense of belonging, feeling a burden to others.

Background: In some cases, after stressful situations, individuals can reframe the situation to find a silver lining or take a positive lesson from an otherwise negative situation. This is called post-traumatic growth (PTG). We are interested in understanding whether perceiving positive changes as a result of struggling with challenges helps individuals to have more positive thoughts about their future, and enhances their ability to change plans and goals when faced with barriers. We also examine whether perceiving positive changes after a stressful life event increases individuals' sense of connectedness to other people and reduces feelings of burdensomeness.

Design: To investigate this research question, we designed a longitudinal study with two time-point measures conducted four-weeks apart. We will examine whether there are changes in all the well-being measures described above across the two time- points and whether people who report higher levels of post-traumatic growth from a recent stressful life experience greater changes in their well-being. We recruited participants from a variety of postcodes in the UK. This enabled us to have a broad representation of different socioeconomic statuses in our sample. It is important for researchers to understand the impact of stressful life experiences on mental health in a broader representation of social groups within the UK.

With this design, we will be able to examine the potential protective role of post- traumatic growth in decreasing the risk for emerging suicidal thoughts. We intend for these findings to contribute to the existing body of research aimed towards therapeutic treatment for people experiencing stressful life events and having suicidal thoughts.

None of the responses you have provided will be used to identify you as an individual; data collected from all participants will be analysed together. The results of this study might be published in academic journals and the researcher's PhD thesis.

We have compiled a list of national organisations you can contact for further support below. You are always welcome to contact the researcher, Meryem Betul Yasdiman, for any advice on accessing more local services or further signposting via email: meryem.yasdiman@nottingham.ac.uk

If as a result of participating in this research study, you felt distressed about any aspects of your life, there are a number of support services you may contact:

- In an emergency: Dial 999 for emergency services
- Samaritans has a National Help Line that is open 24 hours. Tel: 116 123 or email jo@samaritans.org to be connected to professionally trained staff.
- HOPELineUK (PAPYRUS):) https://papyrus-uk.org/ If you are a young person (under 35 years) at risk of suicide or are worried about a young person at risk of suicide use the Hopeline: 0800 0684141 or send a text message to 07786 209697 or email pat@papyrus-uk.org to be connected to professionally trained staff.
- Kooth (online counselling service for young people): https://kooth.com/
- Mind https://www.mind.org.uk/ There is a yellow "I need urgent help" button at the top of the page, which is a tool for people who need urgent help.
- Sane http://www.sane.org.uk/what_we_do/support/helpline SANEline is a national out-of-hours mental health helpline offering specialist emotional support, guidance and information to anyone affected by mental illness, including family, friends and carers.
- The Mix (essential support for under 25s) https://www.themix.org.uk/get-support Call 0808 808 4994 (4-11 pm every day), email, messenger and chat also available.
- Other useful organisations: www.time-to-change.org.uk/what-are-mental- health-problems/mental-health-help-you/other-useful-organisations

If you have any complaints about the study, please contact: Stephen Jackson (Chair of Ethics Committee), stephen.jackson@nottingham.ac.uk

Appendix F: Chapter 6 – Study Materials

Information sheet

Exploring how stressful life experiences influence individuals' well-being

Ethics Approval Number s1250

Researcher: Meryem Betul Yasdiman, *lpxmbya@nottingham.ac.uk*
Supervisors: Prof Ellen Townsend*, ellen.townsend@nottingham.ac.uk*
Dr Laura Blackie*, laura.blackie@nottingham.ac.uk*

What is this study about?

This is an invitation to take part in a research study that will investigate the impact of stressful experiences on individuals' well-being. Before you decide if you wish to take part, it is important for you to understand why the research is being done and what it will involve. Please take the time to read this information carefully and ask any questions you may have before choosing whether to participate. You may email the researcher directly if you have questions using the email address provided at the top of this page.

What does this study involve?

We are interested in understanding how stressful life events can affect individuals' mental health. Particularly, our research aims to understand whether differences in interpreting the stressful event affects our mental health and well-being. If you choose to participate in this study, you will be asked to answer demographic questions (e.g., age, gender) and questions about your mental health, including the extent to which you are experiencing symptoms of depression, how much you feel supported by others around you, the extent to which you feel powerless to change things in your life and how you are feeling when you think about the future.

Then, you will be asked to think about a stressful experience from your past. You will be asked to briefly describe the event and explain what happened, when it happened, and the impact it had on you. Some participants will be asked to write about the situation, attempting to extract any positive aspects from their experience. For example, some situations might encourage people to appreciate certain aspects of their lives or relationships. It is possible that some people may find it difficult to reframe a stressful event in a positive way or to describe the event. This might be affected by how you are feeling now or the intensity/negativity of the event. You can stop at any time if you feel uncomfortable while doing this task and skip any questions you do not wish to answer. After this task, you will be asked questions about your well-being, how much you feel supported by others around you, you are feeling when you think about the future.

Please note that some of these questions will ask about sensitive topics, and you can choose to leave blank any question you do not wish to answer without providing us with a reason. Your participation in the study will last around 40-45 minutes. You will be entered into a prize draw to win an Amazon vouchers (£10). If you are a first-year psychology student at the University of Nottingham, you will be given 1 course credits for your participation.

Who is eligible to participate?

Eligible participants must meet the following criterion: a) Aged 18 or older.

Do you have to participate?

Please note that the questions will cover some sensitive topics, such as the extent to which you deal with difficulties and challenges, and the experience of unpleasant feelings, such as feeling a burden to others. Participation in this study is totally voluntary, and you are under no obligation to take part. You are free to skip or refuse to answer any question in the questionnaires without providing us with a reason. You are free to withdraw at any point before or during the study without providing us with a reason or encountering a penalty or affecting your statutory rights (including your academic profile for UoN students). If you decide you wish to withdraw your data, please email the named researcher on the email given above stating your unique identifier you will write at the beginning of this survey.

How will your data be used and stored?

For information about the University's obligations with respect to your data, who you can get in touch with and your rights as a data subject, please visit:
https://www.nottingham.ac.uk/utilities/privacy.aspx
You will not be asked to provide your name at any point of the survey however, you will be asked to provide your email address in order to be entered into the prize draw. UoN students will receive course credits for participation.

You can request for your data to be removed from analysis up until the point where we delete any identifier and email information (within one-year of your participation), to ensure the data is fully anonymised.

Why we collect your personal data:

The University of Nottingham is collecting your personal data for research purposes, as outlined in this participant information sheet. The legal basis for processing your personal data on this occasion is Article 6(1a) consent of the data subject. The basis for processing your sensitive personal data on this occasion is Article 9(2a) the data subject has given explicit consent to the processing.

How long we keep your personal data:

Once participants let the researcher know that they would like to withdraw their data, their unique identifier and email information will be removed from the data to ensure anonymity. By this point all personal information which is collected about you during the course of the research (e.g., email, age) is strictly confidential and is used for research purposes only. Only the research team will have access to the data, and it will be stored in compliance with the Data Protection Act.
Post-analysis data may be made publicly available to the wider scientific community and this data will be anonymised, and non-identifiable. As an online participant in this research, you should be aware there is always the risk of intrusion by outside agents, i.e., hacking, and therefore the possibility of being identified.

What will happen to the results of the research study?

We aim for the results from this research study to be published in an academic journal, and it might also be presented as a paper at academic conferences.

If you have any questions or concerns please don't hesitate to ask now by using the email provided for the lead researcher at the top of this page. We can also be contacted after your participation at the above addresses.
If you have any complaints about the study, please contact: Stephen Jackson (Chair of Ethics Committee) stephen.jackson@nottingham.ac.uk

Consent Form

Please read the following information carefully before deciding if you wish to participate:

· I have read and understood the Information Sheet.

· I have been provided with the email addresses of the researchers and had the opportunity to ask questions about the study.

· If I have asked questions they have been answered satisfactorily.

· I understand that I am free to withdraw from the study at any time and without giving a reason.

· I give permission for my data from this study to be shared with other researchers provided that my anonymity is completely protected.

· I have read and understood the privacy statement that outlines how my data will be stored and protected according to GDPR regulations.

"This study has been explained to me to my satisfaction, and I agree to take part. I understand that I am free to withdraw at any time."

Do you agree to participate in this research study?

Experimental Debriefing Information

School of Psychology
University of Nottingham

Researcher: Meryem Betul Yasdiman, meryem.yasdiman@nottingham.ac.uk
Supervisors: Prof Ellen Townsend, ellen.townsend@nottingham.ac.uk
Dr Laura Blackie, laura.blackie@nottingham.ac.uk

Exploring how stressful life experiences influence individuals' well-being

Thank you for taking part. We appreciate your help in our study in which you have been asked to complete a series of questionnaires that ask questions about your well-being, coping strategies, your relationship with others, and your mood. This study explores the impact of stressful life events on the factors that may affect one's mental health, such as coping when feeling distressed. We particularly aim to provide an understanding of the differences in interpreting stressful life experiences and whether how we appraise these events affect our well-being. Therefore, some participants of this study were just asked to describe their personal experiences, while others were asked to reappraise the challenging event in a more positive way to find benefits (e.g., greater appreciation of their lives) from the experience. This will allow us to understand the impact and value of engaging in positive reappraisals for mental well-being.
We intend for the findings of our study to contribute to the existing body of research aimed towards therapeutic treatment for people encountering challenging life events. None of the responses you have provided will be used to identify you as an individual; data collected from all participants will be analysed together. The results of this study might be published in academic journals and in the researcher's PhD thesis.

We have compiled a list of national organisations you can contact for further support below. You are always welcome to contact the researcher, Meryem Betul Yasdiman, for any advice on accessing more local services or further signposting via email: meryem.yasdiman@nottingham.ac.uk

If as a result of participating in this research study you felt distressed about any aspects of your life, there are a number of support services you may contact:
- In an emergency: Dial 999 for emergency services
- Samaritans has a National Help Line that is open 24 hours. Tel: 116 123 or email jo@samaritans.org to be connected to professionally trained staff.
- HOPELineUK (PAPYRUS) on 0800 0684141 or send a text message to 07786 209697 to be connected to professionally trained staff.
- Harmless (user led support service for self-harm). Harmless.org.uk
- Cripps medical centre: 01158468888
- Kooth: https://kooth.com/
- You can self-refer to the Nottingham 'Let's talk wellbeing' service https://www.nottinghamshirehealthcare.nhs.uk/letstalkwellbeing

- Other useful organisations: www.time-to-change.org.uk/what-are-mental-health-problems/mental-health-help-you/other-useful-organisations
Student Minds: https://www.su.nottingham.ac.uk/volunteering/volunteering-opportunities/student-led-projects/mentalwealth/

Nottingham counselling service: 01159501743
Nottingham University Nightline: 01159514985

If you have any complaints about the study, please contact: Stephen Jackson (Chair of Ethics Committee) stephen.jackson@nottingham.ac.uk

Appendix G: Additional Regression Analyses (Chapter 6)

In order to address the examiners' comment on the regression analyses, I performed four hierarchical multiple regression analysis using bootstrapping method set at 1000 samples.

1) I entered pre-test burdensomeness scores in Step 1 and included depression and group variable in Step 2. Post-test burdensomeness was the dependent variable. Findings showed that at Step 1 pre-burdensomeness scores contributed significantly to the regression model ($F(1,229) = 800.69$, $p < .001$)) and accounted for 78% of the variation in post-burdensomeness scores. Introducing Depression and grouping variable did not explain a significant variation in post-burdensomeness scores ($F(2,227) = .481$, $p = .618$, R^2 change= .001)

2) I entered pre-test thwarted belongingness scores in Step 1 and included depression and group variable in Step 2. Post-test thwarted belongingness was the dependent variable. Findings showed that at Step 1 pre-belongingness scores contributed significantly to the regression model ($F(1,229) = 786.46$, $p < .001$)) and accounted for 77% of the variation in post-belongingness scores. Introducing Depression and grouping variable did not explain a significant variation in post-belongingness scores ($F(2,227) = .481$, $p = .142$, R^2 change= .004)

3) I entered pre-test hope scores in Step 1 and included depression and group variable in Step 2. Post-test hope was the dependent variable. Findings showed that at Step 1 pre-hope scores contributed significantly to the regression model ($F(1,228) = 572.192$, $p < .001$)) and accounted for 82% of the variation in post-hope scores. Introducing Depression and grouping variable did not explain a significant variation in post-hope scores ($F(2,226) = 1.864$, $p = .157$, R^2 change= .005)

4) Finally, I entered pre-test positive mental health (PMH) scores in Step 1 and included depression and group variable in Step 2. Post-test PMH was the dependent variable. Findings showed that at Step 1 pre-PMH scores contributed significantly to the regression model ($F(1,229) = 1026.456$, $p < .001$)) and accounted for 82% of the variation in post-PMH scores. Introducing Depression and grouping variable did not explain a significant variation in post-PMH scores ($F(2,227) = 1.679$, $p = .189$, R^2 change= .003)