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**Promoting Male Adolescents' Well-Being and Social Outcomes Through a Gratitude
Intervention**

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Declaration of Ethics

The research presented and reported in this thesis was conducted within the guidelines for research ethics outlined in the National Statement on Ethics Conduct in Research Involving Humans (1999), the Joint NHMRC/AVCC Statement and Guidelines on Research Practice (1997) and the James Cook University Statement and Guidelines on Research Practice (2001). The proposed research methodologies received human research ethics approval from the James Cook University Human Ethics Committee (approval numbers H7867 - see [Appendix A](#)).

Abstract

Adolescents can benefit from gratitude instruction. Gratitude has been linked to positive emotions, stronger relationships, better mental health, and more effective stress management. However, gratitude interventions are often designed for adults, and those for adolescents are limited. To address this gap, researchers emphasised tailoring interventions to meet adolescents' needs. This study investigated an adapted gratitude intervention and its impact on male adolescents' dispositional gratitude, well-being (life satisfaction, mental health), and social outcomes (prosocial skills and perceived social support). This research was guided by Social-Cognitive Theory of Gratitude, Broaden-and-Build Theory of Positive Emotions, and Find-Remind-and-Bind Theory. Participants ($N=183$) were male adolescents from three Catholic schools, in Grades 8 and 10. Classes from each school were randomly assigned to an intervention or control group. The intervention group underwent four weeks of gratitude sessions, while the control group attended their usual class curriculum. A mixed-model ANOVA assessed the differences in dispositional gratitude and well-being outcomes across treatment conditions (intervention versus control group) and time points (pre-test, post-test, follow-up). The gratitude intervention effectively enhanced dispositional gratitude and contributed to the maintenance of mental health in Grade 10 adolescents. No significant findings emerged for Grade 8 adolescents. Socio-demographic factors (e.g., religion, ethnicity, family type) did not moderate the relationship between treatment conditions and dispositional gratitude. In summary, the adapted gratitude intervention showed some efficacy for older male adolescents' dispositional gratitude and mental health. Future research is warranted to examine the intervention's effectiveness across different age groups, other well-being and social outcomes, and over a longer period.

Keywords: dispositional gratitude, gratitude intervention, male adolescents, well-being, social outcomes, moderators

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List of Abbreviations

ACG	Alternate Control Group
BMSLSS-PTPB	Brief Multidimensional Students' Life Satisfaction Scale- Peabody Treatment Progress Battery
CCE	Citizen and Character Education
CG	Control Group
GQ-6	Gratitude Questionnaire-6
IG	Intervention group
MHC-SF	Mental Health Continuum-Short Form
MSPSS	Multidimensional Scale of Perceived Social Support
PBS	Prosociality Behaviour Scale
PPI	Positive Psychology Interventions
WHO	World Health Organization

Chapter 1

Gratitude: A Multidimensional Concept

Gratitude is more than just saying thank you. Traditionally regarded as a sense of appreciation, gratitude has since gained increasing recognition as a complex, multi-dimensional concept involving cognition, emotions, and behaviours (Bosacki et al., 2018; Emmons & McCullough, 2003; Rusk et al., 2016; Tudge et al., 2022). Gratitude is described in the literature in a number of ways, including as a human disposition (Emmons & McCullough, 2003; Emmons & Stern, 2013; McCullough et al., 2002), a virtue (Tudge et al., 2015), a strength trait (Li, 2014; Lin, 2016; Rash et al., 2011), a positive emotion (McCullough et al., 2001), a habit and attitude (Emmons & McCullough, 2003), an action (Hong & Kim, 2020), a coping response (Lasota et al., 2020), a complex cognitive ability (Merçon-Vargas et al., 2018), and a by-product of social interactions (Algoe et al., 2016; Fox et al., 2015; Tsang, 2006). Even though the concept of gratitude is difficult to define, scholars, practitioners, and researchers agree that there are advantages to learning more about it. Researchers studying gratitude generally agree that additional studies are needed, with two highlighted areas of research being promoting the understanding of gratitude and cultivating gratitude.

Understanding Gratitude: Concepts, Types and Categories

Numerous efforts have been made to conceptualise gratitude so that it can be studied scientifically. Gratitude has been categorised as a disposition (a stable affective trait that determines one's characteristic manner of responding), a mood (a regular fluctuation in overall gratitude levels), and an emotion (a temporal affective experience upon receiving a favour or gift from someone) (Allen, 2018; Uher et al., 2017). Among these three types, dispositional gratitude is the most investigated and measured, followed by gratitude as an

emotion and mood (Allen, 2018; Emmons & Mishra, 2011; Hussong et al., 2018). In addition to understanding gratitude by types or categories, other researchers have theorised gratitude as a combination of cognitions, attitudes, and socially learnt behaviours that are largely influenced by established socio-cultural norms (Bono et al., 2015; Kristjánsson, 2015; Morgan et al., 2017; Palhares et al., 2018).

As the study of gratitude continues to grow in popularity across different domains of psychology (e.g., Ackerman, 2017; Liang et al., 2022; Ma et al., 2017; Oriol et al., 2021; Owens & Patterson, 2013; Poelker & Kuebli, 2014), researchers emphasise the need to scope the investigation of gratitude by focusing on specific types or measurable qualities of gratitude (i.e., appraisals of aid, gratitude feelings, and benefits) (Bosacki et al., 2018). As such, the present study identified dispositional gratitude as the specific type of gratitude to be examined because of its widespread benefits for human functioning.

Dispositional Gratitude: Functions, Importance and Definitions

Dispositional gratitude functions as a cognitive strategy (Emmons & McCullough, 2003; Conway et al., 2013) and an emotional regulation strategy (Kilbert et al., 2019). It is recognised as a resource for identity development (Bono & Sender, 2018) and for the development of enduring well-being outcomes (Kilbert et al., 2019). The benefits of dispositional gratitude extend across many areas of human functioning (Dickens, 2017; Emmons & Stern, 2013; Lin, 2015; Morgan et al., 2015). Grateful people are more helpful and generous (Allen, 2018) and hopeful (Krause et al., 2015; Uhder et al., 2017). They reported having increased optimism and life satisfaction (Uhder et al., 2017), more positive emotions (Ackerman, 2017), motivation (Bono et al., 2020), higher self-esteem (Corona et al., 2020), increased stress resilience (Wei et al., 2022; Wolfe, 2021), and decreased suicidal thoughts (Krysinska et al., 2015; Wei et al., 2022). Furthermore, the benefits of dispositional

gratitude are reported to extend beyond the individual to impact interpersonal and societal levels (Algoe, 2012; Allen, 2018; Berger et al., 2019; Morgan et al., 2015; Rusk et al., 2016; Tudge & Freitas, 2018). For instance, gratitude is associated with enhanced quality of social relationships (Algoe et al., 2013; Bono et al., 2020; Ma et al., 2013; Tudge & Freitas, 2018), improved peer and teacher relationships (Zhen et al., 2021), strengthened social bonds (Allen, 2018; Ma et al., 2013), and enhanced social adaptation (Jin & Wang, 2019).

Dispositional gratitude is defined as the inclination “to recognise and respond with grateful emotion to the roles of other people’s benevolence in the positive experiences and outcomes that one obtains” (McCullough et al., 2002, p. 112). It is also defined as the by-product of a two-step cognitive process (Emmons & McCullough, 2003). The first step involves the beneficiary (i.e., recipient) recognising the receipt of a positive outcome (i.e., benefit). The second step involves acknowledging the external source (i.e., benefactor) of this positive outcome. To further promote the understanding of dispositional gratitude, Morgan et al. (2015) highlighted two distinct categories of gratitude: *dyadic* and *triadic*. Dyadic gratitude comprises the dual components of ‘benefit’ and ‘beneficiary’, while triadic gratitude comprises the trio of components: ‘benefit’, ‘beneficiary’, and ‘benefactor’. Relative to dyadic gratitude, triadic gratitude is cited as being more frequently examined in gratitude research (Morgan et al., 2015). Taken together, dispositional gratitude involves a complex interplay of cognitive, emotional, prosocial, and behavioural processes.

Rationale for Examining the Adolescent Population

Adolescence: A Pivotal Stage for Change

The World Health Organization (WHO, n.d.) defined adolescence as the age from 10 to 19 years old. Adolescence is a unique phase of human development where rapid biopsychosocial growth takes place (Bosacki et al., 2018). During this life stage, essential

developmental processes like maturation, character formation, core identity, and habit development take place (Bono et al., 2023; Crocetti, 2017; Duthely et al., 2017; Khanna & Singh, 2016). Additionally, it is during adolescence that adaptive or maladaptive behavioural traits develop (Ross et al., 2020).

Adolescents today face numerous challenges and uncertainties that can impede their ability to manage multiple life stressors and impact their well-being (Bono et al., 2023). An example is the COVID-19 global pandemic, which was reported to be an unexpected stressor impacting adolescents' mental well-being (Ang, 2022; Bono et al., 2023). From the disruptions of school closures to involuntary confinement at homes to disruptions in daily and social activities, all these factors negatively affected their mental well-being and social functioning (Geier & Morris, 2022; Wolfe, 2021). An identified way to help adolescents navigate through stressful periods and build their resilience is by developing gratitude in adolescents (Wolfe, 2021).

Therefore, it is strategic to examine dispositional gratitude in adolescents because adolescence is conjectured to be the stage of life where the understanding of gratitude begins to grow in prominence, leading to adulthood (Froh et al., 2008, 2014; O'Brien et al., 2018). Further, there is increasing recognition that the adolescents' malleable brain allows for cognitive and behavioural flexibility that influences their adaptation to their shifting intrinsic and extrinsic environment and promotes positive development (Abrams, 2022). Notably, it is this flexibility that predisposes adolescents to be more easily primed for interventions, leading them to experience more lasting changes (Froh et al., 2009a; Renshaw & Orlinger Steeves, 2016). As such, the implementation of gratitude intervention during adolescence can be a form of early intervention to help them develop more adaptive patterns of behaviour and promote a sense of well-being (Komase et al., 2021).

Dispositional Gratitude and Well-Being Outcomes

Well-being is a multidimensional concept encompassing social, moral, emotional, psychological, and spiritual elements of positive living (Bosacki et al., 2018; Khanna & Singh, 2016). It is defined as having “the support, confidence, and resources to thrive in contexts of secure and healthy relationships, realising their full potential and rights.” (Ross et al., 2020, p. 473). Addressing adolescents’ well-being is beneficial because it is a preventive approach that can reduce adolescents’ stress and increase their school performances (Duthely et al., 2017). Additionally, investigating well-being can assist in the detection and treatment of psychological issues such as depression and anxiety, potentially resulting in better life outcomes (Diener et al., 2017).

The existing gratitude literature indicates that dispositional gratitude is associated with well-being (Bono & Sender, 2018) and plays an important role in the development of well-being outcomes, such as life satisfaction (Armenta et al., 2022; Froh et al., 2010), mental health (Chen, 2021; Geier & Morris, 2022; Kong et al., 2020; Ng, 2022; Portocarrero et al., 2020), emotional and physical health (Fredrickson, 2004; Lin, 2015) and spirituality (Bosacki et al., 2018). For this present study, the two well-being outcomes identified are life satisfaction and mental health. The rationale for their selection is described in the following sections.

Life Satisfaction and Dispositional Gratitude

Life satisfaction is theorised to be the foundation of many adaptive social and psychological outcomes for adolescents, and it plays a pivotal role in their adaptation and development (Bono et al., 2019; Franke et al., 2017; Froh et al., 2010). Life satisfaction refers to the evaluation of the quality of life and satisfaction with life experienced (Diener, 2009; Diener et al., 2017). It is widely regarded as a critical strength and a protective factor against

stress (Franke et al., 2017; Freire et al., 2018). Given life satisfaction's importance for adolescents' growth and development, it is important to examine key mechanisms that can help enhance it.

Dispositional gratitude has been found to prompt adolescents to feel more satisfied with their lives (Armenta et al., 2022; Bono et al., 2019; You et al., 2018). A few underlying processes have been suggested to explain the dynamic relationship between gratitude and life satisfaction. First, recognising the benefits received and obligations towards benefactors, engendered expressing gratitude, may lead to elevated feelings of support (Hussong et al., 2018; Layous et al., 2017), offset negative emotions, and remove barriers to life satisfaction (Armenta et al., 2022). Second, by responding with appreciation, gratitude enables more positive cognitive reappraisals that, in turn, increase life satisfaction (Bryan et al., 2018). Third, the practice of gratitude may stimulate feelings of optimism, contributing to feelings of satisfaction with one's life (Armenta et al., 2022). Additionally, the disposition of gratitude can evoke a sense of humility (Kruse et al., 2014), lead to greater openness towards critical feedback, and motivate self-improvement behaviour (Armenta et al., 2022).

The empirical investigations of dispositional gratitude and life satisfaction in adolescents are presently inconclusive. In some studies, adolescents who experience higher gratitude report higher life satisfaction (Armenta et al., 2022; Bono et al., 2019; Froh et al., 2010; Kong et al., 2015, 2020; You et al., 2018). Yet other investigations have found no significant association between dispositional gratitude and life satisfaction (Froh et al., 2009b, 2014). In addition to life satisfaction, the present study also examines mental health as a well-being outcome. The following section covers mental health in association with gratitude.

Mental Health and Dispositional Gratitude

Mental health is a complex composite of affect and psychological functioning, and it is critical for well-being and effective living (Tennant et al., 2007). It refers to a “dynamic state of internal equilibrium which enables individuals to use their abilities in harmony with universal values of society. Basic cognitive and social skills; ability to recognise, express and modulate one's own emotions, as well as empathise with others; flexibility and ability to cope with adverse life events and function in social roles” (Galderisi et al., 2015, p. 231–232).

Mental Health of Adolescents in Singapore. Singaporean adolescents have been reported to rank as the most stressed out among their peers in other Asian countries (Iyer, 2012; Teo, 2019). In fact, a recent Singapore Youth Epidemiology and Resilience Study surveyed 3,336 young people aged 11 to 18 and found that one in three Singaporean adolescents reported internalising mental health symptoms like anxiety, sadness, and loneliness (Ang, 2022). The study also found that Singaporean youths aged 14 to 16 had more serious symptoms. Collectively, these findings may account for the increased attention cast on Singaporean adolescents’ mental health (CNA, 2022; Goh, 2024; Low, 2023; Seah & Ng, 2023; Shafeeq, 2024). While the Health and Education Authorities of Singapore recognise the importance of adolescents’ mental health and well-being, the urgency now is to find ways that can effectively strengthen these areas for adolescents.

Importance of Addressing Adolescents’ Mental Health. International agencies like the United Nations Children’s Fund (UNICEF) and the WHO have collectively reported a global lack of data on adolescent mental health (Carvajal-Velez et al., 2023). Given the importance of mental health combined with the current lack of mental health data, there is an urgency to increase research focus on examining issues surrounding adolescents’ mental health (Carvajal-Velez et al., 2023). Addressing mental health during adolescence can result

in positive developmental impacts such as protecting them against stress and burnout, leading to better physical health, engagement, and higher productivity (Allen, 2018; Carvajal-Velez et al., 2023; Jakobsen et al., 2022).

Gratitude, as a Mental Health Strategy. The disposition of gratitude is a protective factor for mental health (Bausert et al., 2018). Mental health can be improved either with structured gratitude interventions (Geier & Morris, 2022; Komase et al., 2021) or informally through the practice of gratitude (Chen, 2021; Ng, 2022). As a mental health strategy, gratitude has its appeal because of pre-existing gratitude practices found across many cultures (O'Brien et al., 2018, Layous et al., 2013). Additionally, gratitude is widely known because descriptives like 'thanksgiving' and 'grateful' are widely promoted in society through media headlines, photographs, and even social media hashtags (Armenta et al., 2022). Mental health strategies promoting gratitude have been notably described as practical, easily self-administered, and easily understood (Bono et al., 2023; Davis et al., 2016; Dickens, 2017).

In view of the insights gathered from the literature review, this study aims to examine the impact of a gratitude intervention on well-being outcomes (i.e., life satisfaction and mental health). Additionally, the study will explore the underlying processes or mechanisms that underpin the effectiveness of gratitude for adolescents, such as prosocial behaviour and perceived social support. The rationale for their selection is described in the next section.

Dispositional Gratitude and Social Outcomes

Prosocial Nature of Gratitude

Gratitude is characteristically relational (Bono & Sender, 2018) and crucial for establishing social interactions and strengthening connectedness with others and with society (Emmons, 2007; Froh et al., 2010). It predisposes people to display care and concern

for others (McCullough et al., 2002) and results in reciprocity (Froh et al., 2009b). Gratitude has been linked to the development of prosocial behaviours like cooperation, kindness, generosity, and justice towards others (Algoe et al., 2013; Allen, 2018; Krause et al., 2015; Liang et al., 2022; Ma et al., 2017; Peng et al., 2018; Robustelli & Whisman, 2018; Wolfe, 2021; Yost-Dubrow & Dunham, 2018).

In fact, the prosocial nature of gratitude can be clearly understood by examining the functions of dispositional gratitude, namely as a moral barometer, moral motivator, and moral reinforcer (McCullough et al., 2001). As a moral barometer, gratitude helps the recipient evaluate the benefactor's moral actions. As a moral motivator, gratitude then spurs the recipient to demonstrate prosocial actions towards the benefactors or to unrelated others. As a moral reinforcer, it perpetuates the benefactor's kindness and continual giving. Thus, gratitude is believed to have mutual benefits for both the recipient and the benefactor. Specifically, the recipient benefits in terms of help received, and the benefactor benefits in terms of experiencing positive feedback (Baumsteiger, 2019; Tsang, 2006). The experience of mutual benefits not only reinforces gratitude development but also promotes future prosocial behaviours for both the recipient and benefactor (Tsang, 2006).

Prosocial Behaviour and Dispositional Gratitude

Gratitude research involving adults has investigated social outcomes, such as prosocial behaviours, social support, and empathy, to better understand the prosocial nature of gratitude. Grateful individuals were found to be more prosocial, and they exhibit more supportive, helpful, forgiving and empathic behaviours compared to less grateful people (McCullough et al., 2002). Prosocial behaviour is broadly defined as the "efforts or intentions designed to benefit, promote or protect the well-being of another individual,

group, organisation or society” (Ma et al., 2017, p. 602). Prosocial behaviours have been found to be instrumental for adolescents’ functioning and positive coping in schools because they determine the quality of their social interactions and help them connect to resources necessary for managing potential conflicts and volatile interactions with peers (Baumstieger, 2019; Bausert et al., 2018; Froh et al., 2010; Layous & Lyubomirsky, 2014). Prosocial behaviour can be enhanced through the practice of gratitude (Bartlett & Desteno, 2006) and the experience of gratitude (Bausert & Froh, 2016). Therefore, there appears to be a need for more empirical studies to examine the prosocial outcomes of gratitude in adolescents, as most of the existing gratitude research relies on case studies (Ma et al., 2017; Tsang, 2006) and adult samples (Bono et al., 2019).

Perceived Social Support and Dispositional Gratitude

Gratitude research suggests that the recognition of benefits received from benefactors can lead to the perception of social support received from benefactors (McCullough et al., 2002). Perceived social support generally refers to the awareness that one has access to support from others in times of need (Zhang et al., 2017). The development of gratitude in adolescents has been linked with perceived support from peers (Froh et al., 2009b), parents (Bono et al., 2017; Froh et al., 2009), and teachers (Reckart et al., 2017). Perceived social support is a crucial outcome to cultivate in adolescents because support from key individuals like family members, peers, and teachers is vital for developing mental health (Jakobsen et al., 2022), managing emotions (You et al., 2018), achieving psychological adjustment (Dalmaso et al., 2018), coping with adverse life events and enhancing well-being (Bono & Sender, 2018), and improving academic learning (Jin & Wang, 2019). Despite its importance, gratitude research examining perceived social support is less common compared to research on prosocial behaviour, an area that warrants further

investigation (Wood et al., 2008). This study seeks to extend the current knowledge of perceived social support development in relation to adolescents' dispositional gratitude.

Potential Gratitude Research Areas

The gratitude literature has suggested that there is a lack of causal studies examining adolescents' dispositional gratitude, well-being and social outcomes (Bono & Emmons, 2010; Yang et al., 2021). Given these findings, this study aims to examine the impact of gratitude intervention on dispositional gratitude, well-being outcomes (mental health, life satisfaction), and social outcomes (prosocial behaviour, social support), especially given their significance for adolescents' development and functioning. In addition, previous studies have indicated a lack of research examining the potential moderators of gratitude intervention outcomes (Froh et al., 2008, 2009a; Owens & Waters, 2020) and age-related differences in adolescents' dispositional gratitude (Morgan & Gulliford, 2018). Taken together, these are key research areas that the present study aims to investigate to advance gratitude research in adolescents.

Need for Causality Studies on Gratitude

Empirical investigations have examined the correlational and causal link between dispositional gratitude and well-being (Bausert et al., 2018; Góngora & Castro Solano, 2014). However, most studies linking gratitude to well-being tend to focus more on adults than adolescents (Bausert et al., 2018; Bono et al., 2019; Froh et al., 2014; Layous & Lyubomirsky, 2014; Obeldobel & Kerns, 2021; Renshaw & Orlinger Steeve, 2016; Salve & Lavalekar, 2017; Solom et al., 2017; Tian et al., 2015; Tobia et al., 2019; Zhang et al., 2022). Similarly, most gratitude intervention studies are skewed towards sampling adults, while studies with children and adolescents are less common (Armenta et al., 2020; Bono et al., 2019; Bosacki et al., 2018; Obeldobel & Kerns, 2021; Reckart et al., 2017; Solom et al., 2017; Tobia et al.,

2019; Zhang et al., 2022). Given the different sampling focus in gratitude research, it would be presumptuous and even erroneous to assume that gratitude benefits for adults are similar for adolescents (Chen et al., 2009; Froh et al., 2009a). Thus, more empirical intervention studies sampling adolescents are warranted to evaluate gratitude's impact on well-being and social outcomes for this population (Armenta et al., 2022; Sun & Kong, 2013).

Need to Examine Potential Moderators of Gratitude Intervention Outcomes

When examining the optimal application of gratitude interventions and evaluating treatment outcomes, understanding the role of prospective moderators of gratitude intervention outcomes is important (Bausert et al., 2018; Berger et al., 2019; Owens & Waters, 2020; Watkins, 2014; Wang et al., 2017). Studies have identified several potential moderators of dispositional gratitude and intervention outcomes—including individual differences like positive affect (Froh et al., 2009a), socio-demographic variables (e.g., age, gender) (Froh et al., 2009b; Portocarrero et al., 2020; Wang et al., 2017), reciprocity, social bonds, individualism-collectivism (Ma et al., 2017), personality traits (Harbaugh & Vasey, 2014; Rash et al., 2011; Wang et al., 2017), and religious practice (Portocarrero et al., 2020)—yet research specifically on adolescents remains limited.

Examining moderators of gratitude intervention outcome is crucial because it provides insight into how the individual differences (e.g., age, gender, religious practice, values, inclinations) interact with the intervention to strengthen or weaken its effect (Duthely et al., 2017; Froh et al., 2009a; Guse et al., 2019; Merçon-Vargas & Tudge, 2021; Portocarrero et al., 2020). However, few gratitude intervention studies have examined potential moderators of gratitude intervention outcomes, highlighting the need for more investigations (Froh et al., 2009a; Owens & Waters, 2020). The next chapter will cover this further, highlighting studies examining moderators of gratitude intervention outcomes and

justifying the examination of selected factors that moderate these outcomes.

Need to Examine Age-Related Differences in Dispositional Gratitude

Dispositional gratitude is widely believed to mature with age and through practice, training, education, adaptation, or just by undergoing life experiences (Emmons & McCullough, 2003; Froh et al., 2008; Froh et al., 2011; Guse et al., 2019; Morgan & Gulliford, 2018; Morgan et al., 2015; O'Brien et al., 2018; Tudge et al., 2015). Studies of adult populations indicate that older adults experience higher levels of gratitude compared to younger adults and middle-aged adults (Allemand & Hill, 2016; Chopik et al., 2020). These age-differences in gratitude are similarly reported in studies examining the children and adolescent populations. It is suggested that children's gratitude expression and understanding of gratitude-related concepts are related to their normative socio-cognitive, moral, and emotional development (McCullough et al., 2001; Mendonça et al., 2018; Morgan & Gulliford, 2018). For instance, younger children are reported to develop partial conceptualisations of gratitude until middle childhood, when they develop more abstract gratitude understanding and use more complex emotional words (Morgan & Gulliford, 2018; Obeldobel & Kerns, 2021). Compared to young children, adolescents have a more sophisticated range of gratitude expressions and social connectedness (Freitas et al., 2019; Liang & Kiang, 2018; Morgan & Gulliford, 2018; O'Brien et al., 2018; Ramsey et al., 2018). This is attributed to adolescents' cognitive and emotional maturity that facilitates the development of a sense of self, other-centric perspective, and the evaluation of other's intentionality; all are essential features for gratitude expression (Froh et al., 2008; Liang & Kiang, 2018; McCullough et al., 2001; O'Brien et al., 2018).

Nonetheless, among gratitude studies sampling adolescents, very few have examined age-related differences (Morgan & Gulliford, 2018), and among these studies, the

findings are presently mixed (Chan, 2012; Froh et al., 2009a; Obeldobel & Kerns, 2020; Ramsey et al., 2018; Reckart et al., 2017). Thus, more empirical research is needed to enhance the understanding of age-related differences in dispositional gratitude in adolescents before concluding if adolescents' age is a strong predictor of gratitude levels (Allemand & Hill, 2016; Freitas et al., 2019; O'Brien et al., 2018; Obeldobel & Kerns, 2021). Research is also needed to examine age-related differences in gratitude practice and gratitude expression between younger and older adolescents (Bono & Emmons, 2010; Freitas et al., 2019; Froh et al., 2008).

Therefore, given gratitude's benefits for adolescents, understanding of age-related differences in their disposition of gratitude can inform practitioners of the age adolescents are most cognitively receptive towards gratitude education and ensure the efficient implementation of gratitude interventions. Furthermore, knowledge of age-related differences in adolescents' dispositional gratitude can assist in the design and adaptation of gratitude activities suitable for younger and older adolescents (Cheney et al., 2014), leading to potentially better life outcomes for adolescents (Diener et al., 2017).

Positive Psychological Intervention (PPI)

PPIs are broadly described as a set of intentional activities, treatment methods, or programmes designed to foster positive cognitions, behaviours, and emotions (Sin & Lyubomirsky, 2009; Wellenzohn et al., 2016). PPIs are applicable to both clinical and school settings. They can be implemented across a wide spectrum of adolescents, from typically developing adolescents to those who are at risk or with clinical conditions (Owen & Waters, 2020). While traditional adolescent-based interventions focus on remediating and reducing at-risk behaviours, PPIs are early interventions that can foster the development of strengths and the building of coping resources (Kilbert et al., 2019; Owens & Patterson, 2013; Owen &

Waters, 2020).

There is a rising trend for schools to adopt PPIs, such as gratitude, mindfulness, and resilience interventions (Freire et al., 2018). Notably, this is because studies have shown that PPIs conducted in class or even in school-wide events can lead to a range of benefits for adolescents. For example, they can enhance socio-emotional learning (Bono et al., 2023), boost happiness and well-being, ameliorate mental health (Cheney et al., 2014; Duthely et al., 2017; Freire et al., 2018; Ma et al., 2017; Renshaw & Olinger Steeves, 2016; Wellenzohn et al., 2016), and lead to optimal developmental growth (Green & Norrish, 2013; Owens & Patterson, 2013). Also, as adolescents spend much of their time in schools learning and socialising, schools naturally become the obvious choice for implementing PPIs.

Gratitude Interventions as a PPI

Gratitude interventions are recognised as one of the most effective PPIs for targeting well-being (Froh et al., 2009a; Komase et al., 2021) and human functioning (Renshaw & Rock, 2018). They are primarily designed to cultivate a disposition of gratitude through regular engagement in brief activities, such as writing a gratitude list or diary, composing a gratitude letter, expressing gratitude verbally, and participating in class-based programmes (Davis et al., 2016; Green & Norrish, 2013; Komase et al., 2021). Gratitude interventions have gained increasing support over the years from practitioners and researchers (Duthely et al., 2017), and they have even been cited as one of the emerging foci for clinical practice and psychological research (Kilbert et al., 2019). However, most gratitude interventions were originally developed for adults and only later adapted for adolescents (Obeldobel & Kerns, 2021). Consequently, interventions for adolescents are fewer in number, and research on this population is only slowly emerging (Obeldobel & Kerns, 2021). More empirical studies on adolescents are thus needed to determine if interventions designed for

adults are applicable and effective for this age group.

Overall, the appeal of gratitude interventions can be attributed to several factors. First, they are strength-based, focusing on establishing a positive life trajectory for the adolescent (Duthely et al., 2017; Green & Norrish, 2013; Owens & Patterson, 2013; Owen & Waters, 2020). Second, gratitude activities are reportedly enjoyable, with an other-centric focus and a social nature (Bono et al., 2023; Davis et al., 2016). They are also cost-effective, requiring no costly, complex technical equipment that some sports or physical fitness activities may require (Bono et al., 2023; Dickens, 2017; Layous & Lyubomirsky, 2014). Third, gratitude interventions are practical, effectively supplementing psychological therapies (Dickens, 2017; Layous & Lyubomirsky, 2014). They can be easily incorporated into a treatment plan and are considered very low risk programmes (Diener et al., 2017; Wood et al., 2010). Gratitude interventions are therefore promising for addressing mental health and student well-being issues (Bono et al., 2023; Wood et al., 2010), especially in a school setting where they can be more cost- and time-efficient than individual therapy (Bono et al., 2023; Cheney et al., 2014).

Research on gratitude intervention outcomes presents mixed findings, with some studies reporting positive effects while others do not (Dickens, 2017). These findings also appear to vary based on the type of intervention, comparison group, and population sampled (Davis et al., 2016; Dickens, 2017; Renshaw & Olinger Steeve, 2016). Most gratitude studies involving adolescents examine the correlations of gratitude, rather than the efficacy of interventions (Renshaw & Olinger Steeve, 2016). Considering the increasing trend of PPIs in schools, the inconsistent findings for gratitude interventions, and the limited research on adolescents, several potential research areas concerning interventions for this population emerge. Another less explored area in gratitude intervention studies is the effect of

adolescents' gender.

Gender-Related Differences in Gratitude

Gender is an important variable that should be taken into consideration when examining dispositional gratitude in adolescents (Guse et al., 2019) and adults (Kashadan et al., 2009). While there is little evidence that males are inherently less emotional than females, gender differences in the experience and expression of emotions like gratitude do occur (Brody, 1997; Chaplin, 2015). Studies on gratitude often suggest that female adolescents are more likely to express and experience gratitude than male adolescents (Choi & Yu, 2014; Reckart et al., 2017; Shourie & Kaur, 2016; Tan et al., 2022). However, two gratitude studies that surveyed adolescents found that male adolescents reported experiencing benefits of gratitude in family support (Froh et al., 2009b) and school satisfaction (Tian et al., 2015), while their female classmates did not.

Published gratitude intervention studies have also suggested that female adolescents tend to report experiencing higher levels of dispositional gratitude and more benefits from gratitude interventions compared to their male classmates (Rajan & Easvaradoss, 2012). These findings of gender-related differences in adolescents are similar to findings from earlier intervention studies that sampled adults (Emmons & McCullough, 2003; Kashdan et al., 2009). To the investigator's knowledge, only one gratitude intervention study has found that both male and female adolescents benefited in the areas of mental health and well-being (Bono et al., 2023).

Overall, the findings of gratitude intervention effects are inconsistent or weaker for males than for females. This suggests that researchers should consider the potential impact of gender roles and whether the effects are truly weaker for males. It also highlights the need to examine any other underlying processes that may impede gratitude intervention

effects (Kashdan et al., 2009). Therefore, more confirmatory empirical gratitude intervention studies are needed before concluding that males are less likely to benefit from these interventions.

There are a few possible reasons why males may express less gratitude than females. The first relates to socio-cultural expectations and gender norms socialisation, which is widely believed to have strong implications for the development of masculine beliefs, attitudes and behaviour (Brody, 1997; Lasota et al., 2020; Levant, 1996; O'Neil, 2008). Studies examining the psychology of men inform us that although different ideas of male gender roles exist across developmental life stages, races, ethnicities, and social classes, gender role conflict is a key area of difficulty for males (Levant, 1996). Gender role conflict is defined as the psychological state where one's socialised gender role is restrictive and rigid, leading to adverse cognitive-affective and behavioural consequences for the individual or others (O'Neil, 2008). For example, males may view gratitude as a threat to their masculinity, self-reliance and social status (Levant & Kopecky, 1995; Reckart et al., 2017) because they appraise gratitude to be a vulnerable emotion (Froh et al., 2009b; Naito et al., 2005; Solomon, 1995) associated with indebtedness and dependency (Solomon, 1995). Consequently, in response to these perceived threats to male gender roles, males self-protect by either choosing to avoid gratitude expression or over-inflating their reporting of gratitude (Hong & Kim, 2020; Levant, 1996; Renshaw & Rock, 2018). Studies suggest that gender role conflict can have negative implications for males' interpersonal relationships, psychological health and functioning (O'Neil, 2008).

The second reason why males may report lesser gratitude is rooted in their socio-emotional communication styles, which are likely shaped from a young age by their play patterns. Studies of children show differences in the play styles of boys and girls (Kilvington

et al., 2016; Kung, 2021). Boys engage more in physical activities and competitive sports and are less focussed on emotional connection, while girls engage more readily in conversations and nurturing play activities (Edwards et al., 2003; Kilvington et al., 2016; Pellegrini et al., 2004). This pattern of gender interactions is believed to set the stage for their development into adolescence (Kung, 2021) and even adulthood (Pellegrini et al., 2004). This developmental pathway may have implications for the expression of gratitude, which is widely known as an other-focused emotion involving active social communication and interpersonal relationships (Allen, 2018). As a result, males may be at a disadvantage because their emotional communication is geared more towards achievements, status, and power, unlike females whose styles are often focused on establishing relationships (Brody, 1997; Kashdan et al., 2009; Scherer et al., 1986).

The third reason why males may report lesser gratitude may stem from their lack of practical experience in navigating and expressing emotions in social situations (Kashdan et al., 2009). This lack of practical experience may result in gratitude being erroneously appraised by males as a sign of weakness (Hong & Kim, 2020; Renshaw & Rock, 2018), or even as something unfamiliar, uncomfortable or challenging (Kashdan et al., 2009). Consequently, males may develop a negative appraisal of gratitude, leading them to devalue its benefits and not capitalise on its positive effects for well-being and social outcomes (Hong & Kim, 2020; Kashdan et al., 2009; Renshaw & Rock, 2018).

Given these possible outcomes, it is imperative to find solutions to help males navigate gender role conflicts, socialise toward a more positive appraisal of gratitude, build alternative socio-emotional communication skills, and learn to recognise the benefits of gratitude. One way to do so is to customise a gratitude intervention for males and examine its efficacy for them.

Rationale for Examining Gratitude in Male Adolescents

To the investigator's knowledge, no gratitude intervention studies have yet examined a single-gender sample (e.g., males). Instead, existing studies either conduct between-group gender comparisons (e.g., Bono et al., 2023; Froh et al., 2009b; Kashdan et al., 2009; Rajan & Easvaradoss, 2012; Tan et al., 2022) or do not examine the effects of gender at all (e.g., Bono et al., 2020; Froh et al., 2014; Khanna & Singh, 2016). This suggests that helping males change how they regulate their emotions, cognitions, and behaviours regarding gratitude is a promising area of study that warrants further empirical scrutiny (Kashdan et al., 2009). Additionally, since research indicates that males are more inhibited and less orientated toward expressing and experiencing gratitude than females, focusing on male samples is warranted to better understand the unique challenges they may face.

A further rationale for examining males is to identify additional areas of support they may need and to explore ways to remove potential barriers, allowing them to more freely experience and practice gratitude. Furthermore, because males reportedly experience weaker effects from gratitude interventions, there is a need to examine whether explicitly designed interventions can help them capitalise on the benefits. By teaching new gratitude appraisals in a class setting, this study hopes to help male students navigate potential gender role conflict, adapt their appraisal of gratitude, and expand their current range of emotional expressions. This will allow them to engage in more positive social interactions with their peers and experience enhanced well-being and social outcomes.

Overall, the understanding of male preferences is vital, as it can lead to the development of more effective methods of intervention (Tanner & Allen, 2004). For the present study, it is hoped that the application of gender-related approaches, tailored to meet male adolescents' needs, can help to maximise their motivation and performance

(Miller, 2001; Wehrwein et al., 2007) as they participate in the gratitude intervention. The next section presents the context and significance of this study.

Situating the Study

Even with strong theoretical assumptions for the links between dispositional gratitude, well-being, and social outcomes, empirical research on dispositional gratitude in adolescents is less common than studies on adults (Bono et al., 2019; Bosacki et al., 2018; Solom et al., 2017). Researchers have specifically highlighted the lack of gratitude interventions designed for adolescents (Peolker & Kuebli, 2014; Reckart et al., 2017; Solom et al., 2017) and the limited empirical work examining gratitude interventions in this age group (Armenta et al., 2022). They have also cautioned against erroneously extrapolating gratitude findings from adult or college samples to different age populations, such as children and adolescents (Chen et al., 2009; Froh et al., 2009a).

Among the adolescent well-being outcomes examined in gratitude studies, mental health has been investigated less often than life satisfaction (Guse et al., 2019; King & Datu, 2018). This motivated the present study to examine adolescent well-being, focusing specifically on life satisfaction and mental health. In addition, this study aims to examine social outcomes such as prosocial behaviour and perceived social support. It is hoped that understanding the broad impact of the adapted gratitude intervention may provide more-information on its efficacy for adolescents' well-being and social outcomes.

Gratitude intervention for adolescents remains an area that has yet to be fully examined (Bono et al., 2020). Some potential areas of research include increasing the understanding of the causal mechanisms of gratitude interventions and examining probable moderators of treatment response (Berger et al., 2019; Owens & Waters, 2020; Wang et al., 2017). Although there are a handful of gratitude intervention studies that examine gender

differences in adolescents (Bono et al., 2023; Froh et al., 2009b), no gratitude interventions have been exclusively designed and implemented for male adolescents.

Significance of the Present Study

Therefore, the main goal of the present study is to develop an effective gratitude intervention for male adolescents in Singapore and to increase gratitude research findings for the Singaporean adolescent population. More specifically, the study aims to examine a type of gratitude intervention that is suitable for male adolescents and can be implemented as a class-based programme in a Singaporean school context. Although this study is not the first to investigate an adapted gratitude intervention's effect on adolescents' well-being or social outcomes, it contributes to the gratitude intervention literature in several ways.

First, this research is unique in its adaptation of an existing gratitude intervention (i.e., Froh et al., 2014) to suit the learning needs of male adolescents. Presently, there are no known gratitude interventions specifically designed for male adolescents to use for reference or further examination. Second, this study is notable as it is conducted in Singapore, a developed country in the non-Western region. Although Singapore exudes a modern, Western image, its population is largely made up of Asian ethnic groups (Department of Statistics Singapore, 2023). Thus, it would be interesting to examine how a benefit-appraisal curriculum, designed for Western samples and schools, can be applied to a Singaporean sample and school curriculum. For research on Singaporean adolescents, the present study is noteworthy as it is designed to add to the existing literature concerning their dispositional gratitude, well-being, and social outcomes. Furthermore, no male-focused gratitude intervention study has been conducted in a Singapore school context.

Third, the present study is notable as it assesses the effects of several moderators (i.e., socio-demographic factors) on the adapted gratitude intervention. Based on the

literature reviewed, the examination of moderators is uncommon among gratitude intervention studies and has yet to be fully investigated (Froh et al., 2009a; Hussong et al., 2019; Wang et al., 2017). Finally, as an intervention study, this research is noteworthy as it contributes to the positive psychology intervention literature, especially regarding gratitude interventions for adolescents, thereby adding to the pool of locally designed gratitude interventions (i.e., Caleon et al., 2017). The next section highlights the theoretical frameworks identified to provide a framework for the understanding of dispositional gratitude development and its association with adolescents' well-being and social outcomes.

Theoretical Framework

The present study was guided by three selected theories that played a key role in guiding the investigation of dispositional gratitude and the study design. These are the Social-Cognitive Theory of Gratitude (Wood et al., 2008), the Broaden-and-Build Theory of Positive Emotions (Fredrickson, 1998, 2001), and the Find-Remind-and-Bind Theory (Algoe et al., 2008). Each of these theories is highlighted in the sections below.

Social-Cognitive Theory of Gratitude. Wood et al.'s (2008) Social-Cognitive Theory of Gratitude asserts that experiencing gratitude involves a complex interplay of both individual differences (i.e., trait gratitude) and the cognitive appraisal of situations. Such cognitive appraisals consist of a constellation of variables—namely, cost, value, and genuine helpfulness—that influence the expression and experience of gratitude. This theory proposes that changing one's cognitions about gratitude can lead to an increased frequency of gratitude experienced and its associated benefits for dispositional gratitude and prosocial outcomes. For example, when an individual perceives an act of kindness as both valuable and costly for the benefactor to provide, such appraisals help to connect their actual

experience of gratitude (i.e., state gratitude) with their predisposition toward it (i.e., trait gratitude). As a result, those with a higher disposition for gratitude will likely develop more positive benefit appraisals and experience more gratitude. In sum, Wood et al.'s (2008) Social-Cognitive Theory of Gratitude suggests that gratitude is not merely an intrinsic feeling, but rather that gratitude responses are formed by how one perceives and evaluates the help-giving situation.

In the context of the present study, Wood et al.'s (2008) Social-Cognitive Theory of Gratitude is highly relevant for several reasons. First, it highlights the role of cognitive processes in determining one's socio-emotional experience. Second, it identifies the components of benefit appraisal necessary for the development of gratitude. Thirdly, this model helps to distinguish between the two types of gratitude (i.e., trait and state gratitude) and informs of the interrelationship between them. Lastly, Wood et al.'s (2008) Social-Cognitive Theory of Gratitude is commonly cited by researchers examining gratitude interventions. In fact, it has even been touted as a theory of gratitude that provides the best knowledge and description of the causal factors of gratitude (Watkins, 2014). For the present study, Wood et al.'s (2008) Social-Cognitive Theory of Gratitude played a key role in identifying Froh et al.'s (2014) gratitude intervention (i.e., benefit-appraisal curriculum) as a suitable intervention to cultivate dispositional gratitude in adolescents.

Broaden-and-Build Theory of Positive Emotions. One of the key theories guiding the investigation of dispositional gratitude in this study is Fredrickson's (2001) broaden-and-build theory of positive emotions. This theory is a helpful theoretical tool that has been utilised by several gratitude researchers to explain how gratitude is linked with positive learning-related outcomes and why gratitude is associated with different well-being indices. The broaden-and-build theory highlights that positive and negative emotions hold important

and distinct adaptive functions (Fredrickson, 2001). Positive emotions are believed to generate a broad thought-action repertoire that can lead to the consolidation of important social, physical and intellectual resources. However, negative emotions narrow the thought-action repertoires that are elicited and lead to a downward spiral of resource loss (Fredrickson, 2001). Empirical studies have provided support for the key tenets of the broaden-and-build theory, and positive emotions are linked to students' motivation and engagement (King & Datu, 2018), social support (Lin & Yeh, 2014), scholastic achievement (Pekrun, 2006), and the application of adaptive metacognitive strategies (King & Areepattamannil, 2014), whereas negative emotions are linked with lower academic performance (Owens et al., 2012).

Gratitude aligns with the broaden-and-build theory, as it is believed to encourage feelings of appreciation for benefits received, broaden one's thinking, and build enduring personal resources (Fredrickson, 2004). Grateful people are more broad-minded and have the capacity to identify benefits, recognise opportunities in challenging circumstances, and recognise people and situations that are significant for their well-being, which leads to better coping skills and well-being outcomes (Fredrickson, 2004, 2013; Lin & Yeh, 2014; Watkins et al., 2019). For this study, adopting Fredrickson's (2001) broaden-and-build theory of positive emotions helps to explain how the expression of gratitude can amplify cognitive and attentional skills. As individuals focus on the positive features of life, reflect on the situations for which they are thankful for and adapt to challenging situations, this can potentially lead to an increase in personal resources and social connections that ultimately help them attain a better quality of life and improved well-being (i.e., Conway et al., 2013; Lin & Yeh, 2014; Torrelles-Nadal et al., 2024).

Find-Remind-Bind Theory. A theory that can help explain the link between social

outcomes and gratitude is the Find-Remind-and-Bind Theory by Algoe et al. (2008). The theory asserts that mutual interdependence stems from the positive relational appraisal of benefits. The theory also states that gratitude is more than just repaying benefits; rather, it has a developmental function in strengthening the relationship with a receptive partner. Next, the triadic actions of find, remind and bind are important in strengthening the relationship-building cycle between the benefactor and the beneficiary. This theory posits that the relational appraisal of a benefit occurs when the recipient becomes aware of the benefactor's responsiveness towards the recipient's needs. The recipient then interprets the benefactor's action as care, which may subsequently lead to the experience of gratitude. Afterward, this experience of gratitude leads the recipient to either find a new relationship or be reminded of an existing one and subsequently binds both the recipient and benefactor closer together (Algoe, 2012). In sum, the Find-Remind-and-Bind Theory asserts that the combination of receiving benefits and having a positive appraisal of the benefactor's actions contributes to the development of gratitude and positively impacts social relationships (Algoe, 2012; Algoe et al., 2008).

For this present study, the importance of the Find-Remind-Build Theory lies in how it advocates for the social functions of gratitude and extensively addresses the relational antecedents of gratitude. Compared to previous research that identified intentional gestures and cost as the main components of gratitude, the Find-Remind-and-Bind Theory expanded beyond these two concepts to include the critical appraisal of perceived responsiveness (i.e., feelings of being cared for or being valued) upon receipt of benefits (Algoe et al., 2008; Algoe, 2012). Consequently, gratitude is then understood to be a combination of intentional gestures, cost, and the relational appraisal of benefits received (Algoe et al., 2008). As this study will implement a gratitude curriculum for adolescents,

adapting these relational antecedents of gratitude as the key themes may allow for a more robust gratitude curriculum. Additionally, as this study will be examining adolescents' prosocial behaviour, adopting the Find-Remind-Bind Theory of gratitude can help to explain the critical role of gratitude in the formation of prosocial behaviour and maintenance of relationships (i.e., Algoe, 2012).

Chapter Summary

Chapter One provided an initial overview of the research topic this study aims to examine. This chapter highlighted the importance of dispositional gratitude, presented a definition of gratitude, and explained the rationale for examining gratitude in the male adolescent population. It also introduced key terms such as well-being outcomes (life satisfaction, mental health) and social outcomes (prosocial behaviour, perceived social support) that this study will examine. Furthermore, this chapter scoped the main research areas this study hopes to investigate, including the need for causality studies, the examination of potential moderators of gratitude intervention outcomes, and the investigation of age-related differences in adolescents' gratitude. Positive psychological interventions and their impact on adolescents' development and functioning were next highlighted, followed by a presentation of the rationale for studying gratitude in male adolescents. Finally, the study's rationale and overarching goals, along with the theoretical framework underpinning the study, are presented. The next chapter will present a review of the gratitude intervention literature findings, including their clinical implications for research with adolescents.

Chapter 2

Teaching Gratitude to Adolescents: A Narrative Review of Gratitude Interventions, Moderator Factors and Directions for Future Studies

This chapter will lay the foundation of the gratitude intervention study through a narrative review of gratitude intervention research examining predominantly adolescents. To differentiate between children and adolescents, the WHO's (n.d.) definition of adolescence (i.e., 10-19 years) will be adopted. The term 'adolescent' will be employed when referring to the older children and adolescent samples mentioned in the gratitude literature, while the term 'children' will be used when referring to those under 10 years of age.

Significance, Rationale and Format of the Narrative Review

To the investigator's knowledge, there are only a few reviews examining gratitude intervention studies, and the last was conducted more than four years ago (see Table 1). This present narrative review is therefore significant, as it will build upon prior work to provide an updated synthesis of published information on gratitude interventions for adolescents. It also contributes to the field of qualitative reviews of gratitude interventions, since most existing reviews are quantitative in design.

A narrative review differs from a quantitative review in distinct ways. It adopts a less structured approach to reviewing the literature and offers a qualitative interpretation of findings (Sukhera, 2022; Sylvester et al., 2013). In contrast, a quantitative review is more structured and bound by explicit inclusion criteria (Davies, 2000; Green et al., 2006). Compared to quantitative reviews, a narrative review examines a wide variety of studies, investigates a broad scope of research questions, and provides more detailed process data, including critique and interpretation (Verhoef & Casebeer, 1997). A quantitative review,

however, tends to focus on a narrow question within a specific context and uses a prespecified method to synthesise findings from comparable studies (Sukhera, 2022). In general, the combined findings from quantitative and qualitative reviews are highly useful, as they provide researchers with more valuable perspectives given the broad range of literature reviewed (Sataloff et al., 2021).

Although both types of reviews have their advantages, a narrative review of gratitude intervention studies was selected because it can provide a more readable, reflective and relevant synthesis of diverse literature (Sukhera, 2022). The specific purpose of this narrative review is to give readers a comprehensive understanding of the background of gratitude intervention studies. It will do so by highlighting the types of research conducted, tracing the development of gratitude interventions over the years, and detailing the methods employed to investigate their effectiveness (Ferrari, 2015; Paré & Kitsiou, 2017). Another rationale for this narrative review is to identify existing research gaps and inconsistencies. This will help determine the research questions, formulate hypotheses for the current study, and promote new research ideas involving gratitude interventions (Paré & Kitsiou, 2017; Sataloff et al., 2021; Sukhera, 2022; Verhoef & Casebeer, 1997).

As there is currently no consensus on how a narrative review is to be structured, this review will adopt the general framework recommended by Ferrari (2015). This framework includes a structured literature search strategy involving both a computer database search and manual searches. The central body of this narrative review will present a synthesis of findings in three key areas of interest. The first area presents a synthesis of findings from empirical gratitude intervention studies, covering protocols, methodology, study design, gratitude measures and outcomes. The second area covers the key findings from moderation studies of gratitude intervention outcomes. The third area outlines the

applications for clinical practice and future research.

Table 1

Summary Table of Review Studies Examining Gratitude and Gratitude Interventions and Well-being

References	<i>N</i>	Review type	Design of studies reviewed	Time range of studies	Population sampled	Origin of studies reviewed
Wood et al. (2010)	12	NR	I	2003 - 2010	Mixed populations	Western Countries
Davis et al. (2016)	32	MA	I	2003 - 2015	Mixed populations	Mixed Countries (Western = 30 Non-western = 2)
Renshaw & Olinger Steeves (2016)	20	SR and MA	CS, I	2006 - 2014	Adolescents	Mixed Countries (Western = 14 Non-western = 6)
Dickens (2017)	38	MA	I	2003 - 2016	Mixed populations	Mixed Countries (Western = 32 Non-western = 6)
Bono & Sender (2018)	Not mentioned	NR	CS, I	Not mentioned	Mixed populations	Mixed Countries
Obeldobel & Kerns (2021)	48	SR	CS, L, I	2006 - 2020	Adolescents	Mixed Countries (Western = 30 Non-western = 18)

Note. *N/n* = number of gratitude intervention studies reviewed; NR = Narrative Review; MA = Meta-Analysis; SR = Systematic Review; CS = Cross

Sectional; L = Longitudinal; I = Intervention

Literature Selection Process

In March 2023, a bibliographical search was conducted on Scopus and PsychINFO to identify relevant peer-reviewed journal articles. The search focussed on three areas: gratitude intervention studies, moderators of dispositional gratitude, and gratitude intervention outcomes. It was limited to a 20-year period from 2003 to 2023. Given the limited number of studies on adolescent gratitude and gratitude intervention, the search was expanded to include children's gratitude and general well-being interventions. For the moderator review, the scope was similarly broadened to include relevant cross-sectional and well-being studies that have examined factors influencing gratitude and well-being in adolescents. Furthermore, due to the lack of moderation studies sampling adolescents' socio-demographic variables, selected gratitude or well-being studies from adult populations were also included. These studies examined moderator variables such as religion, ethnicity and family type. This expansion was driven by the present study's interest in examining these same socio-demographic variables in adolescents, as well as the need for an overview of potential moderators to infer how they might strengthen or weaken the intervention outcome for this population.

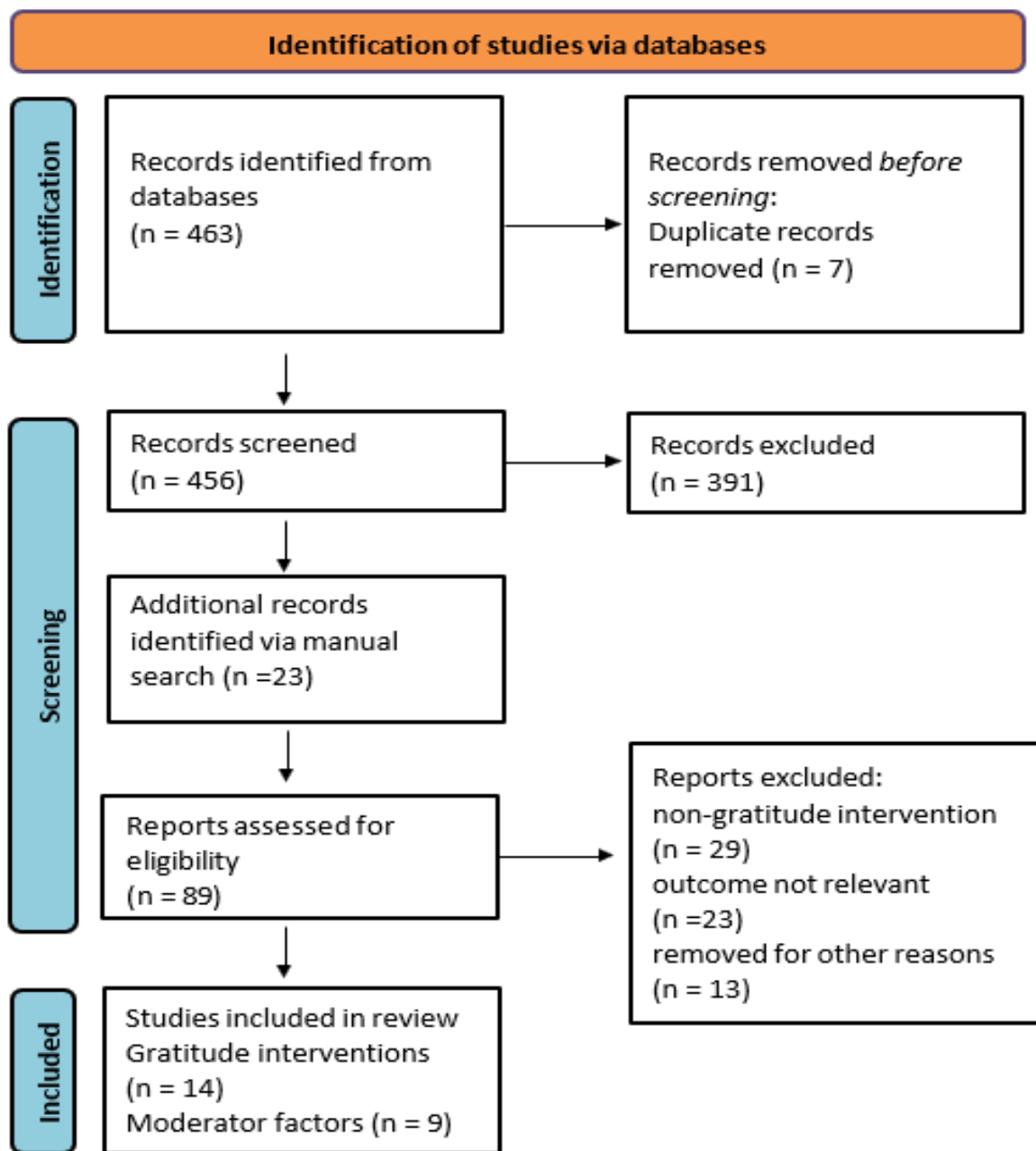
The search terms were informed by previous reviews. The following terms were combined: 'gratitude', 'dispositional gratitude', 'adolescents', 'youths', 'children', 'young adults', 'gratitude intervention', 'positive psychology intervention', 'PPI', 'well-being', 'wellbeing', 'well-being intervention', 'wellbeing intervention', 'subjective well-being', 'life satisfaction', 'mental health', 'prosocial behaviour', 'perceived social support', 'social support', 'moderators', 'socio-demographic', 'age', 'gender', 'race', 'culture', 'religion', 'spirituality', and 'family type'.

Figure 1 presents the results of the literature search. Articles were initially screened

by their titles and abstracts and were retained if they were related to dispositional gratitude, gratitude interventions, well-being outcomes, and moderators. A manual search of the cited references in relevant articles and reviews was then conducted to identify additional articles. The full-text articles and reviews were subsequently assessed for eligibility based on specific inclusion and exclusion criteria. The inclusion criteria were research published in English in a peer-reviewed journal. The exclusion criteria were non-full-text articles, doctoral theses, articles not published in English, and interventions that did not mention gratitude. Ultimately, 14 articles were identified for gratitude interventions, and 9 articles were identified for moderators of dispositional gratitude, well-being, and gratitude intervention outcomes.

Figure 1

PRISMA Chart of Literature Selection Process for Narrative Review



Note. Source: (Page et al., 2021).

Findings from Gratitude Intervention Studies

Table 2 presents the summary information of the empirical gratitude intervention studies that sampled children and adolescent population.

Table 2*Summary Table of Gratitude Interventions Studies for Children and Adolescents*

References	N	Sample	Country	Gratitude Intervention Activity	Gratitude Measures	Outcomes	Comparison Condition(s)	Intervention Timelines	Gratitude Effect Size	Alpha Value
Froh et al. (2008)	221	Grade 6 and 7 Middle school students, 11 and 12 years; Mixed gender	US	Counting blessings	GAC	Grateful emotions, well-being, life satisfaction, physical symptoms, prosocial behaviour Mediator: gratitude in response to aid	AA, CG	8-days intervention, immediate post-test, 3-week follow-up	Post-test $\eta^2 = 0.04$ Follow-up $\eta^2 = 0.04$	.05
Froh et al. (2009a)	89	Grades 3, 8, and 12 school students, 8, 13 and 17 years; Mixed gender	US	Gratitude letter and expressing gratitude to benefactor	GAC	Grateful mood, positive and negative affect Moderator: positive affect	AA	2-weeks intervention, immediate post-test, and 1-month, 2-month follow-up	$\eta^2=0.00$	.01
Shin & Kim (2009)	71	Grade 7-8 students	Korea	Gratitude Enhancement Programme	GQ6	Subjective well-being, perceived social support, psychological adjustment	CG	12-session intervention, post-test	-	.05

Rajan & Easvaradoss (2012)	120	Grade 8 and 11 students; Mixed gender	India	Intervention programme	GQ-6	Dispositional gratitude, happiness, forgiveness	CG	8-hour intervention, immediate post-test	$\eta^2=0.08$	.05
Froh et al (2014) Study 1	122	Grade 4 Elementary school students 8 to 11 years; Mixed gender	US	Benefit-appraisal curriculum (Gratitude education, journaling, note/card writing)	GAC	Grateful mood, benefit appraisal	AA	1-week Intervention, immediate post-test	Grateful mood $\eta^2 = 0.04$ Benefit appraisal $\eta^2 = 0.06$	.05
Froh et al. (2014) Study 2	82	Grade 4 Elementary School students 8 to 11 years; Mixed gender	US	Benefit-appraisal curriculum (Gratitude education, journaling, note/card writing)	GAC	Grateful mood, benefit appraisal positive and negative affect, life satisfaction	AA	5-week intervention, immediate post-test, 7-week, 12-week and 20-week follow-up	12-week and 20-week grateful mood $d = 0.41$ $d = 0.48$ 12-week and 20-week benefit appraisal $d = 0.53$ $d = 0.74$	.05

Khanna & Singh (2016)	177	Grade 7 Middle school students, 11 to 14 years; Mixed gender	India	Benefit-appraisal curriculum (Gratitude education, journaling, note/card writing)	GAC	Grateful emotion, mental health, positive and negative affect, life satisfaction, cognition of benefit-appraisal	CG	5-week intervention, immediate post-test	partial $\eta^2 = .05$	.01
Caleon et al. (2017)	103	Grade 8 and 10 Middle and High school students, 13 and 15 years; Mixed gender	Singapore	Count blessings, mental subtraction of blessings, gratitude collage, gratitude card, social primers, sharing moments and reflection	GQ-6	Dispositional gratitude, relatedness with parents, teachers, and peers	WC	2-week intervention, 4-week post-test	$\eta^2 = .018$	.10
Duthely et al. (2017)	55	Grades 6, 7 and 8 Middle school students; 11 to 13 years; Mixed gender	US	Gratitude visualizations and meditation	GQ-6	Dispositional gratitude, life satisfaction, school satisfaction,	DI, NT	4-week intervention, immediate post-test	partial $\eta^2 = 0.24$	0.001
Baumsteiger et al. (2019) Study 3	105	High school students; 16 to 18 years; Mixed gender	US	Benefit appraisal, gratitude letter, reflection on positive things	GRAT-SF, Qualitative feedback	Gratitude, hope, prosocial intentions	CG	3-day intervention, immediate post-test	Mentioned as very small effect	.001

Bono et al. (2020)	327	Grades 9 to Grade 12 High school students, 13 to 18 years; Mixed gender	US	Gratitude psychoeducation, Gratitude App	GQ-6, Multi-Component Gratitude Measure	Dispositional gratitude, personal and social well-being, and mental health	WC, CG	6-week intervention, immediate post-test	$d = 0.55$	.05
Armenta et al. (2022)	1017	Grades 9 and 10 High school students, 13 to 18 years; Mixed gender	US	Gratitude letters, gratitude-related reflection exercises (online study)	-	Life satisfaction, improved motivation, Mediators: humility, connectedness, elevation, indebtedness, general negative affect	CG	4-week intervention, immediate post-test, 3-months follow-up	Post-test $d = .33$ $d = .29$ Follow-up: $d = .35$ $d = .29$	.05
Bono et al. (2023)	326	High school students 13 to 18 years; Mixed gender	US	Gratitude app, gratitude curriculum, gratitude app + curriculum	GQ-6	Trait gratitude, anxiety, stress, depression, subjective well-being	WC	6-week intervention, immediate post-test	Not indicated	.02

Sahar et al. (2023)	120	High school students 14 to 18 years; Mixed gender	Pakistan	Gratitude letter, count your blessings, grateful meditation	-	Daily life stressors	WC	4-week intervention, immediate post-test	$\eta^2 = 0.09$	.01
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Note. GQ-6 = Gratitude Questionnaire 6; GAC = Gratitude Adjective Checklist; GRAT-SF = Gratitude Resentment and Appreciation Scale - Short Form; AA = Alternate activity control group; CG = Control group; WC = Waitlist control group; DI = Delayed-intervention control group; NT = No-treatment control group

Shortage of Gratitude Intervention Studies Examining Adolescents

Compared to earlier reviews that only found between six and nine studies (i.e., Obeldobel & Kerns, 2021; Renshaw & Olinger Steeves, 2016), this narrative review identified 14 gratitude intervention studies focussed on adolescents. One of the earliest known gratitude intervention studies with adolescents was Froh et al.'s (2008) partial replication of Emmons and McCullough's (2003) work on undergraduates. Based on the reviewed literature, gratitude interventions for adolescents remain scant, with new studies slowly emerging. As a result, researchers have cautioned against prematurely concluding on the interventions' efficacy (Davis et al., 2016; Dickens, 2017) and have called for more investigation into the mechanisms and efficacy of gratitude interventions for this population (Bono et al., 2020; Duthely et al., 2017; Froh et al., 2014).

New Approaches of Gratitude Intervention Protocols

The 14 studies reviewed employed a range of gratitude intervention protocols, from individualised writing tasks to more prosocial activities. The most common protocols used with adolescents include counting blessings, gratitude letters/notes/cards, journalling, benefit-appraisal curriculum, and psychoeducation. The current literature suggests that Froh et al. (2008, 2009a, 2014) and Bono et al. (2020, 2023) are the leading developers of these protocols for adolescents. Their continued efforts have resulted in new developments, which are highlighted in the sections below.

Use of Technology. One recent development in gratitude protocols involves the use of technology. For instance, Bono et al. (2020) designed a gratitude app for adolescents by combining technology with social media practice. The purpose of their study was to both promote gratitude interventions for adolescents and address the limitations of existing interventions. In a follow-up study, Bono et al. (2023) found the app to be effective in

optimising the intervention's impact and minimising adolescents' negative reactions. The app also helped address adolescents' personal and social needs, challenges, and concerns. Bono et al. (2023) concluded that while openly expressing gratitude can be threatening for some adolescents, the app provides a safe online space for them to express gratitude to one another.

Integrated Gratitude Intervention Protocols. Another recent development involves integrating multiple gratitude activities within a single protocol. Gratitude protocols have evolved from a single gratitude activity, such as counting blessings (Froh et al., 2008), to integrated interventions that encompass several gratitude-inducing activities (Baumsteiger et al., 2019; Caleon et al., 2017; Froh et al., 2014; Bono et al., 2020, 2023). Among these, Froh et al.'s (2014) benefit-appraisal curriculum has been widely reported by gratitude researchers as an empirically validated intervention suitable for children and adolescents (Bono et al., 2020; Bono & Sender, 2018; Khanna & Singh, 2016; Renshaw & Olinger Steeves, 2016).

Benefit-Appraisal Curriculum. Froh et al.'s (2014) benefit-appraisal curriculum appears to be one of the most cited gratitude interventions for children and adolescents. Following their earlier work, Froh et al. (2014) conducted two prominent studies that helped develop the science of gratitude intervention. They designed the curriculum to foster more grateful cognitive processing and higher gratitude levels in children. The benefit-appraisal curriculum teaches gratitude by scaffolding grateful thinking and helping children and adolescents understand “the meaning behind experiences of receiving benefits from other people” (Bono & Sender, 2018, p. 233). The curriculum includes a range of gratitude-inducing activities such as psychoeducation, classroom discussion, role-playing, and writing tasks (i.e., journals and cards). Among the various gratitude intervention protocols, Froh et

al.'s (2014) curriculum is notable for having been replicated (e.g., Khanna & Singh, 2016) and having its ideas adopted into other interventions (e.g., Bono et al., 2020).

Khanna and Singh's (2016) research is the first non-Western published study that replicated Froh et al.'s (2014) benefit-appraisal curriculum with a sample of Indian adolescents. Although minor culturally adapted modifications were made (e.g., bilingual questionnaire booklets to ensure participants' comprehension), the researchers adhered closely to the curriculum. Their study not only supported Froh et al.'s (2014) curriculum but also demonstrated its practical value of implementation in an Asian classroom context. However, despite their findings, the researchers highlighted limitations—such as a small sample size, limited grades sampled, and a homogeneous demographic profile—and called for more studies.

The current literature suggests that Froh et al.'s (2014) curriculum has positive, adaptable effects for adolescents and shows promise for implementation in non-Western school contexts. Recent advancements in gratitude interventions have selectively adapted portions of the gratitude protocols from Froh et al. (2014) and Emmons and McCullough (2003) (e.g., benefit appraisal or counting blessings) and incorporated them into new protocols.

Integrated Gratitude Intervention Protocols. In a Singaporean study, Caleon et al. (2017) investigated the effect of a socially orientated gratitude intervention (SOGI) on adolescents' gratitude and social relationships. The SOGI was designed as an in-class curriculum featuring four main activities: gratitude cards, counting everyday blessings, gratitude collage and mental subtraction of blessings. Each activity was tailored to foster gratitude and positive peer relationships among Singaporean adolescents. Caleon et al.'s (2017) study was useful because it demonstrated how an in-class gratitude curriculum can

be implemented in a Singaporean context.

As part of their study, Baumsteiger et al. (2019) developed a comprehensive intervention to promote gratitude in adolescents aged 16 to 18. Their intervention combined three existing gratitude activities: benefit appraisal, gratitude letter writing, and reflecting on positive things. Baumsteiger et al.'s (2019) study was advantageous because it advanced the gratitude literature in two ways. First, by demonstrating the unique effects of gratitude activities, and second, by providing empirical evidence that an integrative gratitude intervention is effective in enhancing gratitude in adolescents.

Bono et al. (2020) expanded on Froh et al.'s (2014) benefit-appraisal curriculum by designing an integrated gratitude intervention protocol that combined a social media app with a psychoeducation curriculum. The former aimed to promote the autonomous practice of gratitude within classrooms, while the latter promoted the science of gratitude through various gratitude activities. The main appeal of Bono et al.'s (2020) integrated gratitude intervention protocol was that it was developed after examining existing gratitude interventions and synthesising recommendations from earlier researchers. These recommendations included ensuring the person-activity fit (Layous & Lyubomirsky, 2014) and incorporating varied, time-intensive and innovative gratitude activities that appealed to adolescents (Davis et al., 2016; Lyubomirsky et al., 2011). Person-activity fit refers to the extent to which an activity's type and dosage align with an individual's personality, values, strengths and culture, thereby enhancing satisfaction, learning and motivation (Lyubomirsky & Layous, 2013). A second appeal of Bono et al.'s (2020) intervention was its modularity; it could be deconstructed and conducted as two individual interventions. This was evident in their follow-up study, where Bono et al. (2023) compared three protocol variations (the gratitude app, the gratitude curriculum, and a combination of both) on adolescents' mental

health and well-being. They found that the integrated protocol exerted a more significant positive effect than using only the gratitude app. A key was that teaching adolescents the science of gratitude enabled them to express thanks more meaningfully.

A recent study by Sahar et al. (2023) examined the effectiveness of an adapted gratitude intervention protocol on Pakistani students' daily stressors. The protocol combined activities such as gratitude letters, counting blessings, and grateful meditation. The daily stressors were measured using a single measure, the 41-item Inventory of High School Students' Recent Life Experiences, which consists of eight subscales. The activities and outcome measures were translated and adapted for Pakistani high school students. The researchers found a moderate effect size for the intervention's effectiveness in reducing daily life stressors related to personal relationships and social interactions (i.e., excessive demands, social alienation, and personal future). While Sahar et al.'s (2023) adapted protocol was cost-effective and easy to administer, the lack of follow-up studies prevented the assessment of its long-term effectiveness. Furthermore, the reliance on a single self-reported measure for daily stressors can be limiting. Given the imbalance in the number of items per subscale (e.g., the "Excessive Demands" subscale contained nine items while "Personal Future" contained only two), questions remain about whether the constructs were too narrowly defined. Additionally, the use of a measure developed for high school students in Western, developed countries raises questions about its applicability, validity and reliability for students in a developing country. Specifically, the measure's factor structure should be assessed for the population of interest. A further question is whether the daily stressors for high school students in developed countries differ from those in developing countries. Therefore, while Sahar et al.'s (2023) findings appear promising, the results are less clear when considering the study's design and measurement concerns.

Other Multi-Activity Gratitude Intervention Protocols. A novel study by Duthely et al. (2017) combined gratitude visualisations and meditation in an intervention conducted with a cohort of culturally diverse adolescents. Although the gratitude-meditation intervention yielded statistically more effective outcomes than Froh et al.'s (2008, 2009a, 2014) interventions, such comparisons are not appropriate given the differences in intervention designs and control conditions. Furthermore, there remains a lack of evidence examining gratitude-meditation interventions, unlike the well-studied protocols developed by Froh et al., which have been adapted by other researchers.

In another study, Armenta et al. (2022) conducted an online study involving weekly gratitude writing activities. Their protocol combined reading gratitude testimonials, writing gratitude letters, gratitude reflections, and reflecting on self-improvement activities. Although Armenta et al.'s (2022) findings supported their intervention's efficacy, several aspects warrant critique. First, it is uncertain whether weekly writing tasks are an optimal learning activity for adolescents, as it is unknown if participants inflated their reports when they submitted them online. Second, a methodological critique concerns the difficulty in confirming whether participants discussed their online assignments with each other, despite instructions not to.

In sum, recent developments in the gratitude intervention design, such as the inclusion of technology and the development of integrated protocols, demonstrate researchers' intentional attempts to ensure relevance for adolescents. These efforts are important because the literature suggests that ensuring adolescents' buy-in and willingness to participate is vital for the successful implementation of any intervention (Bono et al., 2020).

Variability in Methodology, Gratitude Measures and Study Design

Distinct differences in study designs were identified across the 14 studies. These differences include variations in participant random assignment, the type of comparison and control groups, gratitude measures, and the frequency of post-test and follow-up assessments.

Random Allocation. Prior research suggests that the random assignment of students to intervention or control groups can help eliminate potential confounding factors due to individual differences, thereby providing a stronger test for the gratitude intervention (Froh et al., 2014). However, in most of the reviewed studies, randomisation by classes was far more common than randomisation at the student level. The rationale for randomising by class was attributed to pragmatic reasons, such as preventing the disruption of existing class groupings (Khanna & Singh, 2014) or class routines (Bono et al., 2020), avoiding potential response bias (Baumsteiger et al., 2019), and reducing the burden on teachers (Bono et al., 2020) and schools (Froh et al., 2014). While these reasons are valid and have been supported by researchers like Collins et al. (2013), researchers have also recognised that randomisation by group is a limitation and have encouraged true randomisation where possible (Froh et al., 2014).

Only three studies were found to have randomly assigned students individually to conditions. In these studies, randomisation at the student level was feasible because the intervention sessions were conducted outside of regular school hours (Duthely et al., 2017) or online (Armenta et al., 2022). In one instance, the small sample size made coordinating the allocation manageable (Froh et al., 2009a). Furthermore, in each of these cases, the intervention duration was short (e.g., 5 minutes weekly, 10- to 20-minute sessions), and the gratitude activities were independent tasks (e.g., visualisation, meditation, letter writing, and reflection exercises).

Activities of Comparison Groups. Across the 14 reviewed studies, comparable control groups were included to ensure more accurate evaluations of mechanisms linked to gratitude interventions and their respective efficacy (Dickens, 2017; Wood et al., 2010). Gratitude interventions were compared with several types of controls: neutral interventions (e.g., listing daily activities) (Armenta et al., 2020; Froh et al., 2009a, 2014; Khanna & Singh, 2016), positive interventions (e.g., memorisation strategies) (Baumsteiger et al., 2019), negative interventions (e.g., hassle exercise) (Froh et al., 2008), regular class-related activities or no intervention (Bono et al., 2020, 2023; Caleon et al., 2017; Duthely et al., 2017; Rajan & Easvaradoss, 2012; Sahar et al., 2023; Shin & Kim, 2009). The literature has established that gratitude interventions are more effective when compared to a regular class-related activity or no-treatment control. Gratitude interventions were also found to be only slightly more effective than neutral, negative, and positive interventions. In general, the regular class-activities control group was noted to be as effective a comparison group as a neutral, negative or positive control group.

Gratitude Measures. Regarding data collection methodology, a widespread practice is the heavy reliance on adolescents' self-reported data, with only a small number of studies supplementing this with teacher reports (Duthely et al., 2017). Among the different measures, the two most employed for adolescents are the GAC and the GQ-6, both of which are self-reporting tools. Earlier studies tended to use the three-item GAC, while later studies used the six-item GQ-6. A possible explanation is that earlier studies, all conducted by Froh et al. (2009a, 2009b, 2014), focussed on gratitude as a mood or emotion, whereas more recent studies have examined gratitude as a disposition (e.g., Bono et al., 2020, 2023).

At present, the GQ-6 remains the most widely utilised measure for adolescents in both survey and intervention research. Though it was first designed more than two decades

ago to measure dispositional gratitude, researchers have affirmed its relevance (Bono & Sender, 2018; Portocarrero et al., 2020; Renshaw & Olinger Steeves, 2016). Furthermore, it has been argued that the use of different gratitude measures limits the types of comparisons that can be made across studies (Bono & Sender, 2018). To advance gratitude research and allow for more comparable findings, studies should utilise more consistent gratitude measures (Bono & Sender, 2018).

Frequency of Post-Test and Follow-Up. A major limitation of most studies reviewed is the absence of follow-ups to evaluate the long-term effectiveness of gratitude interventions for adolescents (Bono et al., 2020; Portocarrero et al., 2020; Sahar et al., 2023). Among the 14 reviewed studies, only four (Froh et al., 2008, 2009a, 2014; Armenta et al., 2020) included a follow-up, which ranged from weeks to months. The remaining studies used only a pre-test and a post-test. As such, it may be more accurate to categorise the effectiveness of these interventions as either short-term or long-term, depending on whether follow-up assessments were conducted. Although it has been proposed that follow-ups be conducted minimally after one month and up to six months post-intervention (Seligman et al., 2005), several potential barriers exist. For example, many interventions are usually conducted in schools, and factors such as the timing within the academic calendar, existing school schedules, or logistical issues can prevent longer follow-up periods (Jaycox et al., 2006).

Gratitude Intervention Outcomes

In addition to gratitude outcomes, gratitude intervention studies have also examined a range of outcomes related to adolescents' physical, psychological and social well-being. These outcomes have included life satisfaction, positive and negative affect, mental health, prosocial behaviour, and relatedness with parents, teachers and peers. This section

highlights the studies' findings to assess the general efficacy of gratitude interventions in enhancing adolescents' gratitude and overall well-being.

Gratitude. The efficacy of gratitude interventions in enhancing adolescents' gratitude, whether as a mood, feeling or disposition, has been widely reported in the literature. Of the 14 studies, 11 were reviewed for gratitude outcomes; three were excluded because they did not investigate gratitude as an outcome (i.e., Armenta et al., 2022; Sahar et al., 2023; Shin & Kim, 2009). Most of the studies that included gratitude as an outcome obtained positive findings for gratitude as a mood or disposition, except for two studies (i.e., Caleon et al., 2017; Froh et al., 2009a). The researchers in those studies attributed their lack of gratitude-related findings to study design factors, such as the specific gratitude measure, small sample size, comparison group, and a delay in post-test implementation. The current literature suggests that gratitude interventions yield short-term and long-term benefits when examining gratitude as a mood (Froh et al., 2008; 2014; Khanna & Singh, 2016). However, when examining gratitude as a disposition, interventions were found to produce only short-term benefits (Baumsteiger et al., 2019; Bono et al., 2020, 2023; Duthely et al., 2017; Rajan & Easvaradoss, 2012). This could be attributed to the absence of follow-up studies, as most of the studies examining dispositional gratitude used a pre-test and post-test quasi-experimental design. Thus, evidence concerning the long-term impact of gratitude interventions on dispositional gratitude remains limited.

Life Satisfaction and Mental Health. Previous studies have found support for gratitude interventions positively affecting adolescents' life satisfaction and mental health (Armenta et al., 2022; Bono et al., 2020, 2023; Duthely et al., 2017; Froh et al., 2008; Shin & Kim, 2009; Khanna & Singh, 2016). Only one study, by Froh et al. (2014), did not find a significant effect on life satisfaction. The lack of findings in Froh et al.'s (2014) study can be

largely attributed to sampling issues. First, they relied on a convenience sample with limited socioeconomic and ethnic demographic diversity, as the students came from an affluent district and were predominantly Caucasian. Second, the sample size in each condition was small and did not meet Cohen's effect size recommendations. Given these limitations, the validity of the findings and the representativeness of the sample are questionable. Thus, further studies are warranted before drawing conclusions about the efficacy of Froh et al.'s (2014) intervention on adolescents' life satisfaction.

Prosocial Behaviour. Among the gratitude intervention outcomes, only three studies have examined prosocial behaviour in adolescents. The findings are mixed: one study found improved prosocial behaviours towards peers and parents (Caleon et al., 2017), while two other studies did not (Baumsteiger et al., 2019; Froh et al., 2008). Although some researchers have advocated for more studies on adolescents' prosocial behaviours (e.g., cooperation, trust and helping), evidence for prosocial behaviour as an outcome of gratitude intervention remains limited (Froh et al., 2014; Layous & Lyubomirsky, 2014).

Social Support. Only one intervention study was found to examine perceived social support in adolescents. In their study, Shin and Kim (2009) investigated the effects of a gratitude enhancement programme on perceived social support among Korean Grade 7 and 8 students. The intervention group underwent 12 sessions of engaging and interactive activities, with each session lasting 30 minutes. They found that the gratitude enhancement program led to a significant increase in perceived social support (e.g., affective, informational, and material) in adolescents.

Summary of Findings from Gratitude Intervention Studies

Gratitude interventions for adolescents have evolved from single activities to integrated interventions comprising various gratitude activities. Previous studies have

reported positive outcomes for gratitude affect, dispositional gratitude, and well-being, with effect sizes ranging from small to large. Research has also suggested that the strength of the relationship between dispositional gratitude and well-being largely depends on the specific components of well-being being investigated (Portocarrero et al., 2020). Although a wide range of well-being outcomes have been examined, research gaps remain regarding specific outcomes such as mental health, prosocial behaviour, and perceived social support (Baumsteiger et al., 2019; Bono et al., 2023). These gaps represent potential areas for further investigation.

Overall, the findings presented in the studies reviewed suggest that gratitude interventions can be beneficial for adolescents, though these results become less clear when considering the small effect sizes, methodological issues like small sample sizes, and a lack of follow-up studies. The scant number of gratitude intervention studies on adolescents, combined with the diversity of interventions and heterogeneity of study designs, limits the number of quantitative analyses that can be conducted to evaluate any specific type of intervention (e.g., the benefit-appraisal curriculum). Nevertheless, researchers' recommendations for more gratitude intervention studies indicate that this is a promising area for investigation (Dickens, 2017; Diener et al., 2017; Froh et al., 2008; Khanna & Singh, 2016; Obeldobel & Kerns, 2021). The following section highlights the key findings from studies that examined the moderators of dispositional gratitude, well-being and gratitude intervention outcomes.

Moderators of Gratitude, Well-being and Intervention Outcomes

Few studies on adolescent gratitude have analysed factors moderating dispositional gratitude or the effects of gratitude interventions (see Figure 1). Thus, given this population's under-representation in the literature, relevant cross-sectional studies

examining gratitude or well-being outcomes in adolescents and some adults were included. Consequently, this section provides an overview of the potential moderators of gratitude, well-being, and gratitude intervention outcomes. As some studies examined multiple moderators, the findings are presented according to the specific variables that influenced gratitude, well-being, or the intervention outcomes, rather than detailing the full results of each study individually.

Age. One of the more common moderators examined in adolescent gratitude studies is age. Four studies were found examining the interaction between adolescents' age and gratitude. Three of these studies examined for age-related differences in gratitude expressions, and only one study examined for age-related differences in intervention outcomes. These studies sampled participants from Western and non-Western countries, namely from the United States (O'Brien et al., 2018), China (Liang & Kiang, 2018), the United States and China (Wang et al., 2015), and India (Rajan & Easvaradoss, 2012).

Age-related differences were found in gratitude expressions, where adolescents reported a higher level of gratitude expression (i.e., recognising benefactor's intentions and reciprocating intentionally) compared to younger children. Researchers attributed the increased gratitude expression to adolescents' increased maturity and enhanced cognitive abilities to take perspective and discern meaning to the benefactor's intentionality. However, there was a lack of support for age-related differences in intervention outcomes. This can be attributed to the small sample size and narrow age range of young adolescents sampled. Nonetheless, since only one intervention study was found examining age-related differences, more investigations are warranted before concluding on the effect of age on intervention outcomes. Notably, it may be more effective to examine age-related differences in gratitude by comparing younger and older adolescent populations (Bono &

Emmons, 2010; Froh et al., 2008).

Ethnicity. A study by Wang et al. (2015) surveyed gratitude expressions in children and adolescents (i.e., 7 to 14 years old) from two polarised countries, the United States and China. Distinct cultural differences were found between these two groups of participants in gratitude expression. Chinese participants were found to be more likely to exhibit a higher level of gratitude expression compared to their Caucasian peers. Wang et al. (2015) attributed it to the collectivistic culture of Chinese participants that they theorised to play a key role in promoting the development of gratitude in Chinese children and adolescents. In another study, Guse et al. (2019) surveyed 840 South African adolescents (i.e., 14 to 18 years old). They found that Caucasian adolescents (i.e., individualistic culture) reported higher dispositional gratitude than Black adolescents (i.e., collectivistic culture), albeit the effect size was small. Therefore, Guse et al.'s (2019) findings showed no support for Wang et al.'s (2015) earlier claim that collectivistic cultures encouraged the development of gratitude. In sum, as both cross-sectional studies differ in sample size, sample age, and gratitude outcomes, caution is to be exercised when interpreting the findings of ethnicity as a potential moderator of gratitude.

Religion. To the investigator's knowledge, no studies have yet examined adolescents' religion as a moderator of gratitude intervention outcomes. However, in studies sampling adults, one study was found examining religious context as a moderator of the relationship between dispositional gratitude and well-being (Portocarrero et al., 2020), while another study examined how religion (i.e., majority versus minority) and culture influenced adults' evaluation of their subjective well-being (Shiah et al., 2016). The specific findings of these studies are presented below.

Portocarrero et al.'s (2020) study initially hypothesised that individuals from a low

religious context will report more variability in dispositional gratitude scores compared to those from a high religious context. This hypothesis was based on their assumption that individuals from a high religious context were already socialised to exercise more gratitude compared to those from a less religious context. The researchers found that religious context did not moderate the relationship between dispositional gratitude and well-being. Nonetheless, they still advocated for more empirical studies to examine individual differences in religion to better understand religion's impact on the relationship between dispositional gratitude and well-being.

In another study, Shiah et al. (2016) sampled Taiwanese adults from different religious groups and examined how they evaluated subjective well-being. Subsequently, they found that adults from the majority religion (i.e., Buddhism, Taoism) reported a higher evaluation of subjective well-being than those from a minority religion (i.e., Christianity). The researchers attributed it to the close association between the majority Chinese religion (i.e., Buddhism, Taoism) and the traditional beliefs of the Chinese society (i.e., prevailing culture) as compared to Christianity, which was regarded as a minority religion of Western origin. This is an interesting finding, as it suggests that religion type (majority or minority) can potentially moderate the strength of the relationship between prevailing culture and evaluations of subjective well-being.

Although Portocarrero et al. (2020) and Shiah et al. (2016) examined different religion variables and outcomes, their assumptions concerning the impact of individual differences (e.g., majority versus minority, low religious context versus high religious context) on gratitude and well-being outcomes are important for the present study. Given this present study is interested in examining adolescents' religion as a potential moderator of a gratitude intervention, it would be helpful to understand if indeed adolescents' religious type can affect

the strength of the relationship between the gratitude intervention and adolescents' gratitude levels. Nonetheless, whether individual differences of religion exert any influence on the disposition of gratitude in adolescents remains an unexplored but potential area for research (You et al., 2018).

Family Type. Although there are no known published studies linking family type as a moderator variable of adolescents' dispositional gratitude, there are some literatures linking adolescents' family type and their well-being outcomes. In one study, Schütz et al. (2019) surveyed the subjective well-being of 2,135 Brazilian children and adolescents from different family types (i.e., intact, single-parent, reconfigured, and intergenerational). They found significant differences in participants' well-being relative to family type, albeit with a small effect size. Participants from intact families reported more significant positive well-being scores compared to those from single-parent, reconfigured or intergenerational family types. Similarly, a study by Dinisman et al. (2017) also found that children from intact families reported higher well-being, and they had more positive evaluations of their family relationships compared to their peers from single-parent and stepfamilies. Taken together, these findings provide valuable information on the potential role of family type on adolescents' well-being. Yet, there are some areas of methodology that warrant critiquing, namely the unequal distribution of the family types sampled (e.g., more than 50% sampled were from intact families) and the small effect size. Hence, careful consideration needs to be exercised before generalising Schütz et al.'s (2019) and Dinisman et al.'s (2017) results.

Summary of Findings of Moderators of Gratitude and Intervention Outcomes

Among the studies investigating gratitude or gratitude interventions, few studies have incorporated factors moderating dispositional gratitude or intervention outcomes. Furthermore, the literature is dominated by survey studies (e.g., Dinisman et al., 2017; Froh

et al., 2009b; Guse et al., 2019; Liang & Kiang, 2018; O'Brien et al., 2018; Schütz et al., 2019; Shiah et al., 2016; Wang et al., 2015), with intervention studies being scarce (e.g., Rajan & Easvaradoss, 2012). Furthermore, although age is the most frequently investigated moderator of gratitude and gratitude intervention outcomes, factors such as ethnicity, religion and family type remain largely unexamined. Consequently, these findings highlight a need for more research to examine potential moderators of gratitude and gratitude intervention outcomes.

Applications for Clinical Practice and Research

Adolescents can benefit from learning gratitude (Morgan et al., 2015; Wei et al., 2022). This is important given increasing reports of high stress among Singaporean adolescents and the corresponding need for interventions to alleviate this stress (CNA, 2022; Goh, 2024; Low, 2023; Seah & Ng, 2023; Shafeeq, 2024). Gratitude interventions are one such option, as they have been found to enhance well-being, alleviate emotional difficulties and promote human functioning (Komase et al., 2021; Renshaw & Rock, 2018; Wei et al., 2022). However, given the time and resource constraints of schools, there is an urgent need to identify ways to ensure the effective implementation of gratitude interventions and to boost student participation. In addition, given the paucity of gratitude intervention studies with adolescents (Armenta et al., 2022; Bono et al., 2019; Obeldobel & Kerns, 2021), more research is needed in this area. Considering these factors, the following section outlines several recommendations to promote gratitude intervention implementation in schools and advance gratitude intervention research with adolescents.

Ensuring Buy-in of Gratitude Intervention

Gratitude interventions are generally low-cost because they utilise existing resources, such as durable assets and human resources already present in school contexts

(Sahar et al., 2023). Such interventions can be delivered by investigators or teachers (Froh et al., 2014; Caleon et al., 2017). Despite these appealing factors, few gratitude interventions are implemented in schools. A possible explanation is the inability to obtain buy-in from school authorities and teachers alike. Implementing such interventions can involve complex interactions with the wider school system, including communicating last-minute schedule changes to accommodate other school activities, integrating new curriculum, and communicating with and training teachers (Jaycox et al., 2006). These efforts may be perceived as causing inconvenience, extra work, or burdens for form-class teachers who may already be overtasked in their daily roles (Bono et al., 2020; Jaycox et al., 2006). Therefore, careful considerations—such as minimising disruptions to existing class groupings, minimising student movement, avoiding overtasking teachers, and aligning gratitude intervention timelines with existing school schedules—are suggested ways to increase buy-in from teachers and school authorities (Bono et al., 2020; Jaycox et al., 2006; Khanna & Singh, 2014).

Ensuring More Sustained Effects and Activity-Fit for Adolescents

Gratitude interventions need to be optimised to be effective and applicable for adolescents (Hussong et al., 2018; Renshaw & Olinger Steeves, 2016; Wang et al., 2017). One way to do this is by increasing the frequency and duration (i.e., time intensity) of interventions, as this has been found to be advantageous for habit development, continued gratitude practice (Diener et al., 2017) and enhancing dispositional gratitude (Davis et al., 2016). Conversely, it has been suggested that gratitude interventions need to be examined over a longer period to study their sustained efficacy on well-being outcomes, such as mental health (Bono et al., 2020; Obeldobel & Kerns, 2021; Portocarrero et al., 2020).

Another way to optimise gratitude interventions is by designing them to fit the

sample population's needs, rather than adopting a "one-size-fits-all" approach (Bono et al., 2020; Dickens, 2017; Layous & Lyubomirsky, 2014). It is important to find activities that suit participants' strengths, values, and preferences, as this can lead to better engagement, enjoyment, and increased participation (Layous & Lyubomirsky, 2014). For example, including a variety of novel gratitude-inducing activities can appeal to adolescents (Davis et al., 2016; Lyubomirsky et al., 2011), minimise boredom (Diener et al., 2017), and encourage the practice of expressed gratitude towards people or things (Bono & Sender, 2018).

Alternatively, including activities that target adolescents' affective experiences and key well-being domains can also address their specific needs (Guse et al., 2019). These are all important factors to consider when adapting the gratitude intervention, as person-activity fit has been found to be a contributing factor to the success of gratitude-based activities (Bono & Sender, 2018; Bono et al., 2020; Davis et al., 2016; Diener et al., 2017; Lyubomirsky et al., 2011).

Advancing Research of Moderators

The identification of potential moderators of gratitude intervention outcomes is advantageous when adapting the intervention to promote gratitude development in adolescents (Reckart et al., 2017). One such moderator is socio-demographic factors (i.e., individual differences), which can impact the implementation of gratitude activities and intervention protocols (Morgan et al., 2022). The following section describes how socio-demographic variables can be examined as potential moderators of gratitude intervention outcomes.

First, benefit appraisal involves a certain level of cognitive processing maturity to perspective-take and discern others' intentionality (Liang & Kiang, 2018; O'Brien et al., 2018). However, little attention has been given to the understanding of how different ages

process gratitude differently. Thus, age-related differences in dispositional gratitude are an important area to study, as this can provide information on the optimal timing for gratitude intervention implementation and help discern the type of gratitude activities suitable for the sample population (Cheney et al., 2014; Morgan et al., 2022).

Second, emerging literature suggests that gratitude is experienced and expressed differently across cultures or ethnic groups (Corona et al., 2020; Guse et al., 2019; Merçon-Vargas et al., 2018; Morgan et al., 2022). However, cross-cultural explorations of how ethnicity influences the gratitude-well-being relationship is limited (Morgan et al., 2022), and very few studies have investigated the role of ethnicity in shaping adolescents' dispositional gratitude (Guse et al., 2019; Merçon-Vargas & Tudge, 2021). Moreover, cross-cultural studies of adolescent gratitude often focus on collectivistic-individualistic differences (Morgan et al., 2022), and little attention is paid to differences in dispositional gratitude among adolescents of different ethnicities within the same country (Bono et al., 2020).

Therefore, the examination of within-cultural differences in dispositional gratitude is key since within-culture homogeneity cannot be assumed (Morgan et al., 2022). Additionally, examining within-cultural differences is advantageous and can lead to more culturally sensitive gratitude studies (Morgan et al., 2015). Notably, one way to examine the within-culture differences is to compare majority versus minority ethnicity in collectivistic countries where the prevailing collectivistic social norms exist (Corona et al., 2020). This can help to provide knowledge on how specific socio-cultural factors promote the experience and expression of gratitude (Corona et al., 2020). Presently, research has provided assumptions addressing the ethnic majority-minority differences in adolescents' well-being, but not in gratitude. For instance, Yuen and Lee (2016) inferred that a strong and positive

ethnic identity of a minority group was a protective factor for adolescents' well-being. Other researchers like Corona et al. (2020) posited that ethnic minority groups tend to retain cultural values and expressive emotional tendencies from their culture much more than ethnic majority groups. This link to their heritage helps determine the frequency and intensity of their emotional expressions. An area for further investigation is to examine whether the cultural values and emotional predispositions of ethnic minority groups do exert a greater influence on the development of gratitude compared to the ethnic majority.

Lastly, another promising area of research is the relationship between dispositional gratitude and religion (Ackerman, 2017; Kraus et al., 2015; Krause & Hayward, 2015; You et al., 2018). This is because adolescents' gratitude is believed to vary by their religious affiliation (You et al., 2018). Although studies suggest that family type can influence adolescents' well-being outcomes, similar studies on their impact on gratitude outcomes are lacking. Consequently, a potential area for future research is to explore how the socio-demographic variable of family type influences dispositional gratitude in adolescents. Overall, little attention has been given to how dispositional gratitude may differ in adolescents across different cultures, religions, and family types. Further research is thus needed to examine these individual differences as potential factors that can moderate gratitude intervention outcomes.

Chapter Summary

This chapter provided a comprehensive narrative literature review spanning over two decades of research on gratitude interventions with adolescent populations. A significant portion of this chapter synthesised the research findings on gratitude interventions and moderators of intervention outcomes and highlighted clinical applications. Based on the literature reviewed, a consensus exists among researchers that

empirical research on gratitude interventions for adolescent populations is largely underexplored and remains in its nascent stage compared to studies with adult populations (Bono et al., 2019; Cheney et al., 2014; Froh et al., 2014; Salve & Lavalekar, 2017; Solom et al., 2017; Tobia et al., 2019). To address this, many researchers have advocated for the development of more innovative and effective gratitude interventions that can foster gratitude in adolescents (Bono & Sender, 2018; Bono et al., 2020; Davis et al., 2016; You et al., 2018).

Gratitude interventions are known to vary by design, type of gratitude activities, intervention frequency, and the measures used to assess their impact. Despite this variation, the treatment goals are similar, as these studies aim to enhance adolescents' dispositional gratitude and/or well-being. Nevertheless, the absence of follow-up and moderator studies suggests that the role of a gratitude intervention in fostering positive adolescent development has not yet been fully examined (Bono et al., 2020). The key recommendations for clinical practice emphasised promoting the implementation of gratitude interventions in schools to advance research in this area. These recommendations highlighted pragmatic considerations that clinicians must address when designing and implementing interventions for adolescents in school settings. Ultimately, though gratitude interventions hold the potential to yield positive outcomes for adolescents, obtaining buy-in from adolescents and schools is a crucial first step towards ensuring their success. The next chapter will describe the study's design and methodology.

Chapter 3

Study Aims, Research Questions and Hypotheses

Following the review of the gratitude intervention literature in the previous chapter, this chapter presents the statement of the problem, study aims, research questions, and hypotheses that guide the current research. The study aims, research questions, and hypotheses were developed from existing theories, empirical findings, research gaps, and researcher recommendations presented in the previous chapters. To streamline the expected findings for this study, the hypotheses are presented in line with the research questions.

Statement of Problem

Despite the empirical evidence that gratitude interventions increase dispositional gratitude, there is a shortage of published gratitude intervention studies (Obeldobel & Kerns, 2021). Among the empirical research investigating gratitude interventions, most of the studies examined adults, while studies that examined adolescents are fewer (Armenta et al., 2022; Bono et al., 2019; Froh et al., 2014; Tobia et al., 2019; Zhang et al., 2022). Researchers have since cautioned against erroneously extrapolating and generalising gratitude findings from adult samples to different age populations like children and adolescents (Chen et al., 2009; Froh et al., 2009a).

Presently, there are a small number of gratitude interventions designed for adolescents (Peolker & Kuebli, 2014; Reckart et al., 2017; Solom et al., 2017). Mixed findings are obtained from individual studies that examine the effect of gratitude interventions for adolescents (e.g., Bono et al., 2020, 2023; Caleon et al., 2017; Froh et al., 2014; Khanna & Singh, 2016). Quantitative reviews report that while gratitude interventions are beneficial, they have only yielded short-term benefits. A possible explanation for this finding is because

some of the empirical studies reviewed adopted only a pre-test and post-test quasi-experimental design (e.g., Baumsteiger et al., 2019; Bono et al., 2020, 2023; Duthely et al., 2017; Rajan & Easvaradoss, 2012). Hence, there is a need for studies to examine the sustained impact of gratitude interventions (i.e., follow-up) before prematurely concluding on the efficacy of gratitude interventions (Davis et al., 2016; Dickens, 2017).

Existing gratitude studies suggest that there are gender-related differences regarding how gratitude may be perceived (Bono et al., 2023; Guse et al., 2019; Levant & Kopecky, 1995; Naito et al., 2005; Solomon, 1995). Specifically, males are reported to be more inhibited and less orientated in the expression and experience of gratitude compared to females, and they report experiencing fewer gratitude intervention effects than females (Emmons & McCullough, 2003; Kashdan et al., 2009; Rajan & Easvaradoss, 2012). To the investigator's knowledge, no gratitude studies have specifically designed a gratitude intervention for a particular gender group. This is an area to investigate, as it can provide information on whether helping males adapt their appraisal of gratitude and navigate potential gender role conflict can lead to them capitalising the benefits from a gratitude intervention (Kashdan et al., 2009).

Another area of study that is useful to examine, though not widely investigated, is the age-related differences in dispositional gratitude development in adolescents (Morgan & Gulliford, 2018). As gratitude is believed to develop differently across age groups (McCullough et al., 2001; Mendonça et al., 2018; Morgan & Gulliford, 2018), obtaining knowledge of the developmental trajectory of dispositional gratitude on adolescents' gratitude practice and gratitude expression may provide information on the relevance of the gratitude activities and intervention protocols for younger and older adolescents (Cheney et al., 2014; Morgan et al., 2022). This can ensure efficient implementation of gratitude

interventions for adolescents across these age groups (i.e., younger versus older) and lead to better intervention outcomes (Diener et al., 2017).

Based on the literature reviewed in earlier chapters, the examination of moderators of gratitude interventions is less commonly conducted among gratitude intervention studies. There is limited knowledge concerning the issue of why and how the experience and expression of gratitude might differ among participants (Kashdan et al., 2009). Therefore, understanding how moderators can influence adolescents' responses to a gratitude intervention is important, as it can provide useful information for researchers on how to adapt interventions for adolescents to meet their needs (Wang et al., 2017).

Taken together, it suggests that there are still areas in gratitude intervention research that have yet to be fully examined (Bono et al., 2020). Researchers have proposed more investigations into the mechanisms and efficacy of gratitude interventions for adolescents (Bono et al., 2020; Duthely et al., 2017; Froh et al., 2014). To the investigator's knowledge, none of the existing gratitude intervention studies for adolescents have examined age-related differences or cross-cultural impact or specifically focused on male adolescents. Therefore, this study hopes to lend weight to the current empirical work on gratitude interventions for adolescents by examining an adapted gratitude intervention on a sample of Singaporean adolescents. Froh et al.'s (2014) benefit-appraisal curriculum was adapted, with prior permission, for a sample of male adolescents. Though an earlier study (i.e., Khanna & Singh, 2016) revalidated Froh et al.'s (2014) study on a sample of Indian adolescents, it did not examine gender differences, age-related differences or the sustained impact of the gratitude intervention. Further, while Froh et al. (2014) and Khanna and Singh (2016) measured gratitude and well-being outcomes (e.g., life satisfaction, mental health), this present study included additional measures of social outcomes (i.e., prosocial

behaviour, perceived social support).

Research Aims

The overall aim of the current study was to examine the impact of an adapted gratitude intervention on Singaporean male adolescents in dispositional gratitude, well-being and social outcomes. Another of the study's aims was to investigate the impact of the adapted gratitude intervention on two different age groups of adolescents (i.e., Grade 8 versus Grade 10 students) and examine for sustained intervention effects 1 month after the completion of the intervention. Additionally, the study hoped to examine the potential moderators (i.e., religion, ethnicity and family type) of the adapted gratitude intervention outcomes.

Research Question and Hypotheses

The research questions and working hypotheses for this present study were established based on existing gratitude intervention studies, identified research gaps and empirical findings (e.g., Froh et al., 2014; Khanna & Singh, 2016) cited in earlier chapters of this thesis. The main research questions (RQs) and hypotheses proposed for the present study are as follows:

RQ1. Does the adapted gratitude intervention effectively enhance adolescents' dispositional gratitude level, well-being outcomes (i.e., life satisfaction, mental health) and social outcomes (i.e., prosocial behaviour, perceived social support), as opposed to those in the control group at post-test and at follow-up?

H1: Adolescents who participate in the intervention group report higher dispositional gratitude, well-being and social outcomes than the adolescents in the control group at post-test and at follow-up.

RQ2. Will the impact of the adapted gratitude intervention be different for Grade 8 versus

Grade 10 adolescents in the intervention groups across the domains of dispositional gratitude, well-being and social outcomes at post-test and at follow-up?

H2. Grade 10 adolescents who participate in the intervention group report higher dispositional gratitude, well-being and social outcomes than the Grade 8 adolescents in the intervention group at post-test and at follow-up.

RQ3. How will socio-demographic factors like religion, ethnicity and family type moderate the dispositional gratitude outcomes for adolescents across the conditions at post-test and at follow-up?

H3. Socio-demographic factors like religion, ethnicity and family type will moderate dispositional gratitude of the adolescents in the intervention group more than the adolescents in the control group at post-test and at follow-up.

H3a. Adolescents who identify as being from a minority religious group report higher dispositional gratitude compared to those who identify as being from a majority religious group at post-test and at follow-up.

H3b. Adolescents who identify as being from a minority ethnic group report higher dispositional gratitude compared to those who identify as being from a majority ethnic group at post-test and at follow-up.

H3c. Adolescents who identify as being from intact families report higher dispositional gratitude compared to those who identify as being from other family types at post-test and at follow-up.

Chapter Summary

The main aim of the study is to examine if an adapted gratitude intervention can have positive and sustained dispositional gratitude, well-being and social outcomes for a sample of Singaporean male adolescents. Another related aim is to examine for age-related differences

(i.e., Grade 8 versus Grade 10 students) when comparing the outcomes of the gratitude intervention. The last study aim is to examine potential moderators of the adapted gratitude intervention. To guide the present study's investigation, three research questions and working hypotheses were subsequently derived from the existing theoretical and empirical work reviewed in earlier chapters. Following this, the next chapter will present the description of the study design, sampling process, sample demographics, well-being and social outcomes questionnaire instruments, and data analysis methodology. It will include a description of the adapted gratitude intervention together with the theoretical basis for adapting the gratitude activities.

Chapter 4

Study Design and Methodology

This chapter outlines the study design, beginning with a description of the Singapore school context to provide educational background on the adolescent participants. It also addresses the impact of the COVID-19 pandemic, highlighting how the sample, procedure, and data analyses were affected.

Sampling Design

This study used a convenience sample from three Catholic secondary schools in Singapore. The use of convenience sampling was selected because of time and resource constraints, which facilitated the efficient gathering of preliminary data (Jager et al., 2017). The sample was composed of only students from the Normal (Academic) stream. This decision was necessitated by school schedule constraints and existing programmes which the other Express and Normal (Technical) streams were engaged in.

In Singapore, all secondary students are placed into one of three academic pathways—Express, Normal (Academic), and Normal (Technical)—upon completion of their Primary School Leaving Examination (PSLE) at Grade 6 (Ministry of Education Singapore, 2023). Students in the Normal (Academic) typically have moderate academic abilities, with median aggregate examination scores falling between those of the Express and Normal (Technical) students (Caleon et al., 2017). While the use of a convenience sample was consistent with other gratitude studies (e.g., Froh et al., 2014; Geier & Morris, 2022; Tian et al., 2016), the sampling of Normal (Academic) students was consistent with a previous Singaporean study by Caleon et al. (2017), which investigated a social gratitude intervention among these students.

Research Design

A quasi-experimental design was used, with participating classes—rather than individuals—randomly assigned to either an intervention or control group. This method of class-level randomisation was consistent with that of several gratitude intervention studies (i.e., Bono et al., 2023; Caleon et al., 2017; Collins et al., 2013; Froh et al., 2014; Khanna & Singh, 2016). There were several justifications for employing this randomisation method. First, randomising by class helped minimise disruption to the established class groups of the participants (Collins et al., 2013). Since students were already organised into well-established groups for academic purposes, it was deemed undesirable to reallocate them for non-academic purposes to control the research variables (Collins et al., 2013). Nonetheless, any potential differences between these pre-existing groups were addressed through statistical analyses of the socio-demographic data. Second, earlier intervention studies indicated that the variances between schools could be considerably greater than the variances between classes from the same school (Collins et al., 2013). Therefore, randomisation at the class level was considered more appropriate than randomisation at the individual or school level (Brown & Liao, 1999; Collins et al., 2013). Third, while some argued that involving more participants than necessary could present an ethical problem (Hickey et al., 2018), the more widely accepted view was that an insufficient sample size could result in lower statistical power to detect intervention effects (Cohen, 1992; Hickey et al., 2018). Taking these factors into consideration, the decision was made to include a larger sample size than initially anticipated during the power analysis when testing hypotheses 1 and 2.

Power Analysis and Determination of Sample Size

In total, multiple power analyses were required, as the varying study hypotheses

each mandated different data analysis strategies. The decision was made to perform separate power analyses using G*Power (version 3.1.3; Faul et al., 2009) for each hypothesis to determine the minimum sample size required to test the study's hypotheses. The first G*Power analysis was conducted based on the most complex model of the study (i.e., School A) to determine the minimum sample size. Hypothesis 1 was determined following an a priori power calculation using G*Power for Mixed Analysis of Variance (ANOVA) with group (intervention, control) and grade (Grade 8, Grade 10) as between-subjects factors and time (pre, post and follow-up) as a within-subjects factor, assuming a medium effect size and a conservative statistical power of .95. The sample size of $N = 60$ was determined to be adequate to test the study hypotheses. For Hypothesis 3, the G*Power sample analyses were conducted for linear multiple regression fixed model, R^2 deviation from zero assuming a medium effect size, a conservative statistical power of .95 and a total of three predictors. The sample size of $N = 119$ was determined to be adequate to test the study hypothesis. No power analysis was conducted for hypothesis 2 because of the unforeseen changes in study design for the Grade 8 students due to the COVID-19 pandemic. This prevented any comparison between the adolescents from the Grade 8 and Grade 10 intervention groups. However, a power sample analysis was conducted when running analyses between School A and School B, and School A and School C (i.e., to examine for potential treatment contamination). The G*Power analysis suggested 64 participants per group ($N = 128$) in an independent sample t-test.

Participants

Participants ($N = 183$) were male adolescents from three Catholic schools in Singapore. All were students attending the Normal (Academic) stream in secondary schools. 63.4% of the students came from School A, an all-boys school located in the eastern part of

Singapore. School A was the main school identified for the gratitude intervention study, as it provided the Grade 8 and Grade 10 intervention and control groups. 20.2% of students came from School B, an all-boys school located in the north-eastern part of Singapore. School B provided the sample of the Grade 10 alternate control group. The remaining 16.4% of students came from School C, a co-educational school located in the western part of Singapore. School C provided the sample of the Grade 8 alternate control group. As this co-educational school had only two Grade 8 Normal (Academic) classes with very small samples of males in each class, all male samples from both Grade 8 Normal (Academic) classes were included for this study. Overall, the distribution of students in the intervention, control and alternate control groupings showed a slight variation in distribution of 33.9% in the intervention group, 29.5% in the control group and 36.6% in the alternate control group.

Socio-demographic data collected showed that 49.7% (91) identified themselves as Chinese, 19.7% (36) as Malay, 26% (26) as Indian/Sikh, 9.3% (17) as Eurasian, 3.8% (7) as Other, and 3.3% (6) declined to comment. The demographic distribution of the study was similar to the current demographic of the Singaporean population, where the majority race is Chinese, while the minority races are the Malays, Indians and Eurasians (Department of Statistics Singapore, 2023). In the area of religion, 37.3% (69) identified themselves as Catholic/Christian, 22.4% (41) as Muslim, 9.3% (17) as Buddhist, 6.6% (12) as Hindu/Sikhism, 16.4% (30) as Free Thinkers, 1.1% (2) as Other, and 6.6% (12) refrained from comment. As the study adopted convenience sampling of students from Catholic Schools, it was not surprising that Catholics and Christians formed the majority religion while the other religions formed the minority religion. Under family type, 74.3% (136) reported being from intact families, 9.3% (17) from single-parent families, 6.6% (12) from blended families, 0.5% (1) from other, and 9.3% (17) did not wish to comment. In examining students' gratitude roots,

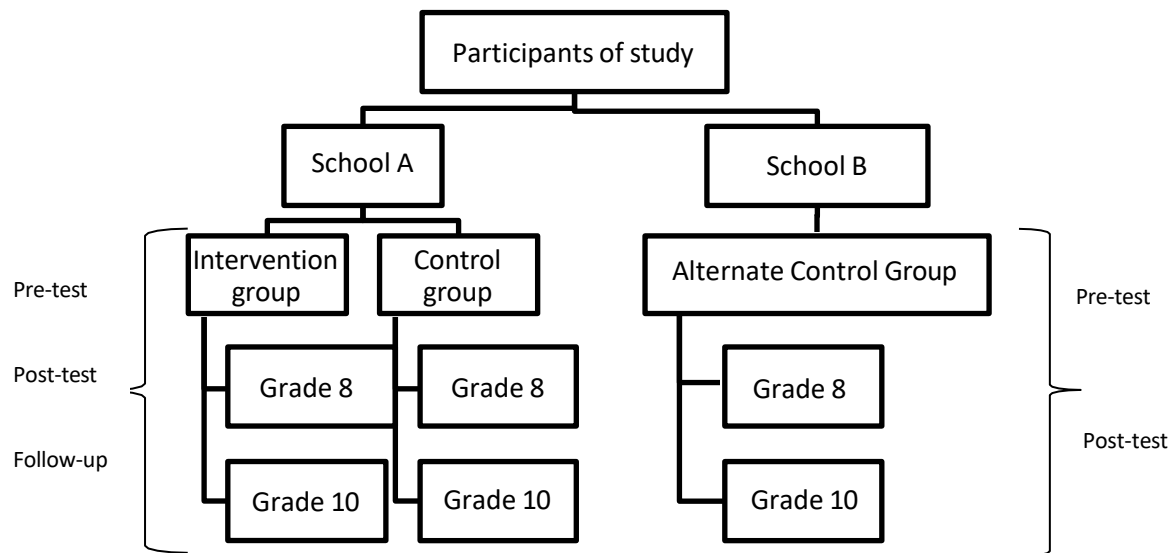
students identified significant people who first taught them how to be grateful. 76% (140) identified parents, 8.2% (15) identified religion, 7.1% (13) identified school, 3.3% (6) identified media, 2.7% (5) identified friends and the remaining 2.2% identified other. In examining current gratitude role models, 69.9% (128) named parents, 10.9% (20) named friends, 8.2% (15) named teachers, 7.1% (13) named 'No one', 3.3% (6) named relatives, and 0.5% (1) named other.

Changes in Participant Grouping and Study Design Due to the COVID-19 Pandemic

A mixed-factorial analysis design (i.e., between-within analysis of variance) was initially employed to study the impact of the gratitude intervention on the students' dispositional gratitude (DV1) and well-being (DV2). The first between-factor variable was the treatment condition (IV1 – treatment versus control group). The second between-factor variable was the grade level (IV2 – Grade 8 versus Grade 10). The repeated factor was the three time periods of assessment (IV3 – pre-test, post-test and follow-up). To ascertain possible treatment contamination, another all-boys Catholic school was initially included to provide the alternate control groups for Grade 8 and Grade 10 students. Figure 2 illustrates the initial participant grouping of the present study.

Figure 2

Initial Participant Grouping by Grade Level (IV1), Treatment Condition (IV2) and over Three Time Periods of Assessment (IV3)



Based on School A's initial school schedule and availability, it was arranged for Grade 10 students to undergo gratitude intervention in the first quarter of the school year followed by Grade 8 students in the second quarter of the school year. School B, an all-boys school, similarly agreed to provide two classes (i.e., one Grade 8 and one Grade 10) as alternate control groups in the first and second quarters of the school year. However, the COVID-19 pandemic occurred, which had several implications for the present study.

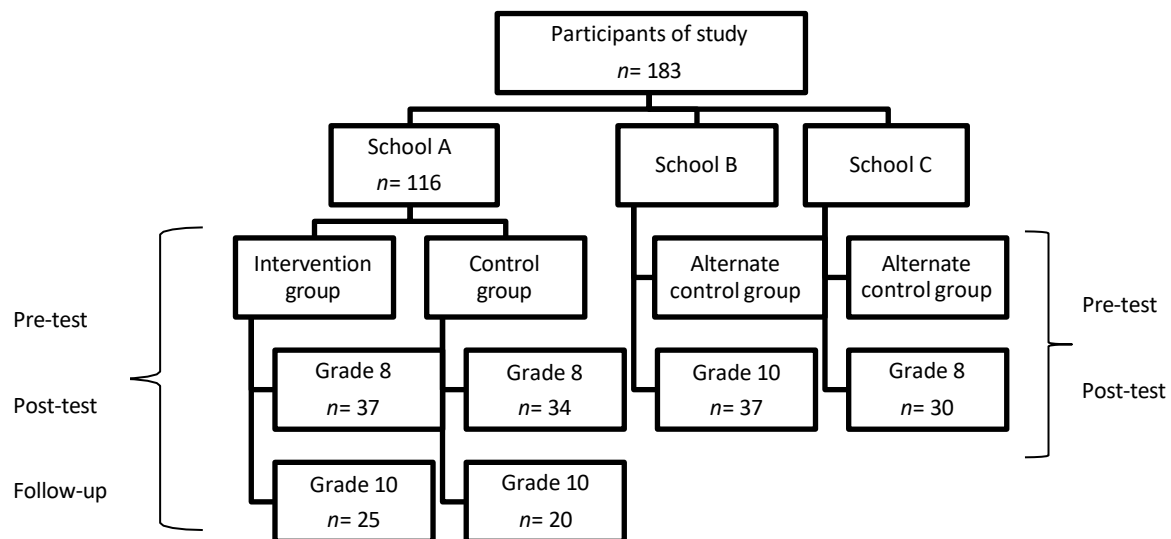
Figure 3 presents the changes in participant grouping, and subsequently study design, due to the impact of the COVID-19 pandemic. For the Grade 10 students in School A, the intervention sessions and follow-up were conducted in the first quarter of the year before the COVID-19 pandemic disrupted the school schedule. The Grade 10 intervention group completed their post-test after 5 sessions and their follow-up 1 month after the last gratitude intervention session. However, for the Grade 8 students in School A, the

intervention sessions were only conducted in the third quarter of the year after the school had reopened. As a result of the COVID-19 pandemic disruption, the Grade 8 intervention group had a shortened intervention period (i.e., 3 sessions) and completed their post-test after 3 sessions. They also had a shortened follow-up time of 3 weeks after the last gratitude intervention session, instead of the intended 1 month (see Figure 3).

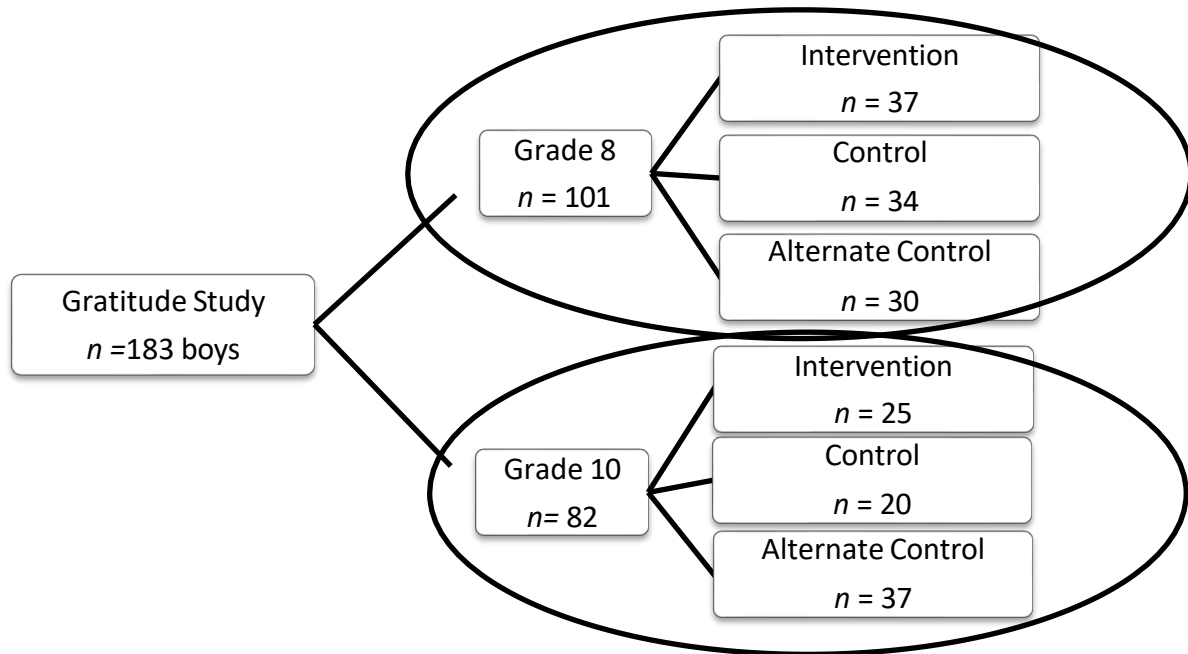
Similarly, the COVID-19 pandemic led to changes in School B's participation, and they were only able to provide a Grade 10 alternate control group. As a result, approvals were sought from the Ministry of Education Singapore to approach School C (see merged [Appendix B](#)) to provide a Grade 8 alternate control group. Data was collected from the two schools in the second semester of the school term when schools reopened. However, due to the shortened school terms and a public holiday in the second semester, the Grade 10 alternate control group had a reduced 4-week period from pre-test to post-test, instead of the planned 5-week period. The Grade 8 alternate control group had a 3-week period from pre-test to post-test, similar to the Grade 8 intervention and control groups.

Figure 3

Changes in Participant Grouping by Grade Level (IV1), Treatment Condition (IV2) and over Three Time Periods of Assessment (IV3)



Given the potential type 1 or 2 errors that may arise from the confounding variable of study design (i.e., difference in intervention sessions, post-test and follow-up time), the initial planned data analyses to compare the grade level (IV2 – Grade 8 versus Grade 10) intervention groups were not conducted. Rather, the data set was only analysed within each grade level (see Figure 4).

Figure 4*Participant Groups by Grade Levels*

Note. Grade 8 sample group was analysed separately from the Grade 10 sample group. Analysis of the Grade 8 sample group involved comparisons between intervention versus control and control versus alternate control. Analysis of the Grade 10 sample group involved comparisons between intervention versus control and control versus alternate control.

Measures

The measures were selected to assess the adolescents' dispositional gratitude, perceptions of general satisfaction with life, state of mental health, prosocial behaviours, and network of social support. Each of these measures had previously been tested for their reliability and validity for an adolescent population (e.g., Bono et al., 2019; Caleon et al., 2017; Cheng & Chan, 2004; Froh et al., 2008, 2009b, 2014; Khanna & Singh, 2016; Rajan & Easvaradoss, 2012; Reckart et al., 2017). They were found to have good internal consistency

reliability, including construct and concurrent validity. Besides these measures, a demographic questionnaire was also included for this study.

Socio-Demographics

The demographic questionnaire collected students' information like class number, age range, class, grade level, family type, ethnicity, and religion (see [Appendix C](#)). Students were further asked to identify their gratitude roots (e.g., 'Who introduced you to the concept of being grateful?') and their current gratitude model (e.g., 'Who do you know that currently practices the concept of gratitude?'). They were also asked to rank the identified persons in order.

Dispositional Gratitude

The Gratitude Questionnaire (GQ-6; McCullough et al., 2002), a 6-item unifactorial self-report questionnaire, was employed to assess students' gratitude. An example of a sample item from the scale is 'I have so much in life to be thankful for.' All items are scored on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Mean scores were calculated, with higher scores indicating higher levels of gratitude. The GQ-6 generally demonstrated good internal reliability across multiple studies, with Cronbach's alphas ranging from 0.62 to 0.87 (McCullough et al., 2002; King & Datu, 2018).

For this study, item 6 was excluded from the scale due to the very low factor loading compared to the other GQ-6 items. This practice was consistent with earlier studies (i.e., Chen et al., 2009; Froh et al., 2011), which had similarly removed item 6 due to very low factor loadings for their samples and poor model fit. While Chen et al. (2009) attributed the low factor loading to the sample's lack of diverse life experiences, Froh et al. (2011) found that item 6 was confusing and unsuitable for adolescent samples because of its abstract nature. In sum, even with the removal of item 6, both studies were able to demonstrate the

reliability and validity of the GQ-6. For this present study, the investigator found the 5-item scale to show adequate reliability (α ranged from .74 to .83).

Life Satisfaction

The Brief Multidimensional Students' Life Satisfaction Scale-Peabody Treatment Progress Battery (BMSLSS-PTPB; Bickman et al., 2010; Seligson et al., 2003) was used to measure students' life satisfaction. The BMSLSS-PTPB is a 6-item self-reporting scale with five response alternatives from 1 (very dissatisfied) to 5 (very satisfied). A sample item from the scale is 'How satisfied or dissatisfied are you with your family life.' The BMSLSS-PTPB is designed to assess the perceived quality of life or global life satisfaction of children and youth (aged 8-18 years) across multiple domains of friendship, self, school, family and living conditions. Mean scores were calculated, with higher scores indicating high satisfaction. Prior permission was obtained from the author to use the scale (see [Appendix D](#)). For this present study, the investigator found the 6-item scale to show good reliability (α ranged from .74 to .94).

Mental Health

Mental health was measured using the Mental Health Continuum-Short Form (MHC-SF; Keyes, 2002), a self-report survey consisting of 14 items that measure emotional, social, and psychological well-being. A sample item from the scale is 'During the past month, how often did you feel that interested in life.' Each of the 14 items can be scored between 0 (never) and 5 (every day). Total scores were calculated, with higher scores indicating better mental well-being. The MHC-SF had shown both excellent internal consistency ($> .80$) and discriminant validity in adolescents (ages 12-18) (Keyes, 2006). For this present study, the investigator found the 14-item scale to show good reliability (α ranged from .92 to .96).

Prosocial Behaviour

The Prosociality Scale (PS; Caprara & Pastorelli, 1993) is a 9-item scale employed to measure students' prosocial behaviour. The items describe behaviours like altruism, agreeableness, and trust. A sample of the items is 'I try to help others.' Respondents rated how often they demonstrated prosocial behaviours during the past month on a 3-point Likert scale ranging from 1 (never) to 3 (often). Mean scores were calculated, with high scores indicating more prosocial behaviours. The PS has good internal reliability with a Cronbach alpha ranging from 0.78 to 0.89 (Caprara et al., 2000). Prior permission was obtained from the author to use the scale (see [Appendix D](#)). For this present study, the investigator found the 9-item scale to show adequate reliability (α ranged from .72 to .85). As with Froh et al.'s (2008) study, the present study also assessed prosocial behaviours by asking students to indicate with 'yes' or 'no' answers if they had provided help to another person. Students were further asked about the number of people they had helped in the past month and to indicate their response in the checkbox, with answers ranging from '1-3', '4-6' or 'more than 7'. Thereafter, students were requested to list down examples of the type of help provided and indicate its perceived usefulness, from 'not useful at all' to 'somewhat useful' to 'very useful'. The purpose in asking for specific responses about the number of people helped and listing the type of help rendered was to allow for more reflective answers as well as for more meaningful interpretation of the reported information.

Perceived Social Support

Students' social support was measured with the Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988). This is a 12-item scale with seven response alternatives from 1 (very strongly disagree) to 7 (very strongly agree). A sample of the items is 'My friends really try to help me.' The MSPSS is designed to measure perceived social support from three sources: Friends, family, and a significant other. For this study, the

items relating to Significant Other were omitted from the MSPSS, as it was assessed to be irrelevant and may not be applicable for students. Prior permission was obtained from the author to omit 'Significant Others' before administering the adapted 8-item MSPSS scale (see [Appendix D](#)). The authors also assured that the impact of the scores for the adapted MSPSS was minimal, as mean scores could be effectively calculated for only two domains. Mean scores were calculated with higher scores indicating high support. The MSPSS, omitting the 'Significant Others' items, has shown adequate internal consistency with alphas ranging from .76 to .78 (Cheng & Chan, 2004). For this present study, the investigator found the 8-item scale to show good reliability (α ranged from .85 to .93).

Gratitude Intervention

Rationale for Selection of Benefit-Appraisal Curriculum

The present study selected Froh et al.'s (2014) benefit-appraisal curriculum over other gratitude interventions (e.g., Caleon et al., 2017; Bono et al., 2020) to replicate because the former was the result of innovative research in applied positive psychology for youth development (Khanna & Singh, 2016). Another reason for selecting the benefit-appraisal curriculum was due to its advantageous design. Froh et al.'s (2014) benefit-appraisal curriculum included standardised and structured lesson plans that could reduce the within-group variability (Froh et al., 2014). More importantly, the gratitude activities and learning of gratitude components complemented other positive psychology interventions, and the curriculum could be readily adapted for children and adolescents of various age groups (Froh et al., 2014; Khanna & Singh, 2016). Froh et al.'s (2014) benefit-appraisal curriculum had practical value, as schools could easily incorporate it into existing class settings without incurring a large investment of finance and time (Khanna & Singh, 2016). As the benefit-appraisal curriculum included a variety of gratitude activities, this appealed to

students and encouraged participation, unlike other conventional gratitude interventions that only involved single-activity gratitude activities like journal writing, gratitude expressions and gratitude visits (Khanna & Singh, 2016).

Furthermore, Froh et al.'s (2014) benefit-appraisal curriculum was preferred over an existing gratitude curriculum that was locally designed for adolescents in Singapore (i.e., Caleon et al., 2017), largely because the latter gratitude curriculum showed a weak effect for the sample of Singaporean students. In contrast, Froh et al.'s (2014) benefit-appraisal curriculum was reported as a novel method of teaching gratitude and was found to be effective in targeting adolescents' social-cognitive appraisals about receiving benefits and cultivating appropriate social skills (Froh et al., 2014; Khanna & Singh, 2016). Besides, the benefits of Froh et al.'s (2014) curriculum even extended to the individuals who were recipients of thank you notes given by the participants (Khanna & Singh, 2016). More details of the gratitude curriculum and their impact will be provided in the next chapter. Overall, the rationale for implementing Froh et al.'s (2014) benefit-appraisal curriculum on a sample of Singaporean students was to add to the knowledge of class-based gratitude interventions and supplement the gratitude intervention research in Singapore.

Adaptations

Table 3 presents the adapted benefit-appraisal curriculum, including a brief description of the activities per session for the Grade 10 intervention group. Although Froh et al.'s (2014) benefit-appraisal curriculum was replicated, the present study introduced a few adaptations based on empirical literature and theoretical frameworks cited in earlier chapters. Prior permission was obtained from the author through email (see [Appendix D](#)). Fundamentally, the adaptations were deemed necessary because, as mentioned earlier, gratitude may be understood differently between genders; thus, gender role differences

needed to be included when designing gratitude interventions (Bausert et al., 2018; Bono et al., 2023; Emmons & McCullough, 2003). Additionally, it was believed that gratitude interventions designed to encourage males' willingness to experience and express gratitude could mitigate any potentially negative evaluations of gratitude and lead to enhanced therapeutic efficacy (Kashdan et al., 2009). Thus, the following adaptations were introduced to enhance male adolescents' receptiveness towards the learning of gratitude.

First, the present study replaced the weekly journal writing segments (i.e., jot it down, create it) in Sessions 1 to 4 with behaviour-based activities (i.e., express it). This was largely because empirical research had shown that adjunct gratitude activities were helpful to teach males alternative gratitude appraisals (Kashdan et al., 2009) and conducting behaviour-based intervention activities (i.e., physical activities) could exact more positive changes (Rajan & Evasvaradoss, 2012).

Second, the key components of dispositional gratitude were then coded into a formula to create a novel experience and facilitate male adolescents' learning (i.e., Intention = I, Cost = C, Benefits = B, Gratitude = G). Third, the present study included interactive and experiential team games (i.e., express it) and employed various gratitude videos to reinforce the learning of dispositional gratitude concepts. These two adaptations were made in light of research suggesting the need to design interactive, fun, practical, exciting and novel gratitude activities for adolescents (Diener et al., 2017; Rajan & Easvaradoss, 2012), as well as the suggestion that including a variety of simultaneously administered gratitude-inducing activities could further encourage the practice of expressed gratitude (Bono & Sender, 2018; Rajan & Easvaradoss, 2012).

Fourth, this present study replaced the role-play activity with the creation of thank you notes. This adaptation is like Khanna and Singh's (2016) study, as they replaced the role-

play activity with the activity of creating thank you cards. While the researchers were unable to implement role-play in the classrooms due to time and logistic constraints, the present study adapted the role-play activity because of safe distancing measures, as the present study was conducted during the COVID-19 pandemic and there were regulations to abide by.

Next, this present study included primers and visualisation techniques, elements that were also introduced in Caleon et al.'s (2017) and Duthely et al.'s (2017) study. The former employed primers to activate adolescents' consciousness towards social situations to facilitate their focus on social relationships when engaging in gratitude practices. While the latter required participants to read aloud together a poem with gratitude-meditation themes as part of the visualisation technique. For this present study, the participants in the intervention group were asked to read aloud together two gratitude statements related to the key gratitude concept at the end of the sessions. These statements were subsequently put up on the classroom noticeboard and served as visual reminders for the participants to encourage the practice of gratitude throughout the week. Another adaptation was the creation of a gratitude tree poster on the class board instead of having the clients write their gratitude on a leaf in their workbook (i.e., Gratitude Tree Activity). The gratitude tree poster then served as another visual reminder, besides the gratitude statements, about the key concepts of gratitude.

Lastly, this present study employed a weekly gratitude jar raffle instead of a weekly raffle ticket. Although the practice of a weekly raffle ticket was similar to Froh et al. (2014) and Khanna and Singh (2016), the difference was that participants in the present study had the opportunity to receive immediate reinforcement instead of waiting till the end of the 5 weeks of gratitude intervention. This practice of employing weekly reinforcements is

similarly aligned with Huston et al.'s (2024) findings that immediate feedback and reinforcement after gratitude interventions helped to motivate participants in continuing with the intervention in the longer term.

Ultimately, the adaptations were designed to help adolescents learn about gratitude through stories containing key themes and a variety of gratitude-inducing activities. These efforts aimed to increase their understanding of the complex gratitude discourse (Morgan et al., 2015) and engage their attention more meaningfully and for a longer period, which maximised the activities' impact and reduced boredom (Diener et al., 2017; Froh et al., 2009a).

Table 3*Adapted Gratitude Intervention for Grade 10 Participants*

Sessions	Curriculum
Session 1: Introduction	<i>Set it up:</i> The facilitator introduces self and co- facilitators. The facilitator briefs the students on what will take place during the session. The facilitator introduces the gratitude jar and distributes blank note cards to the students. Students are encouraged to write down one grateful thought on one side of the note card and indicate their names at the back of the note card. After which the note cards are collected and placed into the gratitude jar as a raffle. <i>Talk about it:</i> The facilitator writes the word ‘Gratitude’ on the board and facilitates an open discussion with the students on what the word means to them. The facilitator then briefly introduces the gratitude formula of Intentions + Cost + Benefits = Gratitude and explains that the following sessions will cover each of the components of gratitude. <i>Watch it:</i> The students watch a video clip titled “Gratitude Is” that depicts different labels and feelings connected with gratitude. <i>Express it:</i> The facilitator hands out writing materials and instructs the students to list down three things that they are most thankful for. Thereafter students are invited to share them with their classmates. <i>Sum it up:</i> The facilitator asks students to share their reflection of the session and then sums up the session. Three gratitude cards for the raffle are drawn from the gratitude jar and read aloud. Each of the winners receives a small snack. The facilitator ends with the two gratitude statements and gets the students to read aloud what they are grateful for before putting it on the class board. Lastly, a recap of the key word of the day was conducted.
Session 2: Intentions	<i>Set it up:</i> The facilitator presents the gratitude jar and distributes the blank note cards. Students are encouraged to write down one grateful thought on one side of the note card and indicate their names at the back of the note card. After which the note cards are collected and placed into the gratitude jar as a raffle.

	<i>Talk about it:</i> At the start of the second session, a recap of the key word of the first session (i.e., Gratitude) and the formula of gratitude is conducted. The facilitator then introduces the key letter and keyword for the second session (i.e, I=Intentions) and writes it down on the white board in the classroom. The facilitator then conducts an open sharing and elicits the students' understanding of the word 'Intentions' in the context of gratitude. <i>Think about it:</i> Following this, students are shown powerpoint slides on actions depicting intentional expression of gratitude. Next, students are presented with two case studies and asked to vote which case study demonstrates 'intentions' in the context of gratitude. The students then watch a video clip addressing "Gratitude is good for you" that explains some research on gratitude impact and association with intentionality. <i>Express it:</i> The students go around the class and demonstrate a gratitude action to one another. Students then play "pass the ball" game that requires them to intentionally call out each other's name and express a word of gratitude toward that person. <i>Sum it up:</i> The facilitator asks students to share their reflection of the session and then sums up the session. Three gratitude cards for the raffle are drawn from the gratitude jar and read aloud. Each of the winners receive a small snack. The facilitator ends with the two gratitude statements and gets the students to read aloud what they are grateful for before putting it on the class board. Lastly, a recap of the key word of the day was conducted.
Session 3 - Costs	<i>Set it up:</i> The facilitator presents the gratitude jar and distributes the blank note cards. Students are encouraged to write down one grateful thought on one side of the note card and indicate their names at the back of the note card. After which the note cards are collected and placed into the gratitude jar as a raffle. <i>Talk about it:</i> At the start of the third session, a recap of the key letter and key word of the first two sessions (i.e., G=Gratitude and I=Intentions) is conducted then followed by the introduction of the key letter and keyword for the third session. The third session key letter was 'C', and the key word is 'Costs'. The facilitator explains that today they will talk

	more about 'Cost'. The facilitator then conducts an open sharing and elicits the students' understanding of the word 'Costs' in the context of gratitude. The students are asked to describe the word <i>cost</i> and are taught the different meanings of the word. The facilitator sets the definition of cost in the context of gratitude; specifically, how it could mean a time when someone gave up something for someone else. The students discuss with one another a time that someone 'paid the cost' and went out of their way to help them. <i>Read about it:</i> The facilitator presents the story of "<i>The Giving Tree</i>" by Silverstein (1964). <i>Express it:</i> The facilitator leads the discussion to identify the costs involved in the video. Students then play a team game involving counting cost and sacrificing individual goals for one another. At the end of the game, students each receive a leaf card and are asked to indicate one cost that someone had paid for them. Students then pin the leaf card on the gratitude tree on the class board. <i>Sum it up:</i> The facilitator asks students to share their reflection of the session and then sums up the session. Three gratitude cards for the raffle are drawn from the gratitude jar and read aloud. Each of the winners receive a small snack. The facilitator ends with the two gratitude statements and gets the students to read aloud what they are grateful for before putting it on the class board. Lastly, a recap of the key word of the day is conducted.
Session 4 - Benefits	<i>Set it up:</i> The facilitator presents the gratitude jar and distributes the blank note cards. Students are encouraged to write down one grateful thought on one side of the note card and indicate their names at the back of the note card. After which the note cards are collected and placed into the gratitude jar as a raffle. <i>Talk about it:</i> At the start of the fourth session, a recap of the key letters and key words of the first three sessions (i.e., G=Gratitude, I=Intentions and C=Costs) is conducted then followed by the introduction of the key letter and key word for the fourth session. The fourth session key letter was 'B', and the key word is 'Benefits'. The facilitator conducts an open sharing and elicits the students' understanding of the word 'Benefits' in the context of gratitude. The facilitator explains what <i>benefit</i> means and asks for examples of benefit as it relates to gratitude.

	<i>Watch it:</i> The students watch a video clip addressing “Science of Gratitude” that addresses positive outcomes of practising gratitude. <i>Express it:</i> The facilitator leads the students to share some of the things that others have done to help them and reflect on how that made them feel. Students then play a team game to identify benefits they have received from one another. Students receive an apple card and are instructed to indicate the benefits they have received from others. Students then pin the apple card on the gratitude tree on the class board. <i>Sum it up:</i> The facilitator asks students to share their reflection of the session and then sums up the session. Three gratitude cards for the raffle are drawn from the gratitude jar and read aloud. Each of the winners receive a small snack. The facilitator ends with the two gratitude statements and gets the students to read aloud what they are grateful for before putting it on the class board. Lastly, a recap of the key word of the day is conducted.
Session 5 – Summary (Intentions + Costs + Benefits = Gratitude)	<i>Set it up:</i> The facilitator presents the gratitude jar and distributes the blank note cards. Students are encouraged to write down one grateful thought on one side of the note card and indicate their names at the back of the note card. After which the note cards are collected and placed into the gratitude jar as a raffle. <i>Talk about it:</i> At the start of the last session, the facilitator summarises the 5 sessions and reintroduces the gratitude formula using key letters I + C + B = G. The facilitator presents a recap of each of the key letters and key words of the gratitude sessions (i.e., I=Intentions, C=Costs, B=Benefits, G=Gratitude). To facilitate a novel learning of the gratitude formula, the facilitator summed up for the students that the gratitude formula I + C + B = G can also be acronyms for ‘I CAN BE GRATEFUL’. <i>Watch it:</i> The students watch the video clip “The Gratitude Dance.” The students are invited to dance along when Singapore is featured on the video. <i>Express it:</i> Students then receive a blank post-it note and instructed to identify a classmate that they want to thank in view of the intention, cost, and benefit theme. Students write

	the gratitude note and then pass it personally to the classmate. <i>Sum it up:</i> The facilitator asks students to share their reflection of the session and three gratitude cards for the raffle are drawn from the gratitude jar and read aloud. Each of the winners receive a small snack. The facilitator ends with the video “The Power of Gratitude” and students are encouraged to remember the gratitude formula and to continue practicing gratitude in their daily living. Lastly, the facilitator thanks the class for their participation.
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Adapted Gratitude Intervention for Grade 8 participants

Table 4 presents the adapted and condensed 3-week gratitude curriculum for the Grade 8 intervention group. Despite this difference in time periods, the Grade 8 intervention group managed to cover all aspects of the gratitude curriculum (i.e., intentions, costs, and benefits) within the condensed 3-week period.

Table 4*Adapted Gratitude Intervention for Grade 8 Participants*

Sessions	Curriculum
Session 1: Introduction and Intentions	<i>Set it up:</i> The facilitator introduces self and co- facilitators. The facilitator briefs the students on what will take place during the session. The facilitator introduces the gratitude jar and distributes blank note cards to the students. Students are encouraged to write down one grateful thought on one side of the note card and indicate their names at the back of the note card. After which the note cards are collected and placed into the gratitude jar as a raffle. <i>Talk about it:</i> At the start of the first session, the facilitator introduces the gratitude formula of Intentions + Cost + Benefits = Gratitude ($I + C + B = G$). As the first session covered the key letter 'I' and the key word 'Intentions', the facilitator writes down the key word on the white board in the classroom. The facilitator then conducts an open sharing and elicits the students' understanding of the word 'Intentions' in the context of gratitude. Following this, students are shown on powerpoint slides actions depicting intentional expression of gratitude. Next, students are presented with two case studies and asked to vote which case study demonstrates 'intentions' in the context of gratitude. <i>Watch it:</i> The students watch two video clips. The first is "Gratitude Is" that displays various terms and feelings associated with gratitude. The second is "Gratitude is good for you" that explains research on gratitude impact and its association with intentionality. <i>Express it:</i> The students go around the class and demonstrate a gratitude action to one another. Students then play "pass the ball" game that requires them to intentionally call out each other's name and express a word of gratitude toward that person. <i>Sum it up:</i> The facilitator asks students to share their reflection of the session and then sums up the session. Three gratitude cards for the raffle are drawn from the gratitude jar and read aloud. Each of the winners receive a small snack. The facilitator ends with the two gratitude statements and gets the students to read aloud what they

	are grateful for before putting it on the class board. Lastly, a recap of the key word of the day was conducted.
Session 2 - Costs	<i>Set it up:</i> The facilitator presents the gratitude jar and distributes the blank note cards. Students are encouraged to write down one grateful thought on one side of the note card and indicate their names at the back of the note card. After which the note cards are collected and placed into the gratitude jar as a raffle. <i>Talk about it:</i> At the start of the second session, a recap of the key letter and key word of the first session (i.e., I=Intentions) is conducted then followed by the introduction of the key letter and keyword for the second session. The second session key letter is 'C', and the key word is 'Costs'. The facilitator explains that today they will talk more about 'Cost'. The facilitator then conducts an open sharing and elicits the students' understanding of the word 'Costs' in the context of gratitude. The students are asked to describe the word 'Cost' and are taught the different meanings of the word. The facilitator sets the definition of cost in the context of gratitude specifically how it could mean a time when someone gave up something for someone else. The students discuss with one another a time that someone 'paid the cost' and went out of their way to help them. <i>Watch / Read about it:</i> The facilitator shows the video of the "The Giving Tree" by Silverstein (1964). <i>Express it:</i> The facilitator leads the discussion to identify the costs involved in the video. Students then play a team game involving counting cost and sacrificing individual goals for one another. At the end of the game, students each receive a leaf card and are asked to indicate one cost that someone had paid for them. Students then pin the leaf card on the gratitude tree on the class board. <i>Sum it up:</i> The facilitator asks students to share their reflection of the session and then sums up the session. Three gratitude cards for the raffle are drawn from the gratitude jar and read aloud. Each of the winners receive a small snack. The facilitator ends with the two gratitude statements and gets the students to read aloud what they are grateful for before putting it on the class board. Lastly, a recap of the key word of the day is conducted.
Session 3 – Benefit and Summary (Intentions +	<i>Set it up:</i> The facilitator presents the gratitude jar and distributes the blank note cards. Students are encouraged

Costs + Benefits = Gratitude)	to write down one grateful thought on one side of the note card and indicate their names at the back of the note card. After which the note cards are collected and placed into the gratitude jar as a raffle. <i>Talk about it:</i> At the start of the third session, a recap of the key letters and key words of the first and second sessions (i.e., I=Intentions and C=Costs) is conducted then followed by the introduction of the key letter and key word for the third session. The third session key letter is 'B', and the key word is 'Benefits'. The facilitator conducts an open sharing and elicits the students' understanding of the word 'Benefits' in the context of gratitude. The facilitator explains what <i>benefit</i> means and asks for examples of benefit as it relates to gratitude. <i>Watch it:</i> The students watch a video clip addressing "Science of Gratitude" that addresses positive outcomes of practising gratitude. <i>Express it:</i> Students play a team game to identify benefits they have received from one another. Students receive an apple card and are instructed to indicate the benefits they have received from others. Students then pin the apple card on the gratitude tree on the class board. Students then receive a blank post-it note and instructed to identify a classmate that they want to thank in view of the intention, cost, and benefit theme. Students write the gratitude note and then pass it personally to the classmate. <i>Sum it up:</i> The facilitator asks students to share their reflection of the session and three gratitude cards for the raffle are drawn from the gratitude jar and read aloud. Each of the winners receive a small snack. The facilitator summarises the 3 sessions and reintroduces the gratitude formula using key letters I + C + B = G. The facilitator presents a recap of each of the key letters and key words of the gratitude sessions (i.e., I=Intentions, C=Costs, B=Benefits, G=Gratitude). To facilitate a novel learning of the gratitude formula, the facilitator sums up for the students that the gratitude formula I+ C + B = G can also be acronyms for 'I CAN BE GRATEFUL'. The facilitator ends with the video "The Power of Gratitude" and students are encouraged to remember the gratitude formula and to continue practicing gratitude in their daily living. Lastly, the facilitator thanks the class for their participation.
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Ethics and Other Approvals for Study

Ethics approval was first sought from the James Cook University School Board (see [Appendix A](#)) and approval was simultaneously obtained from the Provincial Superior of Schools of the Gabrielite Brothers, school principals and the Ministry of Education (merged in [Appendix B](#)). Prior to the study's commencement, the Principal Investigator (PI) provided written information about the study (see [Appendix E](#)) and obtained informed consent and assent from parents/caregivers and students (see [Appendix F](#)). Students who did not give assent and/or whose parents/caregivers did not give consent were excluded from this study. As a result, three students in a Grade 10 intervention group did not participate in the workshop. Their form teacher supervised them while they self-studied at a corner of the class.

Co-Facilitators' Training

Four co-facilitators were recruited by the PI for this study. All were colleagues working in the same organisation. All co-facilitators were university graduates with at least 2 years of working experience with adolescents, including delivering class-based programmes in schools. All co-facilitators were registered school programme trainers with the Singapore Ministry of Education. Each co-facilitator attended two hours of pre-training to familiarise them with the workshop materials before the programme was introduced to the school. Two co-facilitators were randomly assigned to conduct the gratitude sessions with the PI, while the other two co-facilitators were randomly assigned to administer and collect the data from the control groups. Prior to each workshop, the PI met with the two assigned co-facilitators for 30 minutes to review the session plan for the week. During this time, the PI reiterated roles and answered questions concerning the lesson plan. At the end of each workshop, the PI conducted a 30-minute debrief to obtain feedback about the workshop

and to check if the co-facilitators had faced any difficulties in their roles.

Procedure

Intervention and Control Groups

The PI randomly selected two Grade 8 and two Grade 10 classes from the Normal (Academic) classes in School A. Next, the classes were randomly assigned into an intervention or a control group at each grade level (i.e., Grade 8 intervention group versus Grade 8 control group). To ensure consistency in the delivery of instructions, the PI provided written instructions concerning the administration of the survey questionnaires that the co-facilitators read aloud to the students (see [Appendix G](#)).

Pre-test data was collected prior to the start of the gratitude intervention sessions in a classroom setting during the Character & Citizenship Education (CCE) lesson. All surveys were administered at the same time to the intervention and control groups in their respective classes. Two co-facilitators were assigned to the intervention group and two other co-facilitators to the control group while the PI visited both groups. Students took an average of 20 minutes to independently complete the survey. All students were encouraged to answer as honestly as they could and to refrain from discussing their answers with each other. The PI was available at each class to take questions about the study or any of the survey questionnaires.

Gratitude intervention sessions took place during school hours in a classroom setting. Students in the intervention groups underwent weekly sessions, and all sessions were facilitated by the PI and assisted by two co-facilitators. The co-facilitators helped in logistical matters as well as in managing the class dynamics given the large group size. Each session lasted 45 minutes and involved PowerPoint slides, use of multimedia, writing materials and game props. To minimise confounding factors, teachers of all four classes (intervention and

control groups) and level heads in School A were informed not to incorporate any gratitude work in their daily lessons during the timeframe of the whole intervention and data collection phases of the research. Upon completion of the last workshop, the PI and the two co-facilitators administered the post-test measures to the intervention groups in a classroom setting. Follow-up data was collected 1 month after the last workshop by the PI and the two co-facilitators. All students in the intervention group were thanked for their participation in this study.

The control group was a no-treatment waitlist control group who attended their regular school curriculum. Two co-facilitators assisted in administering the questionnaires. The control group completed the same set of questionnaires as the intervention group at the same three time points of measurement of pre-test, post-test and follow-up. Upon completion of the study and after the follow-up data was collected, the control group received one 45-minute gratitude session. The control group was not offered the full gratitude sessions due to school schedules and new restrictions in school because of the COVID-19 pandemic. The PI, assisted by the same two co-facilitators of the intervention sessions, conducted the lesson in a classroom setting. This session comprised a summary of the three gratitude components of intentions, costs, and benefits.

Alternate Control Group

The alternate control group was a no-treatment control group who attended their regular school curriculum during the intervention period. Given the purpose of the alternate control group was to assess the treatment contamination effect, only pre-test and post-test data were collected from the alternative control groups. For each of the alternate control groups, a Normal (Academic) class was randomly selected from the grade level of the school. Due to school restrictions, the PI and her co-facilitators were unable to physically

administer the survey questionnaires to the alternate control groups in School B and School C. Instead, arrangements were made for the class form teachers to administer the survey questionnaires in a classroom setting. The PI provided written instructions (see [Appendix G](#)) concerning the administration of the survey questionnaires that the form teachers read aloud to the students. These instructions were similar to those provided to the co-facilitators. The PI also provided her contact number and email in the instruction sheet for the class teachers and students in the event of any questions concerning the survey administration process. To minimise confounding factors, teachers and level heads in School B and School C were informed not to incorporate any gratitude work in their daily lessons during the timeframe of data collection. Upon completion of the data collection, no gratitude lesson was conducted for the alternate control groups because of the prevailing school restrictions.

Data Analysis Method

Data analyses were conducted with the IBM SPSS Statistical software version 27. Both parametric and non-parametric tests were employed as continuous and categorical data were collected for this study. Preliminary analyses included a non-parametric test, such as the chi-square test of independence (with Yates' continuity correction), to analyse differences in socio-demographic variables—religion (majority, minority), ethnicity (majority, minority), and family type (intact families, other)—between the students. Also, a series of independent sample *t*-tests examined for treatment contamination effects in the control groups. Pearson's correlations were used to analyse the strength of association between the five selected well-being variables, namely, life satisfaction, mental health, gratitude, prosocial behaviour, and perceived social support.

Main hypotheses were analysed with a series of repeated measures. Split-Plot

Analysis of Variance (SPANOVA) was conducted with the within-groups independent variable of Time (pre-test, post-test, follow-up), the between-groups independent variable of Condition (intervention, control), and the dependent variables of dispositional gratitude and well-being outcomes. Effects were analysed for both time and time-by-group interactions. For significant time-by-group interaction effects, follow-up analyses were conducted using pairwise comparison of means for each group across time and across condition for each time (pre-test, post-test, follow-up). With the multiple analyses involved in this study, Bonferroni corrections were employed when analysing for simple effects to reduce the possibility of an increased Type 1 error (Pallant, 2020).

Further, to examine the results from the supplemental prosocial behaviour questions, non-parametric tests like Cochran's Q test and the Friedman test were conducted to analyse the nominal and ordinal data. The Cochran's Q test analysed if the proportion of students' helping behaviour (i.e., yes or no) changed over time in both the intervention and control groups. The Friedman test analysed if the ranked number of people helped (i.e., 1-3 persons, 4-6 persons, more than 7 persons) changed over time in both the intervention and control groups.

Secondary hypotheses testing involved point biserial correlation analyses to determine the strength and direction of associations between the predictor variables (i.e., condition and socio-demographic variables) and the dependent variables (i.e., gratitude scores at post-test and at follow-up). Tetrachoric correlation analyses were also included to estimate the strength of the relationship between the binary variables (i.e., predictor variables). Following these preliminary analyses, the moderated multiple regression analyses, using Hayes' PROCESS Macro Model 1 (version 3.5.3), were conducted to determine the predictive ability of condition and socio-demographic variables on

dispositional gratitude scores at post-test and at follow-up.

Chapter Summary

This study employed a quasi-experimental design, where participants were randomly allocated by classes into the treatment conditions. In addition to a description of the sample and measures, the chapter presented the rationale for selecting the gratitude intervention (i.e., Froh et al.'s (2014) benefit-appraisal curriculum). Explanations for the curriculum's adaptation were also provided along with a description of the adapted version of the intervention. More importantly, this chapter detailed the impact of the COVID-19 pandemic on the study, highlighting the changes made to adapt to the school schedules of the Grade 8 students and the alternate control group samples. Despite the differences in the number of intervention sessions (three or five weeks), both the Grade 8 and Grade 10 intervention groups completed the gratitude intervention and learnt the key gratitude concepts. The following chapter will report the quantitative results obtained through data analyses in support of the present research hypotheses.

Chapter 5

Effects of the Gratitude Intervention on Gratitude, Well-Being and Social Outcomes

This chapter presents the results and findings from the data analyses that support the hypotheses of this study. The preliminary analyses are presented first, followed by the analyses of the main and secondary hypotheses. Since the COVID-19 pandemic impacted the study design of the Grade 8 students but not of the Grade 10 students, the findings are presented separately by grade level. The Grade 10 intervention and control group (i.e., 5-week gratitude intervention period) is discussed first, followed by the Grade 8 intervention and control group (i.e., condensed 3-week gratitude intervention period). This presentation order was chosen to allow for an examination of the findings from the original study design first before those from the condensed design.

COVID-19 Impact on Hypothesis Testing

This study earlier hypothesised (i.e., RQ2.H2) that the impact of the adapted gratitude intervention would be different for Grade 8 versus Grade 10 intervention groups at post-test and in follow-up in dispositional gratitude, well-being and social outcomes. However, as the study on Grade 8 students was conducted amidst the COVID-19 pandemic, the changes in school schedule led to changes in the initial study design for this group of participants. The resultant impact was differences in the number of intervention sessions and in the follow-up time between the Grade 8 and Grade 10 groups. To avoid the possibility of type 1 or 2 errors, no data analyses were conducted for these two hypotheses, and the testing of this hypothesis was later omitted in this study.

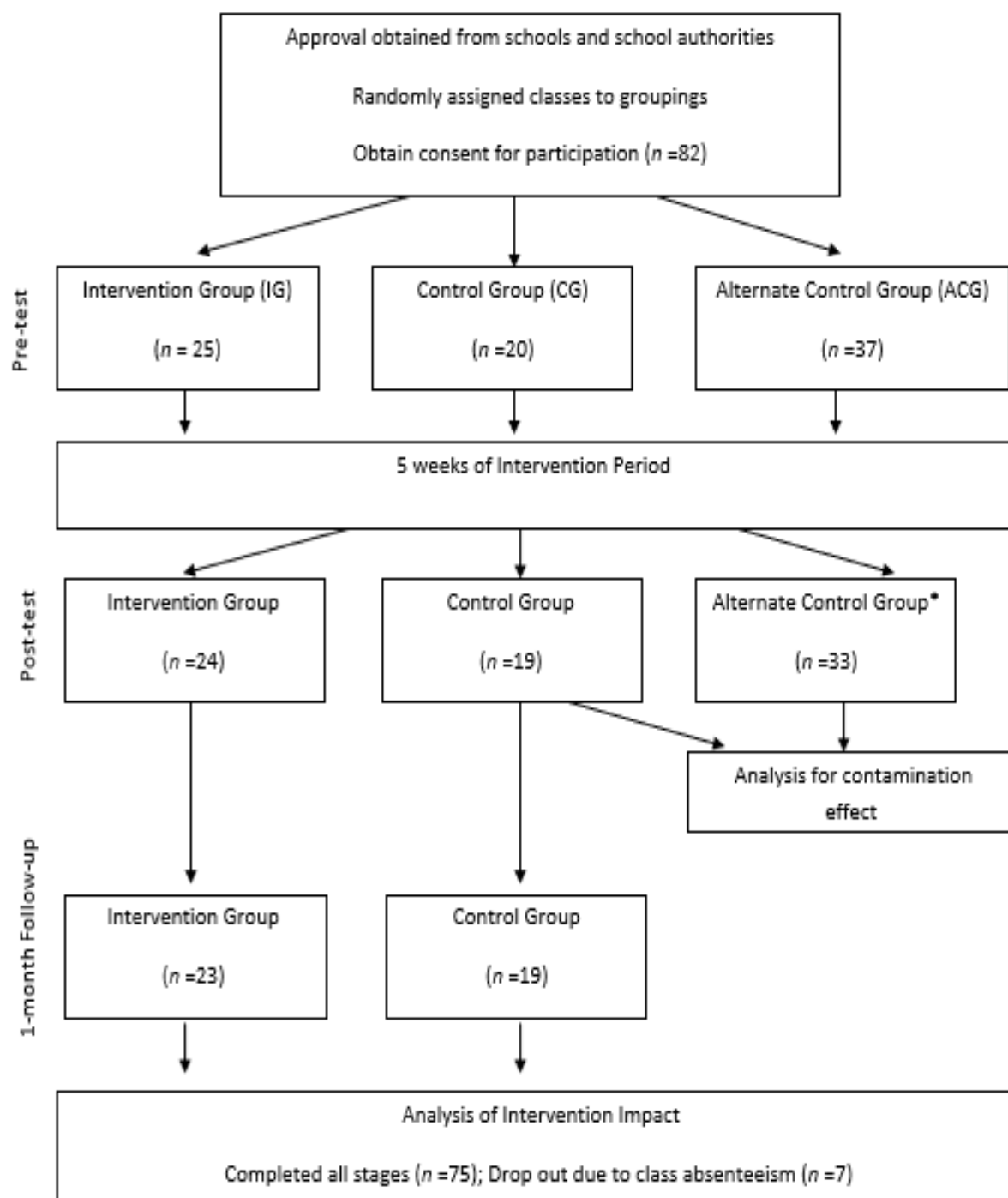
Grade 10 Preliminary Analyses

Missing Data and Assumptions Testing

Before conducting data analyses to test the hypotheses, the data set was examined

for missing and incomplete data using IBM SPSS Statistics for Windows Version 27. Data were missing on some variables for a few students, but no attempts were made to input the missing data. To manage missing data, the pairwise deletion method was employed so that as many students as possible could be included in the overall data analysis (Pallant, 2020). To manage incomplete data, students were omitted from the final dataset if they were absent from class during the post-test or the follow-up test. Thereafter, a final number of 75 Grade 10 students were available for data analysis. Figure 5 shows the flow of Grade 10 students at each stage of the study design.

To detect any violations of assumptions in the Grade 10 data sets, initial tests of normality, linearity and variance were conducted. They included Shapiro-Wilk, Hartley's Fmax test and Levene's test statistics. Given the sample size, the visual inspection of histograms and q-plots was conducted to determine the normality of data (Tabachnick & Fidell, 2014). The preliminary findings showed no violation of the assumptions, and thus parametric tests like correlational analyses, *t*-tests and Split-Plot Analysis of Variance (SPANOVA) were utilised to analyse the data for this study.

Figure 5*Flow of Grade 10 Students Through Each Stage of the Study*

Note. *Alternate Control group had a 4-week time frame between pre and post-test due to school schedule changes.

Socio-Demographic Analyses

Table 5 presents the descriptive statistics of the re-categorised socio-demographics across conditions (i.e., intervention, control, and alternate control). Students who declined to comment on the socio-demographic questions were set as missing data and excluded from the demographic analysis. Given the small number of respondents in some of the socio-demographic groups, the decision was made to regroup the data into two groups for the purpose of comparisons and for moderation hypotheses testing. Based on the socio-demographic data, the variables of religion and ethnicity were each re-categorised, as belonging to majority or minority groups.

For religion, Christians/Catholics formed the majority group, while the other religions (i.e., Muslim, Buddhist, Hindu/Sikhism, Free Thinkers, and Other) were consolidated and identified as the minority group. Similarly, for ethnicity, Chinese adolescents formed the majority group, while the other ethnic groups (i.e., Malay, Indian/Sikh, Eurasians, and Other) were consolidated and identified as the minority group. As for family type, adolescents with intact families were re-categorized as intact, while the other family types (i.e., single-parent families, blended families, other) were consolidated and identified as other.

The chi-square test (with Yates' continuity correction) was conducted to detect potential socio-demographic differences in Grade 10 intervention, control, and alternate control groups. No significant differences were found in the socio-demographic variables of religion (majority, minority), ethnicity (majority, minority), and family type (intact families, other) across the Grade 10 groups ($p > .05$). The findings showed the Grade 10 conditions have similar sample socio-demographic characteristics in both intervention and control groups.

Table 5*Descriptive Statistics of Socio-Demographic Categories Across Grade 10's Conditions*

Categories	Grade 10					
	IG		CG		ACG	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Religion						
Majority	11	45.8	7	38.9	13	38.2
Minority	13	54.2	11	61.1	21	61.8
Ethnicity						
Majority	11	44	13	68.4	22	62.9
Minority	14	56	6	21.6	13	37.1
Family Type						
Intact	22	78.9	15	84.6	28	90.3
Other	1	21.1	4	15.4	3	9.7

Note. IG, intervention group; CG, control group; ACG, alternate control group

Analyses of Potential Treatment Contamination

A series of independent samples *t*-tests were conducted to analyse potential treatment contamination in Grade 10 control groups at pre-test and post-test. No significant differences were found between the Grade 10 control and alternate control groups in dispositional gratitude and well-being outcomes ($p > .01$). The results showed there was no treatment contamination for the Grade 10 control group in School A (see Table 15 in [Appendix H](#) for descriptive statistics and *t*-test results).

Descriptive Statistics and Correlations

Table 6 presents the descriptive statistics and psychometric properties of the measures for Grade 10 intervention and control groups at three time periods of assessment.

To determine the internal consistency of the measures selected for this study, the Cronbach's alpha coefficients were computed for each measure across the three time periods of assessment. The results consistently demonstrated adequate reliability ($\alpha \geq .70$). To determine how variable the data spread was between intervention and control groups, a visible examination of the predicted scores versus the actual range of scores was conducted at grade levels. The results showed that although the range of data sets were similarly varied for both the Grade 10 control and intervention groups, slight differences could be observed for the control group. The Grade 10 control group consistently reported lower minimum scores compared to the Grade 10 intervention group.

Table 6*Descriptive Statistics for Grade 10 Intervention and Control Groups*

Measure	GRADE 10							Cronbach α
	Intervention Group				Control Group			
	Predicted Scores	<i>M</i>	<i>SD</i>	Range	<i>M</i>	<i>SD</i>	Range	
Gratitude	5 – 35							
T1		26.32	4.67	17 – 35	24.11	5.91	13 – 33	.80
T2		28.50	4.48	20 – 35	23.67	5.91	8 – 34	.83
T3		27.95	3.43	20 – 35	24.11	5.69	13 – 34	.75
Life Satisfaction	6 – 30							
T1		3.97	0.44	20 – 30	3.61	0.77	14 – 30	.74
T2		4.08	0.54	17 – 30	3.70	0.84	13 – 30	.94
T3		4.09	0.58	20 – 30	3.97	1.03	12 – 30	.90
Mental Health	0 – 70							
T1		44.73	10.67	25 – 69	38.22	17.41	8 – 70	.92
T2		45.91	11.01	26 – 69	36.11	16.69	8 – 66	.94
T3		46.18	11.27	23 – 66	43.78	15.21	20 – 70	.93
Prosocial Behaviour	9 – 27							
T1		2.39	0.26	17 – 26	2.26	0.40	13 – 27	.72
T2		2.53	0.25	19 – 26	2.35	0.43	15 – 27	.79
T3		2.54	0.25	19 – 27	2.42	0.46	12 – 27	.81
Social Support	8 – 56							
T1		5.49	0.84	33 – 56	4.99	1.39	22 – 56	.89
T2		5.57	0.88	30 – 55	4.78	1.50	15 – 56	.92
T3		5.56	0.92	28 – 56	4.93	1.52	16 – 56	.93

Note. T1, pre-test; T2, post-test; T3, 1-month follow-up; $n = 45$

Table 7 presents the intercorrelations between dispositional gratitude and well-being outcomes at pre-test for the Grade 10 intervention and control groups. Pearson's correlations were conducted to examine the strength and direction of the associations between the five selected well-being measures. All correlations were found to be statistically significant ($p < 0.01$ or $p < 0.05$) and with a large effect size (Cohen, 1988). Thus, this finding showed support for the individual measures utilised to determine dispositional gratitude and well-being outcome in this study.

Table 7

Intercorrelations of Well-being Measures for Grade 10 Intervention and Control Groups

Outcome	1	2	3	4	5
1. T1 Gratitude	-				
2. T1 Life Satisfaction	.60**	-			
3. T1 Mental Health	.61**	.72**	-		
4. T1 Prosocial Behaviour	.59**	.68**	.60**	-	
5. T1 Social Support	.68**	.68**	.64**	.52**	-

Note. T1, pre-test, $n = 45$

** correlation is significant at the 0.01 level (2-tailed)

Gratitude Intervention Impact on Grade 10 Students

RQ1.H1. To address RQ1, the present study compared the dispositional gratitude, well-being and social outcomes of the adolescents in the gratitude intervention group and those in the control group at post-test and delayed post-test (i.e., follow-up). To test the

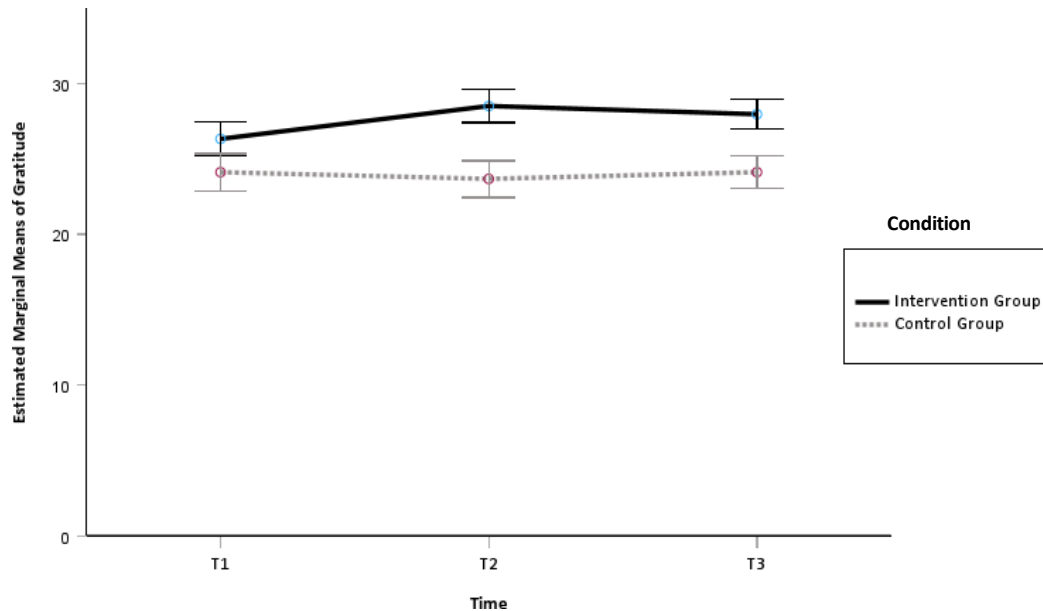
primary hypothesis (RQ1.HQ1.) for Grade 10 participants, a 3 (TIME) $\times$ 2 (CONDITION) SPANOVA was conducted with the within-groups independent variable of Time (pre-test, post-test, follow-up) and the between-groups independent variable of Condition (intervention, control) for each of the dependent variables of dispositional gratitude, well-being and social outcomes. Simple main effect analyses with Bonferroni adjustment were conducted to investigate the significant interaction effects. Additionally, pairwise comparisons of means by condition were conducted to investigate the significant findings of the main effects. The findings are presented below, first for dispositional gratitude outcomes and then for well-being and social outcomes.

Dispositional Gratitude Outcomes

In support of Hypothesis H1, the interaction between condition and time was found to be significant, $F(2, 76) = 3.45, p = .037$, and with a moderate effect size ($\eta_p^2 = 0.08$) (see Figure 6). The main effect of condition on dispositional gratitude scores was found to be significant, $F(1, 38) = 5.99, p = .019$ with a large effect size ($\eta_p^2 = 0.14$). In contrast, the main effect of time on dispositional gratitude was not significant, $F(2, 76) = 1.86, p = .16, \eta_p^2 = 0.05$. The results indicated a difference in dispositional gratitude scores between the two conditions across the three time periods.

Figure 6

Grade 10 Dispositional Gratitude Means at Three Time Periods of Assessment for IG and CG



Note. T1, pre-test; T2, post-test; T3, 1-month follow-up

Mean Dispositional gratitude scores of Grade 10 Intervention group ($n = 22$) and Control group ($n = 18$) at pre-test, post-test and 1-month follow-up.

Error bars: ± 1 Standard Error

To investigate the exact nature of the interaction, a simple main effect analysis with Bonferroni adjustment was conducted. At pre-test, there was no significant difference in dispositional gratitude scores between the two groups, $F(1, 38) = 1.74$, $p = .20$, with a small effect size ($\eta_p^2 = 0.04$). However, at post-test, the Grade 10 intervention group reported significantly higher dispositional gratitude scores than the Grade 10 control group, $F(1, 38) = 8.65$, $p = .006$, with a large effect size ($\eta_p^2 = .19$). Similar patterns of findings were found at follow-up, where the Grade 10 intervention group reported significantly higher dispositional

gratitude scores than the Grade 10 control group, $F(1, 38) = 6.98, p = .01$, and with a large effect size ($\eta_p^2 = .16$). As hypothesised, the Grade 10 intervention group reported higher dispositional gratitude scores at post-test and more sustained dispositional gratitude scores at follow-up compared to their counterparts in the control group.

Pairwise comparisons of means were conducted to investigate changes in dispositional gratitude scores over time by conditions. For the intervention group, a significant positive change in dispositional gratitude scores was found only from pre-test to post-test, $F(2, 37) = 5.06, p = .01$, with a large effect ($\eta_p^2 = 0.22$). Participants in the intervention group reported a significant increase in dispositional gratitude scores from pre-test ($M = 26.32, SD = 4.67$) to post-test ($M = 28.5, SD = 4.48$), but no significant increase in dispositional gratitude scores from post-test ($M = 28.5, SD = 4.48$) to follow-up ($M = 27.95, SD = 3.43$). Participants in the control group reported no significant changes in dispositional gratitude scores from pre-test ($M = 24.11, SD = 5.91$) to post-test ($M = 23.67, SD = 5.91$) to follow-up ($M = 24.11, SD = 5.69$). These patterns of findings suggest that participants in the intervention group were able to enhance their dispositional gratitude scores from pre-test to post-test, but this effect was not evident among participants in the control group.

Well-Being and Social Outcomes

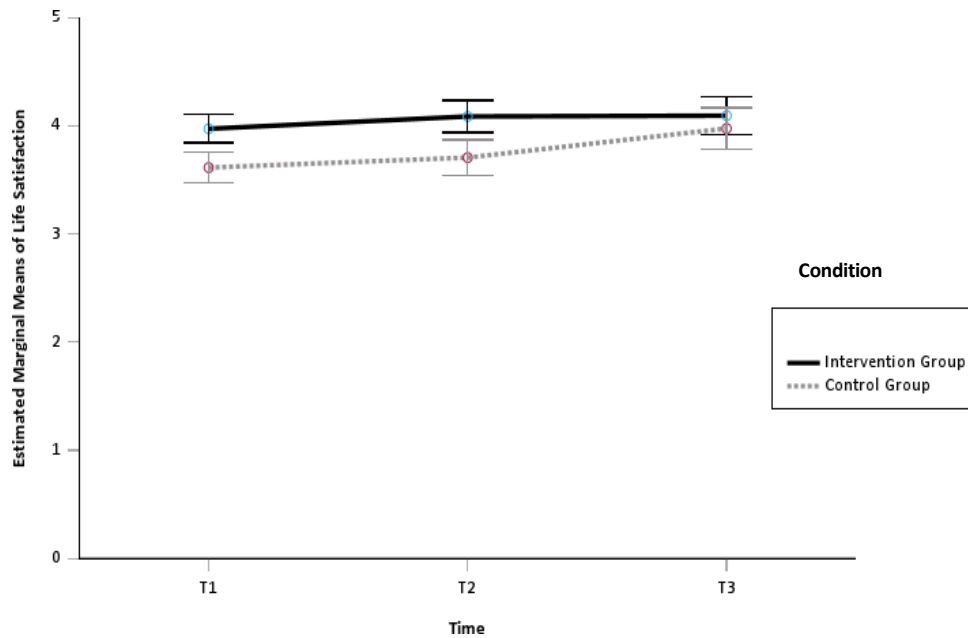
Life Satisfaction. The results of the present study for life satisfaction did not support Hypothesis H1, as no interaction effect was found between condition and time, $F(1.84, 69.74) = 2.01, p = .15, \eta_p^2 = 0.05$. There was also no main effect of condition on life satisfaction, $F(1, 38) = 1.86, p = .18, \eta_p^2 = 0.05$. In contrast, a significant main effect of time on life satisfaction was found, $F(1.84, 69.74) = 5.59, p = .007$, with a moderate effect size ($\eta_p^2 = 0.13$) (see Figure 7). Thus, the Grade 10 intervention group did not report higher life satisfaction scores or more sustained life satisfaction scores at follow-up compared to their

counterparts in the control group. To further investigate the significant main effect of time, pairwise comparisons of means over time by condition were conducted. For the intervention group, no statistically significant change in life satisfaction scores was found from pre-test ($M = 3.97$, $SD = 0.44$) to post-test ($M = 4.08$, $SD = 0.54$) to follow-up ($M = 4.09$, $SD = 0.58$). However, for the control group, there was a statistically significant change in life satisfaction scores over time, $F(2,37) = 4.24$, $p = .02$, with a large effect ($\eta_p^2 = 0.19$).

Participants in the control group reported a significant increase in life satisfaction scores from pre-test ($M = 3.61$, $SD = 0.77$) to follow-up ($M = 3.97$, $SD = 1.03$) and from post-test ($M = 3.70$, $SD = 0.84$) to follow-up ($M = 3.97$, $SD = 1.03$), but no significant increase was observed from pre-test ($M = 3.61$, $SD = 0.77$) to post-test ($M = 3.70$, $SD = 0.84$). These findings suggest that participants in the intervention group had stable life satisfaction scores across three time periods, whereas the control group's life satisfaction scores changed over time.

Figure 7

Grade 10 Life Satisfaction Means at Three Time Periods of Assessment for IG and CG



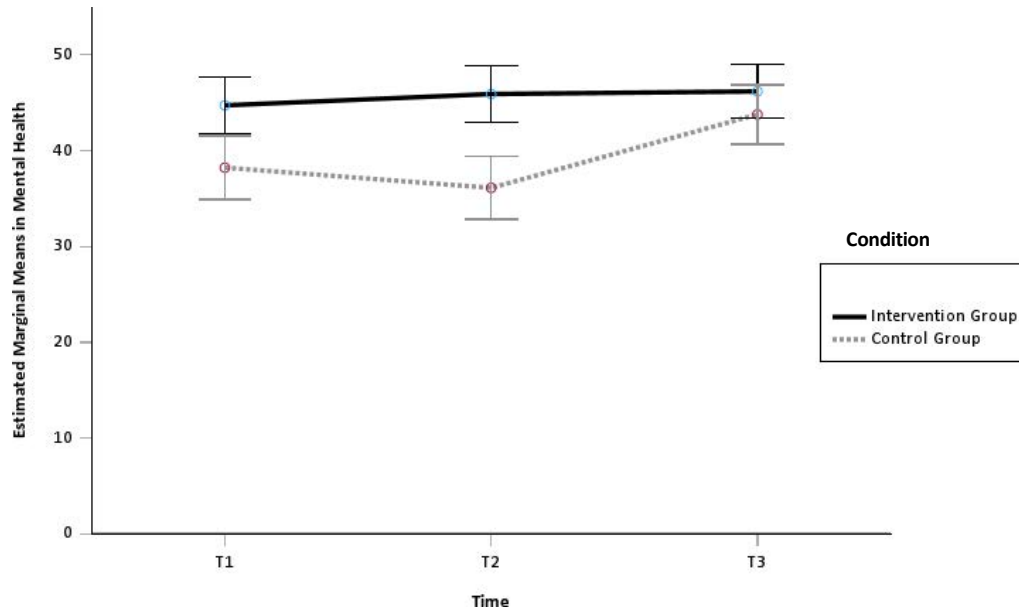
Note. T1, pre-test; T2, post-test; T3, 1-month follow-up

Mean Life Satisfaction scores of Grade 10 Intervention group ($n = 22$) and Control group ($n = 18$) at pre-test, post-test and 1-month follow-up.

Mental Health. In partial support of Hypothesis H1, the interaction between condition and time was found to be significant, $F(2, 76) = 3.16, p = .048$, with a moderate effect size ($\eta_p^2 = 0.08$). There was no main effect of condition on mental health, $F(1, 38) = 2.42, p = .13, \eta_p^2 = 0.06$. In contrast, the main effect of time on mental health was found to be significant, $F(2, 76) = 4.33, p = .017$, with a moderate effect size ($\eta_p^2 = 0.10$) (see Figure 8). The results indicated that the pattern of mental health scores over time differed between the two conditions.

Figure 8

Grade 10 Mental Health Means at Three Time Periods of Assessment for IG and CG



Note. T1, pre-test; T2, post-test; T3, 1-month follow-up

Mean Dispositional gratitude scores of Grade 10 Intervention group ($n = 22$) and Control group ($n = 18$) at pre-test, post-test and 1-month follow-up.

Error bars: ± 1 Standard Error of Means

To investigate the exact nature of the interaction, a simple main effect analysis with Bonferroni adjustment was conducted. At pre-test, no statistically significant difference in mental health scores was found between the two groups, $F(1, 38) = 2.11$, $p = .16$, with a small effect size ($\eta_p^2 = 0.05$). However, at post-test, the Grade 10 intervention group reported statistically significantly higher mental health scores than the Grade 10 control group, $F(1, 38) = 4.96$, $p = .032$, with a moderate effect size ($\eta_p^2 = 0.12$). At follow-up, there was no statistically significant difference in mental health scores between the two groups, $F(1, 38) = .33$, $p = .57$, with a small effect size ($\eta_p^2 = 0.01$). As hypothesised, the Grade 10 intervention group reported higher mental health scores at post-test compared to their

counterparts in the control group. However, the Grade 10 intervention group did not report more sustained mental health scores at follow-up compared to their counterparts in the control group.

To further investigate the significant main effect of time on mental health, pairwise comparisons of means over time by condition were conducted. For the intervention group, no statistically significant change in mental health scores was found from pre-test ($M = 44.73$, $SD = 10.67$) to post-test ($M = 45.91$, $SD = 11.01$) to follow-up ($M = 46.19$, $SD = 11.27$). However, for the control group, there was a statistically significant change in mental health scores from post-test to follow-up, $F(2, 37) = 8.82$, $p < .001$, with a large effect ($\eta_p^2 = 0.32$). Participants in the control group reported a significant increase in mental health scores from post-test ($M = 36.11$, $SD = 16.69$) to follow-up ($M = 43.78$, $SD = 15.21$), but there was no significant increase in mental health scores from pre-test ($M = 38.22$, $SD = 17.41$) to post-test ($M = 36.11$, $SD = 16.69$). These patterns of findings suggest that participants in the intervention group had stable mental health scores over three time periods, whereas the control group's mental health scores changed over time. Nonetheless, examination of the data revealed that a few participants in the control group inflated their scores, reporting full scores for the mental health questionnaire while their other responses on the well-being and social measures were less inflated.

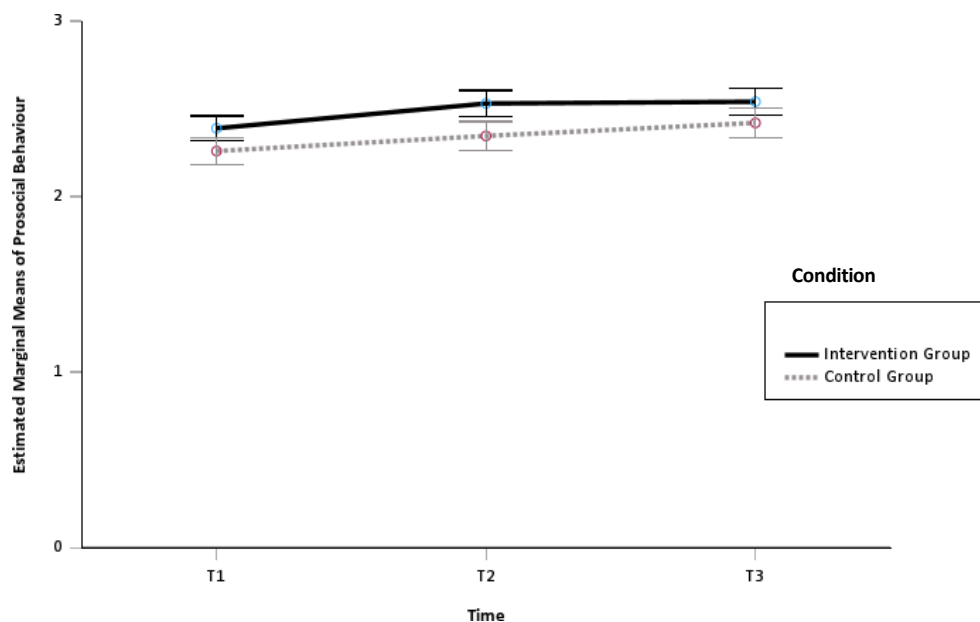
Prosocial Behaviour. The results of the present study for prosocial behaviour did not support Hypothesis H1, as no interaction effect was found between condition and time, $F(2, 76) = 0.38$, $p = .68$, $\eta_p^2 = .01$. There was also no main effect of condition on prosocial behaviour, $F(1, 38) = 2.10$, $p = .16$, $\eta_p^2 = .05$. In contrast, the main effect of time on prosocial behaviour was found to be significant, $F(2, 76) = 8.35$, $p < 0.001$, with a large effect size ($\eta_p^2 = .18$) (see Figure 9). However, the Grade 10 intervention group did not report higher or

more sustained prosocial behaviour scores at follow-up compared to their counterparts in the control group.

To further investigate the significant main effect of time, pairwise comparisons of means over time by conditions were conducted. For the intervention group, there was a statistically significant change in prosocial behaviour scores over time, $F(2, 37) = 5.06$, $p = .01$, with a large effect size ($\eta_p^2 = .22$). Participants in the intervention group reported a significant increase in prosocial behaviour scores from pre-test ($M = 2.39$, $SD = 0.26$) to post-test ($M = 2.53$, $SD = 0.25$) and from pre-test ($M = 2.39$, $SD = 0.26$) to follow-up ($M = 2.54$, $SD = 0.25$). However, there was no significant increase from post-test ($M = 2.53$, $SD = 0.25$) to follow-up ($M = 2.54$, $SD = 0.25$). For the control group, there was a statistically significant change in prosocial behaviour scores over time, $F(2, 37) = 3.43$, $p = .04$, with a large effect size ($\eta_p^2 = .16$). Participants in the control group reported a significant increase in prosocial behaviour scores from pre-test ($M = 2.26$, $SD = 0.40$) to follow-up ($M = 2.42$, $SD = 0.46$), but no significant increase was found from pre-test ($M = 2.26$, $SD = 0.40$) to post-test ($M = 2.35$, $SD = 0.43$) or from post-test ($M = 2.35$, $SD = 0.43$) to follow-up ($M = 2.42$, $SD = 0.46$). These findings suggest that participants' prosocial behaviour scores changed over time, regardless of whether they were in the intervention group or the control group.

Figure 9

Grade 10 Prosocial Behaviour Means at Three Time Periods of Assessment for IG and CG



Note. T1, pre-test; T2, post-test; T3, 1-month follow-up

Mean Dispositional gratitude scores of Grade 10 Intervention group ($n = 22$) and Control group ($n = 18$) at pre-test, post-test and 1-month follow-up.

Error bars: ± 1 Standard Error

To analyse the supplemental prosocial behaviour measures, Cochran's Q test was conducted to investigate if the proportion of Grade 10 students' helping behaviour changed over the three time periods of assessment (pre-, post-test and follow-up). The results of the Cochran's Q test did not indicate any significant differences in the proportion of students' helping behaviour across the three time periods of assessment for either the Grade 10 intervention group ($\chi^2(2) = 0.33, p = .85$) or the Grade 10 control group ($\chi^2(2) = 1.00, p = .61$). The Friedman test was then conducted to investigate if the ranked number of people helped

(i.e., 1-3 persons, 4-6 persons, more than 7 persons) changed over the three time periods of assessment. Students who did not indicate their response were considered as missing values and excluded from the analyses. The results of the Friedman test indicated that for the Grade 10 intervention group, there was no statistically significant difference in the ranked number of people helped across the three time periods of assessment (pre-, post-test and follow-up, $\chi^2(2, n = 17) = 2.17, p = .34$). Similarly for the Grade 10 control group, there was no statistically significant difference in the ranked number of people helped across the three time periods of assessment (pre-, post-test and follow-up, $\chi^2(2, n = 14) = 1.60, p = .45$). Thus, neither the Grade 10 intervention group nor the control group reported any significant changes in their helping behaviour or ranked number of people helped over the three time periods of assessment.

Perceived Social Support. The results of the present study for perceived social support did not support Hypothesis H1, as no interaction effect was found between condition and time, $F(1.65, 62.65) = 0.93, p = .38, \eta_p^2 = .02$. There was no main effect of condition on perceived social support, $F(1, 38) = 3.25, p = .08, \eta_p^2 = .08$. Similarly, there was no main effect of time on perceived social support, $F(1.65, 62.65) = 0.29, p = .71, \eta_p^2 = .01$. Thus, the Grade 10 intervention group did not report higher perceived social support scores or more sustained positive effects at follow-up compared to their counterparts in the control group.

Grade 8 Preliminary Analyses

Missing Data and Assumptions Testing

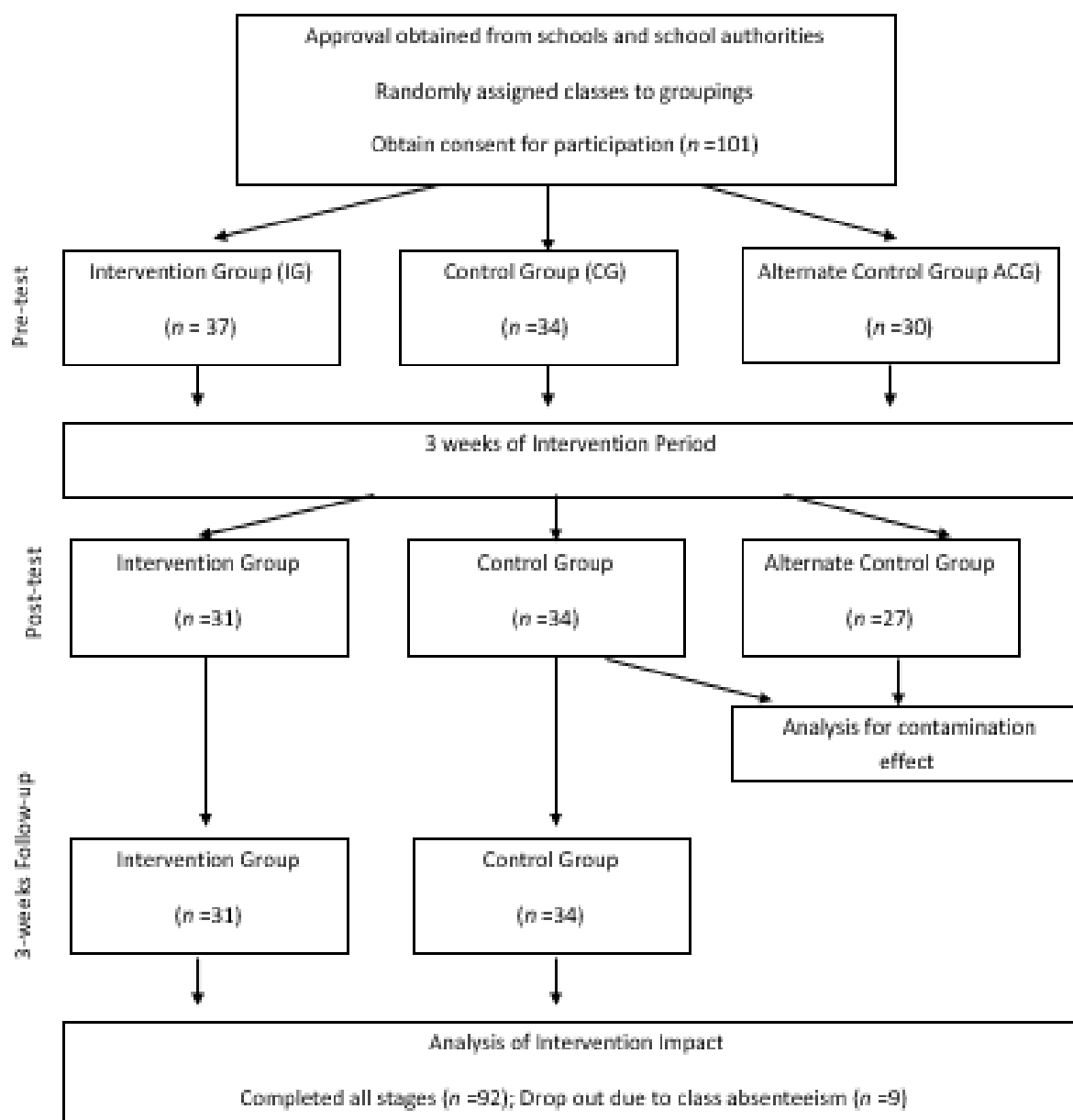
Figure 10 shows the flow of Grade 8 students through each stage of the study. Similar to the preliminary analyses for Grade 10 students, the Grade 8 data set was examined for missing and incomplete data before conducting analyses to test the hypotheses. Although

some data were missing on a few variables for some students, no attempts were made to input the missing data. Instead, a pairwise deletion method was employed to manage missing data, thus including as many students as possible in the overall data analysis (Pallant, 2020). Students were omitted from the final dataset if they were absent from class during the post-test or the follow-up test. Consequently, Grade 8 students ($N = 92$) were available for data analysis.

Furthermore, to detect any violations of assumptions in the Grade 8 data sets, initial tests for normality, linearity and variance were conducted. This included the visual inspection of histograms and Q-Q plots to determine the normality of the data (Tabachnick & Fidell, 2014). Preliminary findings showed no violation of the assumptions.

Figure 10

Flow of Grade 8 Students Through Each Stage of the Study



Socio-Demographic and Treatment Contamination Analyses

Table 8 presents the descriptive statistics of the recategorised socio-demographics across conditions (i.e., intervention, control, and alternate control). A chi-square test (with

Yates' continuity correction) was conducted to detect potential socio-demographic differences among the Grade 8 intervention, control, and alternate control groups. No significant differences were found in religion (majority, minority), ethnicity (majority, minority), and family type (intact, other) across the Grade 8 groups, all $p > .01$. Thus, the findings showed that the Grade 8 conditions have similar socio-demographic characteristics.

Table 8

Descriptive Statistics of Socio-Demographic Categories Across Grade 8's Conditions

Categories	Grade 8					
	IG		CG		ACG	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Religion						
Majority	18	51.4	10	30.3	10	37
Minority	17	48.6	23	69.7	17	63
Ethnicity						
Majority	18	50	15	44.1	12	42.9
Minority	18	50	19	55.9	16	57.1
Family Type						
Intact	23	67.6	26	95.7	22	78.8
Other	11	32.4	7	4.3	4	21.2

Note. IG, intervention group; CG, control group; ACG, alternate control group

A series of independent samples *t*-tests were conducted to analyse for potential treatment contamination. The tests found no significant differences between the Grade 8 control and alternate control groups in dispositional gratitude, well-being and social outcomes ($p > .01$). The results showed no treatment contamination for the Grade 8 control groups (see Table 16 in [Appendix H](#) for descriptive statistics and *t*-test results).

Descriptive Statistics and Correlations

Table 9 presents the descriptive statistics and psychometric properties of the measures for the Grade 8 intervention and control groups across three time periods of assessment. Cronbach's alpha coefficients were computed for each measure across the three time periods, and the results consistently demonstrated adequate reliability ($\alpha \geq .70$). A visual examination of the predicted scores versus the actual range of scores was conducted to determine how the data spread varied between the intervention and control groups. The results showed that the range of data sets was similarly varied for the Grade 8 control and intervention groups. Specifically, the Grade 8 control group consistently reported lower maximum scores compared to the Grade 8 intervention group.

Table 9*Descriptive Statistics for Grade 8 Intervention and Control Groups*

Measure	GRADE 8							Cronbach α
	Intervention Group				Control Group			
	Predicted Scores	<i>M</i>	<i>SD</i>	Range	<i>M</i>	<i>SD</i>	Range	
Gratitude	5 - 35							
T1		26.57	4.32	18 - 35	27.45	5.44	16 - 35	.78
T2		25.83	4.23	16 - 35	27.00	5.76	16 - 35	.78
T3		25.93	4.33	16 - 35	26.30	5.50	18 - 35	.74
Life Satisfaction	6 – 30							
T1		3.93	0.74	11- 30	3.85	0.71	14 – 30	.84
T2		4.06	0.69	17 -30	3.78	0.82	12 - 30	.84
T3		4.02	0.92	12 - 30	3.80	0.81	13 - 30	.85
Mental Health	0 - 70							
T1		43.52	14.26	12 - 70	44.48	13.84	12 - 68	.92
T2		47.57	15.81	10 -70	44.90	13.08	18 - 68	.92
T3		46.35	18.04	9 -70	46.06	14.00	5 - 68	.96
Prosocial Behaviour	9 - 27							
T1		2.45	0.44	12 - 27	2.32	0.34	14 - 26	.81
T2		2.46	0.49	9 - 27	2.39	0.37	14 - 27	.85
T3		2.43	0.45	11 - 27	2.34	0.38	15 - 26	.84
Social Support	8 - 56							
T1		5.42	1.33	17 - 56	5.26	1.07	23 - 56	.85
T2		5.62	1.21	20 - 56	5.24	1.31	17 - 56	.90
T3		5.38	1.18	22 - 56	5.07	1.28	11 - 56	.90

Note. T1, pre-test; T2, post-test; T3, 3-weeks follow-up, $n = 71$

Table 10 presents the intercorrelations between dispositional gratitude and well-being outcomes at pre-test for the Grade 8 intervention and control groups. All correlations were statistically significant ($p < .01$ or $p < .05$) and showed a large effect size (Cohen, 1988). Thus, the findings supported the individual measures used for assessing dispositional gratitude and well-being outcomes in this study.

Table 10

Intercorrelations of Well-being Measures for Grade 8 Intervention and Control Groups

Outcome	1	2	3	4	5
1. T1 Gratitude	-				
2. T1 Life Satisfaction	.45**	-			
3. T1 Mental Health	.52**	.53**	-		
4. T1 Prosocial Behaviour	.28*	.30*	.44**	-	
5. T1 Social Support	.36**	.51**	.72**	.60**	-

Note. T1, pre-test, $n = 71$

** correlation is significant at the 0.01 level (2-tailed)

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

Gratitude Intervention Impact on Grade 8 students

RQ1.H1. To address Research Question 1, the present study compared the dispositional gratitude, well-being and social outcomes of adolescents in the gratitude intervention group with those in the control group at post-test and follow-up. To test the primary hypothesis (RQ1.HQ1.) for the Grade 8 intervention group, a 3 (TIME) $\times$ 2 (CONDITION) SPANOVA was conducted with the within-groups independent variable of Time

(pre-test, post-test, follow-up) and the between-groups independent variable of Condition (intervention, control) for each of the dependent variables: dispositional gratitude, well-being and social outcomes. A simple main effect analysis with Bonferroni adjustment was conducted to investigate any significant interaction effects. Additionally, pairwise comparisons of means by condition were conducted to investigate the significant main effects. The findings are presented below, first for the dispositional gratitude outcome and then for the well-being and social outcomes.

Dispositional Gratitude Outcomes

The results of the present study for dispositional gratitude did not support Hypothesis H1, as no interaction effect was found between condition and time, $F(2, 122) = 0.49, p = .61, \eta_p^2 = 0.01$. There was no main effect of condition on dispositional gratitude, $F(1, 61) = 0.48, p = .49, \eta_p^2 = 0.01$. Similarly, there was no main effect of time on dispositional gratitude, $F(2, 122) = 2.47, p = .09, \eta_p^2 = 0.04$. Thus, the Grade 8 intervention group did not report higher or more sustained dispositional gratitude compared to the control group.

Well-Being and Social Outcomes

Life Satisfaction. The results of the present study for life satisfaction did not support Hypothesis H1, as no interaction effect was found between condition and time, Pillai's Trace = 0.04, $F(1.61, 96.9) = 1.33, p = .27, \eta_p^2 = 0.02$. There was no main effect of condition on life satisfaction, $F(1, 60) = 1.1, p = .30, \eta_p^2 = 0.02$. Similarly, there was no main effect of time on life satisfaction, $F(1.61, 96.9) = 0.06, p = .90, \eta_p^2 = 0.001$. Thus, the Grade 8 intervention group did not report higher or more sustained life satisfaction compared to the control group.

Mental Health. The results of the present study for mental health did not support Hypothesis H1, as no interaction effect was found between condition and time, $F(1, 52) =$

0.03, $p = .86$, $\eta_p^2 = 0.001$. There was no main effect of condition on mental health, $F(1.43, 74.3) = 1.06$, $p = .33$, $\eta_p^2 = 0.02$. Similarly, there was no main effect of time on mental health, $F(1.43, 74.3) = 2.04$, $p = .15$, $\eta_p^2 = 0.04$. Thus, the Grade 8 intervention group did not report higher or more sustained mental health compared to the control group.

Prosocial Behaviour. The results of the present study for prosocial behaviour did not support Hypothesis H1, as no interaction effect was found between condition and time, $F(2, 116) = 0.22$, $p = .81$, $\eta_p^2 = 0.004$. There was no main effect of condition on prosocial behaviour, $F(1, 58) = 1.01$, $p = .32$, $\eta_p^2 = 0.02$. Similarly, there was no main effect of time on prosocial behaviour, $F(2, 116) = 0.70$, $p = .50$, $\eta_p^2 = 0.01$. Thus, the Grade 8 intervention group did not report higher or more sustained prosocial behaviour compared to the control group.

To analyse the supplemental prosocial behaviour measures, Cochran's Q test was conducted to investigate if the proportion of Grade 8 students' helping behaviour changed over the three time periods of assessment (pre-, post-test and follow-up). The results of the Cochran's Q test did not indicate any significant differences in students' helping behaviour across the three time periods of assessment for either the Grade 8 intervention group ($\chi^2(2) = 0.00$, $p = 1.00$) or the control group ($\chi^2(2) = 2.33$, $p = .31$). The Friedman test was conducted to investigate if the ranked number of people helped (i.e., 1-3 persons, 4-6 persons, more than 7 persons) changed over the three time periods. Students who did not indicate their response were considered as missing values and excluded from the analyses. The results of the Friedman test indicated that for the Grade 8 intervention group, there was no statistically significant difference in the ranked number of people helped across the three time periods of assessment (pre-, post-test and follow-up, $\chi^2(2, n = 25) = 2.00$, $p = .37$). For the Grade 8 control group, there was a statistically significant difference in the

ranked number of people helped across the three time periods ($\chi^2(2, n = 27) = 7.79, p < .05$). However, pairwise comparisons with Bonferroni correction failed to reach the .05 level of significance for any pair of time periods (pre-test and post-test: $p = .922$; pre-test and follow-up: $p = .20$; post-test and follow-up: $p = 1.00$). Thus, neither the Grade 8 intervention group nor the control group reported any significant changes in their helping behaviour or in the ranked number of people helped over the three time periods of assessment.

Perceived Social Support. The results of the present study for perceived social support did not support Hypothesis H1, as no interaction effect was found between condition and time, $F(1.9, 112.07) = 0.58, p = .55, \eta_p^2 = 0.01$. There was no main effect of condition on perceived social support, $F(1, 59) = 0.93, p = .34, \eta_p^2 = 0.02$. Similarly, there was no main effect of time on perceived social support, $F(1.9, 112.07) = 1.98, p = .15, \eta^2 = 0.03$. Thus, the Grade 8 intervention group did not report higher or more perceived social support compared to the control group.

Moderated Multiple Regression

RQ3.H3. To address Research Question 3, the present study investigated if socio-demographic factors of religion, ethnicity and family type moderated the relationship between treatment condition and adolescents' dispositional gratitude at post-test and follow-up. To test this hypothesis, a moderation regression analysis was selected to determine the predictive ability of treatment condition and socio-demographic variables on dispositional gratitude scores. Preliminary checking of assumptions was conducted, and additional statistical tests were included to ensure the assumptions of sample size and multicollinearity were not violated.

Table 11 presents the descriptive statistics for the predictor variables and calculated weighted codes. To ensure there were sufficient students per predictor and an adequate

sample size for moderation analyses, the Grade 8 and Grade 10 samples were combined into one sample due to the small sample size of each grade level. Weighted effect coding was applied to ensure the proportional representation within each category and to increase the generalisability of the sample results to the population (Grotenhuis et al., 2017). Weighted effect code was derived by applying the formula: $(\Sigma_{biggergroup})/(\Sigma_{smallergroup})$. Subsequently, a chi-square test (with Yates' continuity correction) was conducted to detect potential socio-demographic differences between the intervention and control groups. No significant differences were found in religion (majority, minority), ethnicity (majority, minority), and family type (intact, other) across the conditions, all $p > .05$. The findings showed that the treatment conditions have similar sample characteristics. Point-biserial correlation analyses were then conducted to determine the strength and direction of associations between the predictor variables (condition, religion, ethnicity, and family type) and the outcome variables (post-test and follow-up). The results of the point-biserial correlational analyses indicated no significant correlation between any of the predictor variables and the outcome variables (all $p > .05$).

Table 11*Descriptive Statistics for Predictor Variables and Calculated Weighted Codes*

Variable	Frequency	Weighted Codes	Mode
Condition			1.00
Intervention	62	1.00	
Control	54	-1.15	
Religion			-1.00
Majority	46	-1.00	
Minority	70	1.00	
Ethnicity			-1.00
Majority	57	1.00	
Minority	59	-1.00	
Family Type			1.00
Intact	86	1.00	
Other	30	-2.87	

Note. N=116.

Table 12 presents the results of the tetrachoric correlation analyses for the predictor variables. A series of tetrachoric correlation analyses was conducted to estimate the strength of the relationship between the binary variables (i.e., predictor variables). The results indicated generally low correlations between these variables.

Table 12*Tetrachoric Correlations for Predictor Variables*

Variable	1	2	3	4
1. Condition	-			
2. Religion	-.25	-		
3. Ethnicity	.31	-.41	-	
4. Family Type	.07	.07	-.22	-

Note. N=116.

Overall, the preliminary analyses showed no violation of the assumptions of normality, linearity, multicollinearity, and homoscedasticity. These findings supported the use of moderation regression analysis as a statistical tool for this study. The overall model fit statistics and unstandardised coefficients of the model parameters are reported in the sections below.

Post-Test and Follow-up Moderation Analysis Findings

Table 13 presents the moderator predictors at post-test and follow-up. The results of the hypothesis testing are reported in the sections below.

Table 13*Moderation Analysis of Predictors at Post-Test and 1-month Follow-Up*

Outcomes	Predictors	<i>B</i>	<i>t</i>	95% CI	
				<i>LLCI</i>	<i>ULCI</i>
T2 Gratitude	Religion	.21	0.50	-0.62	1.04
	Ethnicity	-.02	-0.04	-1.03	.99
	Family Type	-.01	-0.04	-0.61	0.58
T3 Gratitude	Religion	.06	0.14	-0.77	0.89
	Ethnicity	-.70	-1.42	-1.68	0.28
	Family Type	.33	1.15	-0.24	0.90

Note. T2, post-test; T3, 1-month follow-up; *N* = 116

CI = confidence interval; *LL* = lower limit; *UL* = upper limit

Religion. RQ3.H3a. Hypothesis 3a posited that adolescents who identified as a minority religious group would report higher dispositional gratitude compared to those from a majority religious group at both post-test and follow-up. The results did not support this hypothesis at post-test. Treatment condition and religion type did not significantly explain the variance in dispositional gratitude ($R^2 = .02$, $F(3, 104) = 0.74$, $p = .53$). The interaction between treatment condition and religion type did not significantly explain additional variance in dispositional gratitude ($\Delta R^2 = .01$, $F(1, 104) = 1.12$, $p = .29$). Inspection of the coefficients revealed that treatment condition did not influence the dispositional gratitude scores, regardless of religion type ($B = .42$, $p = .38$, 95% CIs [-0.53,1.36]). Similarly, religion type did not influence the dispositional gratitude scores, regardless of treatment conditions

($B = .21, p = .62, 95\% \text{ CIs } [-0.62, 1.04]$).

The findings were consistent at follow-up and did not support Hypothesis H3a at follow-up. Condition and religion type did not significantly explain the variance in dispositional gratitude ($R^2 = .02, F(3, 103) = .62, p = .60$). Furthermore, the interaction between condition and religion type did not significantly explain additional variance in dispositional gratitude ($\Delta R^2 = .00, F(1, 103) = .03, p = .86$). The coefficients showed that neither condition ($B = .62, p = .20, 95\% \text{ CIs } [-0.32, 1.56]$) nor religion type ($B = 0.06, p = .89, 95\% \text{ CIs } [-0.77, .89]$) significantly influenced dispositional gratitude scores. Thus, the religion predictor was not found to moderate the relationship between treatment condition and dispositional gratitude scores at post-test or follow-up. Thus, adolescents from the minority religious group were not found to report higher dispositional gratitude than those from the majority religious group at these two time points.

Ethnicity. RQ3.H3b. Hypothesis 3b posited that adolescents who identified as a minority ethnic group would report higher dispositional gratitude compared to those in a majority ethnic group at post-test and follow-up. The results did not support Hypothesis H3b at post-test. Condition and ethnicity type did not significantly explain the variance in dispositional gratitude ($R^2 = .01, F(3, 104) = 0.47, p = .70$). The interaction between condition and ethnicity type did not significantly explain additional variance in dispositional gratitude ($\Delta R^2 = .006, F(1, 104) = 0.58, p = .45$). An inspection of the coefficients showed that the effect of condition on dispositional scores was not significant, regardless of ethnicity type ($B = .44, p = .35, 95\% \text{ CIs } [-0.50, 1.38]$). Similarly, ethnicity type did not significantly influence dispositional gratitude scores, regardless of condition ($B = -.02, p = .97, 95\% \text{ CIs } [-1.03, .99]$).

The findings were consistent at follow-up and did not support Hypothesis H3b. Condition and ethnicity type did not significantly explain the variance in dispositional

gratitude ($R^2 = .05$, $F(3, 103) = 1.90$, $p = .14$). The interaction term did not significantly explain additional variance in dispositional gratitude ($\Delta R^2 = .02$, $F(1, 103) = 1.64$, $p = .20$). The coefficients revealed that neither condition ($B = .60$, $p = .19$, 95% CIs [-0.31, 1.51]) nor ethnicity type ($B = -0.70$, $p = .16$, 95% CIs [-1.68, .28]) significantly influenced dispositional gratitude scores. Ethnicity was not found to moderate the relationship between treatment conditions and dispositional gratitude scores at either post-test or follow-up. Consequently, adolescents from the minority ethnic group did not report higher dispositional gratitude than those in the majority ethnic group at either time point.

Family Type. RQ3.H3c. Hypothesis 3c investigated whether adolescents from intact families would report higher dispositional gratitude compared to those from other family types at post-test and at follow-up. The results of the present study for family type did not support this hypothesis at post-test, as condition and family type did not significantly explain the variance in dispositional gratitude ($R^2 = .01$, $F(3, 104) = 0.36$, $p = .78$). The interaction between condition and family type also did not significantly explain additional variance in dispositional gratitude ($\Delta R^2 = .002$, $F(1, 104) = 0.24$, $p = .62$). An inspection of the coefficients showed that condition did not influence the dispositional gratitude scores, regardless of family type ($B = .43$, $p = .37$, 95% CIs [-0.51, 1.37]). Similarly, family type did not influence the dispositional gratitude scores, regardless of condition ($B = -0.01$, $p = .97$, 95% CIs [-0.61, .58]).

The results also did not support Hypothesis H3c at follow-up. Condition and family type did not significantly explain the variance in dispositional gratitude ($R^2 = .03$, $F(3, 103) = 1.05$, $p = .37$). The interaction effect was also not significant ($\Delta R^2 = .000$, $F(1, 103) = .00$, $p = .98$). Analysis of the coefficients indicated that neither condition ($B = .66$, $p = .16$, 95% CIs [-0.26, 1.59]) nor family type ($B = -0.006$, $p = .25$, 95% CIs [-0.24, .90]) significantly influenced

the scores. Thus, the family type predictor was not found to moderate the relationship between treatment conditions and dispositional gratitude scores at either post-test or follow-up. Consequently, adolescents from intact families were not found to report higher dispositional gratitude compared to those from other family types at these two time points.

RQ2.H2. To address Research Question 2, the study hypothesised (H2) that the Grade 10 adolescents in the intervention group would report higher dispositional gratitude, well-being and social outcomes than the Grade 8 adolescents in the intervention group at post-test and follow-up. However, data analyses for this hypothesis (H2) were not conducted because the differing number of intervention sessions and varying lengths of follow-up time between the Grade 8 and Grade 10 intervention groups compromised the comparability of the groups. As a result, no analysis was performed to examine age-related differences in treatment effect.

Informal Qualitative Analysis of School Personnel's Feedback

Although the study primarily relied on quantitative data, the post-study feedback provided by the school personnel was included as qualitative (i.e., anecdotal) data. This feedback was verbally provided by the vice principal to the principal investigator (PI) after the school evaluated the impact of the gratitude intervention for their students. Subsequently, upon the PI's request, the school personnel ($N = 5$) provided written feedback via email. Two were Form Teachers (FT) of the intervention groups, and the remaining were key school personnel, including the Head of Character Citizen Education (CCE), School Staff Developer (SSD), and the Vice-Principal (VP) of School A. Thus, the school personnel's post-study feedback constituted the anecdotal data regarding the study's impact (see Appendix I). This anecdotal evidence was advantageous for this study, as it described school personnel's observations of students' significant behaviours over time, which might

otherwise be lost (*Anecdotal Notes (Assessment)*, n.d.).

However, given the small sample for the anecdotal data, the decision was made to informally analyse the qualitative data, and no reliability analyses were carried out. Instead, the PI conducted simple analyses of the post-study feedback provided by school personnel. General themes were drawn from the anecdotal data concerning the students' participation, the observed changes in students' behaviour, and the school personnel's buy-in of the gratitude intervention (see Table 14). This manner of analysis was similar to studies by Bono et al. (2023), Dutherly et al. (2017), and Hong and Kim (2020), which also conducted informal qualitative analysis of the anecdotal data received from participants in their studies.

Table 14*General Themes from Post-Study Feedback*

School Personnel	Themes
<i>Students' Participation</i>	
Grade 10 FT	The game-based activities required the boys to work as a team to achieve their goals and saw the class erupt in fits of laughter as they brainstormed how best to complete the tasks.
Grade 8 FT Head of	It was heartwarming to see the class so engaged and open to learning.
CCE	The I+C+B=G formula helped students to unpack and understand what gratitude meant
<i>Observed changes in students' behaviour</i>	
<i>Grade 8 FT</i>	I could definitely see the change in some individuals... However this effect tapered off as the weeks and months went by, and the lessons only stuck with a few individuals.
SSD	Benefits of the project in creating empathy amongst the students
<i>Head of CCE</i>	This was evident when we read cards that these students wrote - gratitude cards for their parents, school cleaners and their peers. There was a greater vocabulary of words and sentences used beyond "thank you".
VP	This class won a school award for their level, and this is a first time an N(A) class won such an award.
<i>School personnel's buy-in of the gratitude intervention</i>	
VP	This research is timely to show that finding the right strategies can impact boys just as effectively.
<i>Grade 8 FT</i>	I think it is a project worth having but one must consider the follow up to ensure sustainability and long-term viability.
SSD	The school is currently adapting it such that there are various touch points during school events to help remind the students on gratitude along the year.

The anecdotal evidence provided by the school personnel suggested that the gratitude intervention activities successfully elicited, promoted and sustained the male students' interest and active involvement. School personnel also detected visible, positive behavioural changes in the male students. Furthermore, anecdotal evidence indicated the staff's positive receptivity toward the class-based gratitude intervention. In fact, one teacher even advocated for follow-up sessions. This initiative is significant, as it reflects the school's positive evaluation of the intervention and its perceived impact on the male students. One of the most encouraging findings was the indication that the gratitude intervention activities would be widely applied in the school context.

Chapter Summary

Three working hypotheses were initially developed to examine the impact of an adapted gratitude intervention on male adolescents' dispositional gratitude, well-being and social outcomes. A 3 (TIME) $\times$ 2 (CONDITION) SPANOVA was conducted to test the first hypothesis (RQ1.H1). Partial support was found, as statistically significant findings were obtained only for the Grade 10 intervention group in dispositional gratitude and mental health, but not in other well-being and social outcomes. No statistically significant findings were obtained for the Grade 8 intervention group. Moderation analyses were conducted to test Hypothesis 3 (RQ3.H3), and the findings indicated that the identified predictors (i.e., religion, ethnicity, and family type) did not account for a significant variance in the dispositional gratitude scores at either post-test or follow-up. Higher dispositional gratitude was not found for adolescents from the minority religious groups, minority ethnic groups, or intact families at either time point.

Regarding Hypothesis 2, no data analyses were conducted due to the differing number of intervention sessions and varied length of follow-up time between the Grade 8

and Grade 10 intervention groups, which influenced the comparability of the groups. Thus, the present study was only able to investigate and analyse two working hypotheses. The next chapter will present the study's findings with reference to earlier studies and theoretical frameworks mentioned and will discuss the implications and limitations of the study.

Chapter 6

The Case for the Adapted Gratitude Intervention

This study was designed to investigate the impact of a gratitude intervention on male adolescents, exploring whether it could foster higher dispositional gratitude and improve well-being and social outcomes. Drawing upon existing theoretical frameworks, the investigation focussed on three key questions. First, would participation in the intervention lead to sustained improvements in gratitude, well-being, and social outcomes relative to a control group? Second, would there be an age-related difference in the intervention's effectiveness, with older adolescents benefiting more? Finally, would key socio-demographic factors, specifically religion, ethnicity, and family type, moderate the intervention's effect on dispositional gratitude? This chapter will provide a comprehensive discussion of these findings, situating them within the relevant literature, addressing the study's limitations, and outlining implications for future research.

Impact of Gratitude Intervention

Dispositional Gratitude

The effectiveness of the gratitude intervention on gratitude disposition was found significant for Grade 10 but not for Grade 8 adolescents. This positive finding for Grade 10 adolescents concurs with earlier studies (i.e., Baumsteiger et al., 2019; Bono et al., 2020) which found that gratitude interventions were effective in enhancing dispositional gratitude in adolescents from Grade 9 to Grade 12. Further, while the large effect size of the Grade 10 gratitude findings suggests statistically more effective results compared to small to medium effects in earlier studies (e.g., Baumsteiger et al., 2019; Bono et al., 2020; Sahar et al., 2023), the small sample limits the validity of the findings. Regarding the non-significant dispositional gratitude finding for Grade 8 adolescents, this concurs with Caleon et al.'s

(2017) study but is contrary to earlier studies that reported on the efficacy of gratitude interventions for Grade 6 to Grade 9 adolescents (i.e., Bono et al., 2023; Duthely et al., 2017; Froh et al., 2014; Khanna & Singh, 2016).

Taken together, the discrepant findings across the two grades can be attributed to the following reasons. First, it can be due to the timing when the gratitude intervention was conducted, and the different number of gratitude intervention sessions received by each group. The Grade 10 intervention group completed their gratitude intervention sessions before the COVID-19 pandemic impacted the school schedules. Whereas the Grade 8 intervention group started their gratitude intervention session when school reopened in the third term amid the COVID-19 pandemic. Although both intervention groups managed to complete all aspects of the gratitude curriculum (i.e., intentions, costs, and benefits), the Grade 8 group only underwent three sessions of gratitude intervention, while the Grade 10 group completed five sessions. The present findings appear to suggest that the longer (i.e., more sessions) adolescents engage in the gratitude intervention, the greater the likelihood of higher dispositional gratitude scores. This is aligned with the proposition that dispositional gratitude requires time, understanding, expression and continual reinforcement for it to be fully developed (Bono et al., 2023; Merçon-Vargas et al., 2018; Tudge et al., 2022). Also, it is aligned with the suggestion that gratitude interventions need to be conducted for prolonged periods of time in an academic year or over more sessions for them to be effective in enhancing the disposition of gratitude in individuals (Bono et al., 2023; Catalano et al., 2004; Davis et al., 2016). In other words, considerations need to be given to the frequency, intensity and duration of the gratitude sessions to allow for habit development and the development of continual gratitude practice (Diener et al., 2017).

Second, it can be attributed to varying cognitive maturity of the two groups of

adolescents, as it was proposed that one's ability to think less egocentrically and to comprehend others' intentionality increases with age (Liang & Kiang, 2018). In this study, the adapted gratitude protocol required adolescents to reflect on benefits received and simultaneously engage in perspective-taking to appraise the benefactor's intentions and cost incurred; these require adolescents to possess a certain level of cognitive maturity. It is plausible that the Grade 8 adolescents in the present study may have less developed cognitions that account for their limited mental capacity to develop a grateful outlook compared to Grade 10 adolescents who may have more matured cognitions (Zhen et al., 2021). Third, the lack of significant gratitude intervention findings for Grade 8 adolescents can be because the practice of expressing gratitude may be difficult for them (Dinz et al., 2023).

Overall, the different gratitude findings across the two groups coincide with the view that there is no 'one size fits all' gratitude intervention design, indicating that the same intervention may not exact the same impact on adolescents, even those from similar cultural backgrounds (Ciarrochi et al., 2022; Dickens, 2017). For the present study, both groups of adolescents underwent different study designs and experienced the gratitude intervention sessions under different environmental circumstances (i.e., pre-COVID-19 pandemic and during the COVID-19 pandemic). As such, interpretation of these findings must then be conducted within the context of this study's limitations, which will be presented in a later section of this chapter.

Well-Being and Social Outcomes

Mental Health

The gratitude intervention was found to be partially effective for the Grade 10 adolescents and not for those in Grade 8. Specifically, the adapted gratitude intervention

demonstrated a buffering effect on the mental health of Grade 10 adolescents and maintained their mental health levels post-intervention, while the control group showed a decline. This finding aligns with earlier studies that found positive effects of gratitude interventions on the mental health of older adolescents (e.g., Bono et al., 2020; 2023). Notably, unlike Bono et al.'s studies, which primarily sampled Hispanic adolescents, the current study involved a more ethnically diverse—though exclusively male—adolescent sample. While these post-intervention results confirmed the primary hypothesis, they were not sustained at the one-month follow-up. Possible explanations include a loss of novelty or the waning effect of the gratitude intervention's team-building nature (Davis et al., 2016; Lyubomirsky et al., 2011). The one-month hiatus from team-based activities, which followed the five-week intervention period, may have contributed to the observed decline in effect. Alternatively, the significant post-test finding for Grade 10 adolescents could be attributed to chance, and thus it should be interpreted with caution.

In contrast, the non-significant mental health findings for the Grade 8 participants contradict earlier studies that reported significant treatment effects for younger adolescents (e.g., Bono et al., 2023; Froh et al., 2008; Khanna & Singh, 2016). A key explanation for this discrepancy is the shorter duration of the intervention for the Grade 8 group, who received only three weekly sessions compared to the five to ten sessions in other studies. The implications are important and will be discussed later in the context of the other well-being and social outcomes. Ultimately, given the disparate findings and intervention lengths between the grade levels (Grade 8 and Grade 10), more intervention studies and a replication of the present study are necessary before endorsing the efficacy of gratitude interventions for both Grade 8 and Grade 10 adolescents.

Life Satisfaction, Prosocial Behaviour and Social Support

Notably, the present study did not demonstrate that the adapted gratitude intervention led to significant findings in life satisfaction, prosocial behaviour and perceived social support for either the Grade 10 or Grade 8 intervention groups. These non-significant findings contrasted with some previous studies. For example, regarding life satisfaction, this study's results differed from earlier studies which had found improved life satisfaction in younger adolescents (i.e., Duthely et al., 2017; Froh et al., 2008, 2014; Khanna & Singh, 2016) and older adolescents (i.e., Armenta et al., 2022; Bono et al., 2020). Similarly, the null result for social support findings in younger adolescents contradicted the significant findings in Shin and Kim's (2009) study. However, concerning the non-significant prosocial behaviour findings, they aligned with Baumsteiger et al.'s (2019) and Froh et al.'s (2008) studies. In contrast, they contradicted Caleon et al.'s (2017) study, as the latter found improved prosocial behaviour in younger adolescents towards their parents and peers.

Overall, the weak statistically significant findings for both intervention groups may be attributed to several reasons. One potential reason is cultural factors, given their influence on how gratitude is perceived and expressed (Corona et al., 2020; Morgan et al., 2015). For instance, individuals from Asian cultures tend to report fewer benefits from expressing gratitude than their counterparts in Western cultures (Armenta et al., 2020; Layous et al., 2013). Another reason is that male adolescents may have inflated their self-reported scores due to perceived socio-cultural expectations and gender norms (Hong & Kim, 2020; Lasota et al., 2020; Levant, 1996; O'Neil, 2008; Renshaw & Rock, 2018). This could have resulted in ceiling effects, which may explain the limited increases in well-being and social outcomes.

A third reason is that the strong emphasis on teaching the cost-benefit appraisal of

the gratitude intervention may have led to less emphasis being placed on the equally important well-being and social components. Furthermore, another reason for the null findings is that though some adolescents may have experienced subtle internal changes, these changes were felt but not expressed as visible shifts in behaviour (Freire et al., 2018). Alternatively, the selected well-being and social outcome measures may not have been appropriate or sensitive enough to identify the subtle but significant internal changes of adolescents (Cheney et al., 2014). Another possibility is the testing effects, whereby completing the well-being and social measures at pre-test may have served as a form of intervention for both groups (Uhder et al., 2017).

Sampling could also be a factor, as the adolescents for this study were recruited through convenience sampling, and thus they may have lacked the motivation or the readiness to change (Uhder et al., 2017). This is not surprising, since the lack of readiness is commonly found in clinical settings, especially when whole groups are recruited as convenience samples (Uhder et al., 2017). Although the adolescents were given the initial option to opt out, peer pressure or general awkwardness might have prevented them from exercising their autonomy. This is because adolescence is a phase of life where identities and social relationships are forming (Hong & Kim, 2020). Consequently, the adolescents in this study may not have been as interested in the intervention or found it particularly useful (Flinchbaugh et al., 2012).

Specifically for the Grade 8 intervention group, the lack of findings may be attributed to the timing (i.e., duration, frequency) of the gratitude sessions. Researchers have highlighted that well-being and social components may require more time to develop before visible changes or habit formation can be observed (Freire et al., 2018; Hong & Kim, 2020; Zhen et al., 2021). Researchers have also suggested that a prolonged intervention time can

help establish stronger well-being and social outcomes (Bono et al., 2020, 2023; Catalano et al., 2004; Geier & Morris, 2022; Portocarrero et al., 2020). Thus, for the Grade 8 group, the shorter duration (i.e., three sessions) may have been insufficient to produce a significant downstream effect on their well-being and social outcomes. Additionally, because the intervention for the Grade 8 group occurred during the COVID-19 pandemic, it is likely that stress from the changes and uncertainties may have adversely influenced these adolescents (Geier & Morris, 2021), masking any potential effects.

Given these reasons, the interpretation of the current findings should be conducted with caution, and more research is warranted. Future studies would benefit from investigating different ways to promote participants' motivation, willingness and continual engagement, especially since the intervention sessions can extend over a long period.

Support for Theoretical Framework

Regarding theoretical applications, this study's finding provides some support for the Social-Cognitive Theory of Gratitude (Wood et al., 2008). This theory asserts that changing one's cognitions can lead to an increased frequency and intensity of gratitude experienced, as well as its associated well-being and social benefits. Consistent with this theory, it is possible that the effect of challenging older adolescents' gratitude benefits appraisal—through teaching gratitude components and engaging in gratitude-based activities—ultimately led to increased dispositional gratitude and maintained the mental health level of the Grade 10 adolescents in the intervention group. In general, the Social-Cognitive Theory of Gratitude (Wood et al., 2008) provides a useful framework for understanding the processes involved in developing dispositional gratitude and how gratitude can impact adolescents' mental well-being outcomes. Nonetheless, the lack of significant effect findings for the other well-being and social outcomes prevents this study from fully supporting the

theory's application. More studies are needed to establish if the Social-Cognitive Theory of Gratitude is a suitable framework for designing and studying gratitude interventions.

Furthermore, the present study found no support for Frederickson's (1998, 2001) Broaden-and-Build Theory, which is contrary to studies that have found support for it (e.g., Pohling et al., 2018; Zhen et al., 2021). In this study, the broadening effect was not evident (e.g., increased prosocial behaviour), and the build effect on relationships (e.g., increased perceived support) was not significant. Thus, mirroring Wood et al.'s (2010) review findings, the present study also found a lack of evidence to support the Broaden-and-Build Theory. Similarly, regarding Algoe's (2012) Find-Remind-and-Bind Theory, this study also found no evidence that dispositional gratitude helped to strengthen the social connections with identified benefactors or other adolescents. Consequently, this study provides no support for the application of this theory.

Role of Moderators

The results of this study did not support the hypothesis (R3.H3.) that socio-demographic factors like religion, ethnicity, and family type moderated the relationship between treatment conditions and dispositional gratitude scores at post-test and follow-up. Although the sample was drawn from a Catholic school, adolescents from the majority religious group (i.e., Catholic/Christian) did not report significantly lower dispositional gratitude compared to those from minority religious groups (i.e., other religions). This finding is loosely supported by Portocarrero et al.'s (2020) study, which found that religious individuals may not always report higher gratitude levels, despite the social norms of their faith promoting the disposition of gratitude. However, it is contrary to Shiah et al.'s (2016) study, which suggested that both the prevailing culture and main religion can jointly exact a stronger positive outcome compared to that of a minor religion. As mentioned in an earlier

chapter, the analysis of adolescents' religion is an important area because it can provide information on whether different religions affect the nature of the relationship between gratitude and well-being outcomes (You et al., 2018). Nonetheless, given the present non-significant finding and the dearth of gratitude studies examining religion as a moderator factor, no conclusions can be drawn on whether adolescents' religion influenced their response to gratitude interventions.

Furthermore, the present finding suggested that adolescents from minority ethnic groups did not report significantly higher dispositional gratitude compared to those from the majority ethnic group. This is contrary to existing cultural theories that infer that the cultural values of ethnic minorities may exert a greater influence on the development of dispositional gratitude compared to those from the ethnic majority (i.e., Corona et al., 2020) and that the positive ethnic identity of a minority group can be a protective factor for adolescents' well-being (Yuen & Lee, 2016). Hence, whether the cultural values of ethnic minorities exert a greater influence on the development of gratitude compared to the ethnic majority remains an area for further investigation.

Likewise, adolescents from intact families did not report significantly higher dispositional gratitude compared to those from other family types. This finding did not support the earlier findings from Dinisman et al. (2017) and Schütz et al. (2019), who found that intact families positively predicted children's well-being. Nevertheless, despite the non-significant findings of socio-demographic moderators in this study, the examination of moderators remains an important aspect of gratitude intervention. This is because it can provide helpful information on how to adapt gratitude interventions to best accommodate the range of adolescents' needs (Layous & Lyubomirsky, 2014; Owens & Waters, 2020; Wang et al., 2017).

Real-World Application

Despite the lack of statistically significant findings in this study, classroom observations and encouraging anecdotal evidence provided by school authorities presented a more positive picture. Both the PI and co-facilitators observed that the younger and older adolescents in the intervention group enjoyed the weekly sessions, as evidenced by their active participation and cooperative behaviours. Key school personnel and form class teachers also provided strong anecdotal evidence based on their observations of the class participation and the overall class experience (see [Appendix I](#)). All school personnel praised the gratitude intervention and reported positive feedback regarding the adolescents' positive behaviours based on their observations during the sessions, at follow-up and even during school-wide events. One form class teacher even highlighted the need for sustained work to further cultivate adolescents' gratitude disposition. While these findings were not part of the study's initial goals, a significant positive implication is that these events are indicative of real-world application, namely the school personnel's buy-in regarding their students' learning and expression of gratitude (Bono et al., 2020; Khanna & Singh, 2016). Nonetheless, while the present study yielded some promising findings for dispositional gratitude, several limitations need to be considered for future investigations.

Limitations of the Present Study

The first limitation, common to gratitude intervention studies, is the collection of self-reported data from students and exclusion of other key sources like parents, teachers or even peers (Pohling et al., 2018). Despite the common belief that self-reporting is an essential methodology when measuring subjective variables (Obeldobel & Kerns, 2021), the sole reliance on self-reporting data may result in confounding factors and lead to increased errors (Kilbert et al., 2019). Self-reported data can be susceptible to social-desirability

effects, as students can potentially overinflate their self-reporting of gratitude and well-being more than is experienced (Renshaw & Rock, 2018). Additionally, self-reported data can lead to common method bias, where the score differences are due to the measurement method rather than the constructs being measured (Bono et al., 2019; Kilbert et al., 2019; Podsakoff et al., 2003; Renshaw & Rock, 2018).

A second limitation concerns the inability to generalise the findings to the larger student population. This is largely because the present study is limited by the convenience sampling of male, Normal (Academic) students from specific Catholic schools in Singapore. Considering this, the sample may not be representative of the students in the other academic streams (i.e., Express and Normal (Technical)). Additionally, given the lack of comparison with female adolescents, the present study is unable to establish with certainty if the adaptations to the gratitude intervention do increase impact for male adolescents, a goal that the present study had targeted to achieve. While cross-cultural populations were sampled, there was no initial investigation on whether some of the cultures were predisposed to hold a higher value of gratitude compared to others. This is important to note because one's cultural context can influence the effectiveness of subjective well-being interventions (Diener et al., 2017). Hence, the present study's sample would not be a true representation of ethnically diverse adolescents in Singapore. Furthermore, since the significant findings observed were derived from a small sample size, that may limit the statistical power of the analysis and increase the risk of Type I and Type II errors. As such, these results should be interpreted with caution and may not be generalisable to a broader population. Taken together, these highlighted factors limit the sample representativeness and the generalisability of the gratitude intervention findings to the general male adolescent population (Baumsteiger et al., 2019; Pohling et al., 2018; Zhen et al., 2021). To some

extent, the findings of this present study may only be generalisable to Singaporean male adolescents in Catholic schools. Alternatively, there is a likelihood that the efficacy of the gratitude intervention may be only applicable to the male adolescents selected in this present study.

The third limitation and a particular drawback of the present study is that the participants could not be randomly assigned to the conditions. Common with all other gratitude interventions in schools, participation in intervention or control group is rarely based on random assignment because of the complex logistics and current school curriculum schedule (Geirer & Morris, 2021). As a result, the non-randomisation of students can lead to confounding factors, particularly pre-existing differences between groups, that could affect the causal inferences that can be drawn from the study (Froh et al., 2014; Gopalan et al., 2020). Non-randomisation can also prevent the accurate evaluation of the adapted gratitude intervention's benefits (Freire et al., 2018). Unfortunately, for this study, true random assignment was not possible because of the school schedules as well as the environmental constraints that prevented intermingling across classes.

A fourth limitation concerns the design of the gratitude intervention, which may not be suitable for widespread online administration. This is because the adapted gratitude intervention was designed for face-to-face implementation, employing group-based activities and interactive gratitude expression to elicit students' active involvement. Hence, a drawback of this design is its limited potential for wide distribution. Notably, these identified limitations are not uncommon in experimental research (Uher et al., 2017). Rather, they should be considered in relation to the implications and strengths of the present study.

Empirical Implications of Study

The present finding further illustrates for educators and practitioners that implementing a gratitude intervention may be more beneficial for older male adolescents, as it promotes the development of a higher and more sustained disposition of gratitude, as well as buffers against lowered mental health levels. In view of this, educators and clinicians can consider implementing gratitude interventions when the goal is to cultivate gratitude disposition or even sustain mental health levels for older adolescents. Even though the present findings were mostly non-significant, the adapted gratitude intervention has a few strengths, namely in its applicability and practicality for a class setting.

Firstly, the gratitude activities are brief, easy to understand and easy to implement with adolescents. Secondly, the gratitude curriculum is presented in a structured way that teachers can easily add to complement existing structured program curriculums like civic and moral education (Lin, 2016), socio-emotional learning programmes (Bono et al., 2023) or even English writing classes (Bausert & Froh, 2016). However, it will be important to first train teachers on how to implement this intervention. Thirdly, with buy-in from school personnel and including some creative efforts, the gratitude activities and gratitude practices can be easily infused into the school culture and potentially generate a more lasting impact on adolescents (Bono et al., 2023).

This present study also contributes to existing gratitude intervention literature by examining cross-cultural variables and sampling a diverse Asian ethnic group of adolescents. This is significant because the cross-cultural research of adolescents' dispositional gratitude is an area that is often largely underexamined and unmentioned. To the investigator's knowledge, this study is perhaps one of the first Asian studies to investigate the potential influence of diverse Asian ethnicity, religion and family type as moderators of a gratitude intervention on male adolescents' dispositional gratitude.

Furthermore, since dispositional gratitude is important for adolescents' moral development and functioning, gratitude interventions should not be regarded as a quick-fix self-help treatment (Dickens, 2017). Rather, continual work is necessary to investigate alternate and more effective ways to help cultivate gratitude in adolescents (Bono et al., 2023). This is mainly because the current view shared by many researchers is that adolescents would benefit more from gratitude interventions than from having no interventions at all (Bono et al., 2020, 2023; Caleon et al., 2017; Duthely et al., 2017; Renshaw & Orlinger Steeves, 2016; Sahar et al., 2023). Presently, a few questions remain unanswered in this present study. One concerns the lack of gratitude intervention's significant impact on well-being and social outcomes based on the quantitative results. Another question concerns whether the extent of impact of the gratitude intervention is different for younger and older adolescents. As this is a preliminary study investigating an adapted gratitude intervention for male adolescents, future research may wish to address these questions, refine the research limitations addressed in the earlier section and enhance the present findings. Several suggestions have been offered for future research investigating gratitude interventions, and they are presented below.

Pathway for Future Studies

Related to the sample of the study, it is possible that the adolescents sampled for the present study would have characteristics that are not reflective of all male adolescents, given the differing school cultures. Future studies would benefit from testing the adapted gratitude intervention on males from other Catholic and even non-Catholic schools. Future studies would also benefit from replicating the adapted gratitude intervention with a more diverse sample of adolescents, like female adolescents or clinical populations like adolescent support groups, adolescent remedial treatment groups or those in rehabilitation centres

(Baumsteiger et al., 2019; Davis et al., 2016; Renshaw & Rock, 2018). Notably, as no age comparisons were conducted between the younger and older adolescents in the present study, future researchers would benefit from analysing the effect of age on the gratitude intervention outcomes. This information is potentially useful for the determination of the optimum age for interventions as well as the tailoring of interventions to suit the developmental age of the students (Cheney et al., 2014; Morgan et al., 2022). It is recommended that researchers employ random assignment of participants, as this could help eliminate potential confounding factors due to individual differences between students (Froh et al., 2014) and enable the generalisation of findings (Renshaw & Rock, 2018). For instance, students could be randomly assigned to either intervention or control groups within the class instead of assigning conditions by classes.

Further, related to the intervention design, the present study adapted Froh et al.'s (2014) benefit-appraisal curriculum, which involved three main concepts, namely, intentions, cost, and benefits. Future studies would benefit from examining each concept individually and then comparing which is most effective in cultivating dispositional gratitude (Layous & Lyubomirsky, 2014). Alternatively, future studies would benefit from comparing different types of gratitude interventions (e.g., gratitude expressions versus gratitude curriculum) and noting their efficacy (Layous & Lyubomirsky, 2014). However, in view of the fact that interventions require consistency and intensity in implementations for habit formation and training to be effective, future studies would benefit from examining if increasing the regularity and intensity of a gratitude intervention has a differing effect on the adolescent sample (Davis et al., 2016; Hong & Kim, 2020; Pohling et al., 2018).

Concerning the data collected, while this study primarily collected quantitative data, future data analysis would benefit from including qualitative data (i.e., interviews,

discussion groups). This is because the combination of both quantitative and qualitative data of dispositional gratitude and well-being could lead to a more accurate evaluation of the efficacy of a gratitude intervention (Freire et al., 2018; Gabana et al., 2019; Shiah et al., 2016). In fact, a multi-modal method of data collection would be beneficial over self-reporting measures, as it provides more knowledge of gratitude intervention's impact on adolescents (Bono et al., 2020; Cheney et al., 2014; Kilbert et al., 2019; Layous & Lyubomirsky, 2014). Stakeholders like peers, parents and teachers could be given tasks to code adolescents' behaviours to provide more insight concerning the impact of the adapted gratitude intervention (Bono et al., 2019; Freire et al., 2018; Gabana et al., 2019; Kilbert et al., 2019; Shiah et al., 2016; You et al., 2018).

Related to moderator factors, future studies would benefit from examining other psychosocial mechanisms (e.g., parenting style, parenting involvement, and family background) of family type that potentially moderate the relationship between gratitude interventions and well-being or social outcomes (Jin & Young, 2019; Tudge et al., 2022). While the current study focused on adolescents' religion, future empirical studies would benefit from including measuring individual differences in adolescents' religiosity or religious efficacy to better understand religion's impact on the relationship between dispositional gratitude and well-being (Portocarrero et al., 2020). This would involve getting adolescents to report on the type and frequency of their religious practice, such as participation in organised religious services and events, practicing prayers and daily devotions, active service in other religious contexts, and observances of religious events.

About whole-school application, while it has been suggested that cultivating gratitude for adolescents in schools has a potential positive effect on the overall school environment, the extent of this positive ripple effect on the school environment is presently

unknown (Bausert & Froh, 2016). Future studies would benefit from embarking on a comprehensive whole-school gratitude study to observe if it led to more sustainable outcomes for schools (Bausert et al., 2018). However, beforehand, studies would need to identify the implicit school practices and school culture that can support gratitude learnings in more informal ways (Bono et al., 2023; Green & Nourrish, 2013). Future studies would benefit from exploring having class form teachers and school personnel deliver the gratitude programmes rather than external facilitators who are more unfamiliar to the students (Bono et al., 2020, 2023). This is primarily because teachers are key personnel in schools that can influence adolescents' experience and expression of gratitude and the school culture by modelling gratitude expressions and reinforcing key gratitude messages (Bausert & Froh, 2016; Bono et al., 2023; Weare, 2000; Zhen et al., 2021).

Chapter Summary

The findings of this study suggest that the adapted gratitude intervention was effective in enhancing dispositional gratitude in Grade 10 male adolescents immediately after the intervention and at follow-up. The intervention also appeared to have a buffering effect on the mental health levels of this group. However, the weak statistical effect on life satisfaction, prosocial behaviour, and social support outcomes for both the Grade 10 and Grade 8 intervention groups indicates limited support for the intervention's effectiveness in enhancing these specific well-being and social outcomes for male adolescents.

In relation to the theoretical frameworks, the findings lend partial support to the Social-Cognitive Theory of Gratitude (Wood et al., 2008), explaining how cognitive processes contributed to enhanced gratitude and associated mental health benefits. However, the lack of significant social outcome findings provided no support for the Broaden-and-Build Theory (Frederickson, 1998, 2001) and the Find- Remind-and-Bind Theory (Algoe, 20128). Despite

the lack of widespread statistically significant findings, the study demonstrated some notable strengths, including the reported buy-in from key school personnel, anecdotal evidence of students' positive gratitude behaviours, and the plans to embed gratitude activities into the school curriculum. These elements indicate the adapted gratitude intervention's real-world applicability.

Further research is needed to establish the extent to which adolescents' cognitive maturity influences the effectiveness of gratitude intervention. To this end, recommendations for future studies include replicating the study with a wider pool of clinical and non-clinical adolescents, ensuring the optimal design of the gratitude intervention, employing more objective assessment methods, exploring other moderators, and implementing the gratitude intervention as a whole-school study. Therefore, future researchers would benefit from investigating when, how, and for whom gratitude is most beneficial (Armenta et al., 2020). The concluding remarks of the present study are presented in the next chapter.

Chapter 7

Concluding Remarks

This study investigated the efficacy of an adapted gratitude intervention on dispositional gratitude, well-being and social outcomes in a sample of Singaporean male adolescents across three time periods of assessment. It also investigated the moderating effects of socio-demographic factors in the relationship between treatment conditions and dispositional gratitude at post-test and at follow-up. Overall, the present findings rendered only partial evidence for the effectiveness of Froh et al.'s (2014) gratitude intervention for adolescents, namely in enhancing dispositional gratitude and in buffering or maintaining mental health levels of older male adolescents. Although the findings illustrated the four-week sustained effect of the gratitude intervention on dispositional gratitude, no other significant findings were obtained for the other well-being and social outcomes for Grade 10 adolescents. Similarly, for Grade 8 adolescents, no significant findings were obtained concerning the efficacy and sustained effects of the gratitude intervention on dispositional gratitude, well-being and social outcomes.

Largely, the lack of significant findings for the Grade 8 participants may be attributed to the main uncontrollable factor of the COVID-19 pandemic that led to the nationwide disruption to Singapore schools' calendar and school activities (e.g., shorter school term, changed school timings, imposed limitations on school activities). Specifically, the disruption of the school scheduling resulted in several unforeseen changes in the study design for the Grade 8 adolescents (e.g., shorter intervention period, compact gratitude intervention sessions, shorter post-test and follow-up data collection timelines). As a result, the fidelity of the gratitude intervention was maintained for the Grade 10 adolescents, who completed the gratitude intervention before school closure, but not for the Grade 8 adolescents who

had their sessions delayed. Taken together, the COVID-19 pandemic and the changes in school schedule and protocols are all extraneous variables that were unexpected and unavoidable. Hence, it is altogether possible that the replication of this study, conducted in a post-COVID-19 era, may be able to obtain different findings for Grade 8 adolescents.

Distinct Elements of the Study

This study was designed to contribute to research on gratitude interventions for adolescents, a goal that was achieved in multiple aspects. First, the present study addressed a gap in the literature by focusing on male adolescents. Previous studies have examined both genders (e.g., Caleon et al., 2017) or compared them (e.g., Bono et al., 2023), but none have exclusively investigated male adolescents or designed an intervention specifically for this group. This approach aimed to help male students navigate potential gender role conflict, adapt their appraisal of gratitude, broaden their range of emotional expressions, and maximise their motivation to embrace the benefits of gratitude.

Second, this study incorporated an examination of potential moderators, an aspect that is infrequently explored in most gratitude intervention studies. Third, it introduced adjunct gratitude activities, such as behaviour-based team activities and a weekly gratitude jar raffle, to help male participants express gratitude. This contrasts with earlier interventions that mainly relied on writing tasks, like journaling, worksheets, or gratitude letters.

Additionally, this research aimed to increase the number of locally developed gratitude interventions in Singapore by assessing the applicability of a benefit-appraisal curriculum within a Singaporean sample and the local school system. The findings have established initial groundwork for future gratitude intervention studies that may focus on a single-gender adolescent sample. Finally, to the investigator's knowledge, this study

represents the first Singaporean adaptation of a Western-designed gratitude intervention (Froh et al.'s (2014) benefit-appraisal curriculum) for a sample of Asian male adolescents, with results suggesting significant positive outcomes.

Wider Significance of the Present Study

In line with the real-world application mentioned earlier, this study appeared to have a sustained impact on gratitude in the participating school even after the study's completion. Two unexpected contributions, which were not part of the study's initial hypotheses, are School A's subsequent application of gratitude practices and activities across the entire school and the active buy-in from school personnel and adolescents from other grade levels. Specifically, School A designed two gratitude trees that were incorporated into a school-wide activity to promote gratitude expressions among students (see Appendix J). According to feedback from school personnel, students from various levels willingly participated in contributing to the two gratitude trees that were placed in the school foyer. It was also reported that School A incorporated other gratitude practices, such as writing short notes to express gratitude towards health practitioners during the COVID-19 pandemic and to parents at a school event. Furthermore, the PI was invited by School A on two separate occasions to conduct one-day gratitude workshops to share the preliminary findings and provide training to all the teachers. Consequently, all teachers in School A were taught the components of gratitude, including the various gratitude activities that were introduced in the gratitude intervention.

Another valuable contribution of the study was the uptake from a few schools that requested the gratitude programme for their students. This occurred a few months after the intervention was completed in School A. Consequently, the adapted gratitude intervention has been conducted in four other schools. In fact, one of the schools even requested two

consecutive runs of the gratitude programme for different grade levels. To date, several adolescents ($N = 358$), aged 13 to 19 years, have completed the gratitude programme. However, as no prior permission was obtained from the Ministry of Education in Singapore to collect data in these schools, no additional research data are available. Collectively, the implementation of school-wide gratitude activities and the increased uptake of the programme in other schools indicate successful buy-in from students and school personnel (Bono et al., 2020; Khanna & Singh, 2016). It also indicates that the gratitude programme is a promising school-based activity worth promoting.

Final Conclusion

Gratitude is widely reported to offer numerous advantages for adolescents, particularly in school life, where it has been linked to better social relationships, academic performance, healthy development, and subjective well-being (Froh et al., 2009b; Tian et al., 2016). The present study suggests that sufficient duration and frequency of intervention sessions are necessary before dispositional gratitude can be cultivated. Another interesting finding pertains to the potential role of the gratitude intervention in helping to maintain mental health levels in older adolescents. Nonetheless, given the significant findings for dispositional gratitude and mental health were derived from a small sample size of Grade 10 adolescents, these findings may not be generalisable to a broader population and should be interpreted with caution. Also, while statistical significance for other well-being and social outcomes was weak, classroom observations and anecdotal evidence from school personnel suggest otherwise.

Overall, gratitude interventions are not a quick-fix treatment (Dickens, 2017) and may not appeal to every student (Flinchbaugh et al., 2012). However, there is ample evidence that gratitude-based interventions are generally more effective than having no

intervention at all (Bono et al., 2020, 2023; Caleon et al., 2017; Duthely et al., 2017; Renshaw & Orlinger Steeves, 2016; Sahar et al., 2023). Engagement in any type of gratitude intervention is beneficial, primarily because the practice of gratitude is widely regarded to be accessible, cost-effective, and easy to implement in clinics, schools, and the general population (Armenta et al., 2020; Dickens, 2017; Dinz et al., 2023; Renshaw & Orlinger Steves, 2016).

Therefore, continued research on the effects of gratitude interventions is recommended, as gratitude holds valuable outcomes for adolescents, schools and the larger society (Bono et al., 2020, 2023). Future intervention studies would benefit from examining how to further optimise the benefits of gratitude interventions to meet the varying needs of adolescents, considering gender and cultural influences. In sum, this study's findings represent a nascent step toward illustrating that gratitude interventions can effectively cultivate dispositional gratitude for older adolescents. The goal—from facilitating gratitude expression to challenging gratitude appraisals in male adolescents—is simply to create a space for gratitude.

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I acknowledge the use of Scribbr (<https://www.scribbr.co.uk/grammar-checker/>) to help in reviewing my writing for spelling, punctuation, and grammatical errors at the final stage of preparing my thesis re-submission. From 23 September to 1st Oct 2025, individual chapters of the thesis were uploaded, and the output was modified further to represent my tone and style of writing.

Appendix A

JCU Ethics Approval

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Appendix B

Approvals from Participating School Authorities

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b) School A Principal's approval

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d) School C Principal's Approval

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Appendix C

Survey Form

CLASS: _____ REGISTRATION NUMBER: _____

INSTRUCTIONS

Thank you for taking the time to fill in this questionnaire about youth and their issues. This activity should take you 10 - 15 minutes to complete. Please answer as honestly as you can. Your answers will be treated with complete confidentiality. Once completed, please return this questionnaire to the instructor.

Please fill in the relevant sections and place an (X) next to the word that best matches your response

1. What is your AGE

	12 – 13
	14 – 15
	16- 18
	>18
	Decline to comment

2. What is your ETHNICITY

	CHINESE
	MALAY
	INDIAN
	EURASIAN
	OTHER (specify):
	Decline to comment

3. What is your FAMILY STRUCTURE

	INTACT
	SINGLE PARENT
	BLENDED
	OTHER (specify):
	Decline to comment

4. What is your RELIGION

	CHRISTIAN
	MUSLIM
	HINDU
	BUDDHIST / TAOIST
	FREE THINKER
	OTHER (specify):
	Decline to comment

5. Who introduced you to the concept of being grateful? Rank in order

	PARENTS
	SCHOOL
	FRIENDS
	RELIGION
	MEDIA (e.g., internet, books, movies, tv)
	OTHER (specify):

6. Who do you know that currently practises the concept of gratitude? Rank in order

	PARENTS
	FRIENDS
	RELATIVES
	TEACHERS
	NO ONE
	OTHER (specify):

ADDITIONAL QUESTIONS

1. In the past month, have you offered your help to another who was in trouble or who needed emotional support?

	YES
	NO

2. How many people have you helped in the past month?

	1-3
	4-6
	MORE THAN 7

3. List down the help you provided for these people then circle how useful was your action to those helped?

[illegible]

Appendix D

Approvals from Authors of Measures

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Appendix E

JCU Information-Sheet-Human-Research-Ethics for Parents and Participants



INFORMATION SHEET (PARENT)

PROJECT TITLE: Socio-emotional skills learning and Practicing gratitude in male adolescents

Your child/ward is invited to take part in a research project about the development of male adolescents' well-being through the learning of socio-emotional skills and practicing gratitude. The study is being conducted by Ms Adrienne Sng and in contribution to her Professional Doctorate project in Doctorate of Clinical Psychology at James Cook University, Singapore.

If you agree for your child/ward to be involved in the study, he will be invited to participate in 5 sessions of interactive workshops conducted during class time and in the normal school programme. Each session will only last 45 minutes and will involve learning about socio-emotional skills like benefits-appraisal, expressing appropriate social behaviours, understanding intentions of others and also practicing gratitude. The use of multimedia, worksheets, team activities, drama and group discussions will be employed during the sessions to facilitate active learning. There are also questionnaires that your child/ward will complete, and these measures cover adolescents' overall functioning, socio-emotional behaviour, social support, social interactions and general attitudes. The questionnaires should only take 10 minutes to complete and there are three different times to complete these questionnaires: pre workshop, after all 5 weeks of workshops and one month later. All questionnaires will be conducted during class time.

Taking part in this study is completely voluntary and your child/ward can stop taking part in the study at any time without explanation or prejudice. Your child's/ward's responses will be strictly confidential. The data from the study may be used in research publications and reports like thesis, journal articles, research posters but your child/ward will not be identified in any way in these publications.

If you have any questions about the study, please contact – Ms Adrienne Sng (Principal Investigator) or Supervisors.

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If you have any concerns regarding the ethical conduct of the study, please contact:
Human Ethics, Research Office
 James Cook University, Townsville, Qld, 4811
 Phone: (07) 4751 5011 (ethics@jcu.edu.au)



INFORMATION SHEET (PARTICIPANT)

PROJECT TITLE: Socio-emotional skills learning and Practicing gratitude in male adolescents

You are invited to take part in a research project about the development of male adolescents' well-being through the learning of socio-emotional skills and practicing gratitude. The study is being conducted by Ms Adrienne Sng and in contribution to her Professional Doctorate project in Doctorate of Clinical Psychology at James Cook University, Singapore.

If you agree to be involved in the study, you will be invited to participate in 5 sessions of interactive workshops conducted during class time and in the normal school programme. Each session will only last 45 minutes and will involve learning socio-emotional skills like benefits-appraisal, expressing appropriate social behaviours, understanding intentions of others and also practicing gratitude. The use of multimedia, worksheets, team activities, drama and group discussions will be employed during the sessions to facilitate active learning. There are also questionnaires that you will complete, and these measures cover adolescents' overall functioning, socio-emotional behaviour, social support, social interactions and general attitudes. The questionnaires should only take 10 minutes to complete and there are three different times to complete these questionnaires: pre workshop, after all 5 weeks of workshops and one month later. All questionnaires will be conducted during class time.

Taking part in this study is completely voluntary and you can stop taking part in the study at any time without explanation or prejudice. Your responses will be strictly confidential. The data from the study may be used in research publications and reports like thesis, journal articles, research posters but you will not be identified in any way in these publications.

If you have any questions about the study, please contact – Ms Adrienne Sng (Principal Investigator) or Supervisors

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If you have any concerns regarding the ethical conduct of the study, please contact:
Human Ethics, Research Office
 James Cook University, Townsville, Qld, 4811
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Appendix F

JCU Informed Consent for Parents and Participants

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Appendix G

Instructions for Facilitators and Teachers Administering Survey

Instructions to the students

1. Thank you for taking the time to fill in this questionnaire about youth and their issues.
2. This activity should take you a total of 10 – 15 minutes to complete.
3. Please start by filling in your class and registration number.
4. For questions 1-4, indicate your response with an (X).
5. For questions 5-6, please rank your responses instead of marking with an (X).
6. When answering the questionnaires, please answer as honestly as you can and be sure not to skip any questions.
7. Your answers will be treated with complete confidentiality.
8. Once completed, do check if you have missed out any responses.
9. Finally, please hand in the completed questionnaire to the instructor.

Appendix H

Results Of Treatment Contamination Analyses for Grade 8 and Grade 10 Control Groups

Table 15

T-Test Results of Treatment Contamination Analyses for Grade 10 Control Groups

Grade 8	CG		ACG		<i>t</i> (55)	<i>p</i>	Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Life Satisfaction T1	3.63	0.76	3.77	0.85	-0.60	.55	-.17
Life Satisfaction T2	3.75	0.83	3.91	0.79	-0.73	.47	-.21
Mental Health T1	39.20	17.25	40.59	13.53	-0.31	.76	-.09
Mental Health T2	37.68	17.61	42.15	14.04	-1.01	.32	-.29
Gratitude T1	23.80	6.11	26.81	5.90	-1.82	.08	-.50
Gratitude T2	23.79	5.77	27.09	5.19	-2.12	.04	-.61
Pro-Social Behaviour T1	2.23	0.41	2.47	0.33	-2.34	.02	-.65
Pro-Social Behaviour T2	2.32	0.43	2.54	0.32	-2.05	.05	-.59
Social Support T1	5.00	1.41	5.44	1.06	-1.19	.24	-.36
Social Support T2	4.89	1.55	5.40	1.02	-1.26	.22	-.40

Note. M = Mean; SD = Standard Deviation IG, Intervention Group; CG, Control Group; ACG, Alternate Control Group; T1 = Pre-test; T2 = Post-test; *p* = .01

Table 16*T-Test Results of Treatment Contamination Analyses for Grade 8 Control Groups*

Grade 8	CG		ACG		<i>t</i> (62)	<i>p</i>	Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Life Satisfaction T1	3.85	0.69	4.00	0.57	-0.94	.35	-.24
Life Satisfaction T2	3.78	0.81	4.02	0.61	-1.28	.21	-.33
Mental Health T1	42.91	14.90	42.07	12.85	0.24	.82	.06
Mental Health T2	44.94	12.87	43.93	14.36	0.29	.78	.08
Gratitude T1	27.65	5.48	26.43	4.99	0.92	.36	.23
Gratitude T2	27.21	5.80	26.33	4.98	0.62	.54	.16
Pro-Social Behaviour T1	2.33	0.34	2.30	0.34	0.31	.76	.79
Pro-Social Behaviour T2	2.38	0.37	2.44	0.34	-0.65	.52	.17
Social Support T1	5.17	1.12	5.09	1.07	0.28	.78	1.10
Social Support T2	5.17	1.35	5.29	0.93	-0.38	.71	1.19

Note. M = Mean; SD = Standard Deviation IG, Intervention Group; CG, Control Group; ACG, Alternate Control Group; T1 = Pre-test; T2 = Post-test, *p* = .01

Appendix I

Anecdotal Evidence: Feedback from School Authorities and Form Teachers of School

(Form Teacher 1)

Adrienne and her team from Boys Town were attune with the needs of the class and were skilful in facilitating the various activities to help the boys think about gratitude. The game- based activities required the boys to work as a team to achieve their goals and saw the class erupt in fits of laughter as they brainstormed how best to complete the tasks. They adeptly communicated the practice of gratitude and its benefits, and it was a great start to encouraging the boys to reflect on the many areas and people in their lives that they can give thanks for.

(Form Teacher 2)

The Gratitude Project had mixed results for my students. As a whole the class was difficult to manage and also displayed a lack of empathy despite teachers trying their best to connect with them and teach them from the heart. During the project it was heartwarming to see the class so engaged and open to learning and I could definitely see the change in some individuals. However this effect tapered off as the weeks and months went by, and the lessons only stuck with a few individuals. Overall, I think it is a project worth having but one must consider the follow up to ensure sustainability and long term viability.

(School Staff Developer (SSD))

Seeing the benefits of the project in creating empathy amongst the student, the school is currently adapting it such that there are various touch points during school events to help remind the students on gratitude along the year. This ranges from classroom lessons with classes having a gratitude tree, to various events like Labour Day appreciation for non- teaching staff, Parents Appreciation Day, and Staff Affirmation Day.

(Vice Principal)

There has been research on ways to develop the attitude of gratitude amongst the youth and findings often point to weaker results with boys compared to girls. Thus, this research is timely to show that finding the right strategies can impact boys just as effectively.

(HOD CCE)

I thought the I+C+B=G formula helped students to unpack and understand what gratitude meant. This was evident when we read cards that these students wrote gratitude cards for their parents, school cleaners and their peers. There was a greater vocabulary of words and sentences used beyond “thank you”

Appendix J

School-Wide Gratitude Tree (post-study)

