Teen Sleep, Emotional Well-Being and Mental Health: A Qualitative Study

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Abstract

Worldwide and in Aotearoa New Zealand (ANZ), adolescents often obtain insufficient sleep and experience poor emotional well-being and mental health. However, limited research explores what adolescents think and experience about their sleep, emotional well-being and mental health.

This experiential qualitative study aimed to learn what adolescents' think about their sleep, emotional well-being and mental health and the possible connection between these concepts. Adolescents were given the opportunity to showcase what they do, or would like to do, to get the best possible sleep, emotional well-being and mental health. Further, adolescents voiced what others, such as family and the school could do to improve their emotional well-being, mental health and sleep. Interviews were conducted with 12 adolescents at one North Island ANZ school and data were analysed using reflexive thematic analysis.

The analysis yielded six themes and four sub-themes. The ‘Knowing, Doing and Wanting to Do’ theme highlighted that many adolescents knew what impacted their sleep, mental health and emotional well-being, and were taking positive actions to support these concepts, like creating a comfortable sleeping environment. The ‘Who Influences Teen Sleep’**,** theme indicated that some families were already supporting their adolescents' sleep, while other adolescents noted that there were actions their family, friends or people at school could take to help their sleep. The ‘When I have a Good Sleep, I'm usually Pretty Productive…’, theme portrayed that good or poor sleep influenced productivity and energy levels. The ‘I'm Not Faking it when I'm Not Tired…’ theme showcased how good or poor sleep influenced social interactions. The ‘What’s the Connection Between Sleep, Mental Health, Mood and Emotional Well-being?’ theme highlighted the uni-or-bi-directional connections that good or poor sleep had on mood, mental health and emotional well-being. Lastly, the theme ‘What should we do now? indicated that many adolescents wanted more education at school about mental health, sleep and emotional well-being.

This research highlighted that adolescents have a detailed understanding of their sleep, mental health and emotional well-being. The results of the study can inform adolescent health policies, care and interventions, and emphases the need to work with adolescents in these endeavours.

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Kind regards,

Kavita.

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List of Terms and Abbreviations

ANZ= Aotearoa New Zealand.

Qualitative research= Includes interviews and theme generation, as opposed to statistical analysis.

REM= Rapid Eye Movement.

NREM=Non-Rapid Eye Movement.

EWB= Emotional Well-Being.

SES = Socioeconomic status, which is one's social standing in society based on their wealth (e.g. money, house area, job etc).

Sleep architecture= Sleep structure and pattern.

Process C=Circadian 24-hour activity rhythm sleep cycle.

Process S= Homeostatic rhythm sleep system cycle.

N1= Stage one sleep.

N2=Stage two sleep.

N3=Stage three sleep.

Sleep hygiene = Sleeping habits and strategies before going to bed, such as midnight snacking, watching screens etc.

Sex = One's biological orientation, which can be either male, female or trans.

Gender = Is a social construct in which one internally feels comfortable with. It can be male, female or on-binary/trans. One's sex and gender can be different from one another; they can also be the same.

EEG= Electroencephalogram.

Hz= Hertz, unit measurement for frequency.

Two Process Model= Model showing how sleep is regulated by the interaction between Process C and Process S.

CNS= Central Nervous System.

Rumination= Thinking about negative thoughts, feelings or experiences without any resolution.

OECD/EU= Organisation for Economic Cooperation and Development/European Union.

WHO= World Health Organisation.

HSED= High Socio-Economic Deprivation.

LDA= Low Deprivation Areas.

Hedonic= Includes how one feels about day-to-day experiences.

Eudaimonic= Having judgments about one's life satisfaction, having a sense of meaning, purpose and the ability to pursue both self-goals and goals beyond the self.

LGBTQIA+= lesbian, gay, bisexual, transgender, queer (or sometimes questioning), intersex, asexual, and others.

Thematic analysis= An approach to conducting and analysing qualitative data.
Illustrative approach= listing what was said by participants.

Analytical approach= Interpreting what participants said in relation to past research.

Thematic mind maps= A mind map showing the ideas connected between themes and sub themes.

Codes=Summarise an idea from the interview transcript data.

Semantic codes= Consist of descriptive information of what was simply said by the participants.

Latent codes= Contains information such as hidden meanings, underlying assumptions, ideas, or ideologies from the participant that might have shaped or informed their descriptive semantic code.

Familiarisation= First stage of Thematic analysis that involves listening and reading interviews and interview transcripts.

OCD= Obsessive Compulsive Disorder.

ODD= Oppositional Defiant Disorder.

GAD= Generalized Anxiety Disorder.

PTSD= Post Traumatic Stress Disorder.

MDD= Major Depressive Disorder.

Internalising symptoms= Inwards symptoms like negative cognitions

Externalising symptoms= Outward symptoms like angry bursts.

Preface

Thesis Context

This research aimed to look at what ANZ adolescents think and feel about their sleep, whether adolescents see a connection between their sleep, emotional well-being and mental health. Furthermore, it also investigated what strategies adolescents use or would like to use to get better sleep, emotional well-being and mental health. Hence, this research wanted to:

- Learn more about teens' thoughts, experiences and feelings about their sleep, emotional well-being and mental health.
- Better understand what teens think about the possible connection between sleep and their emotional well-being and mental health.
- Determine what teens already do, or would like to do, to get the best possible sleep, emotional well-being and mental health.
- Determine what teens think others (family and the school) can do to improve their emotional well-being, mental health and sleep.

Scope of the Thesis

This research is restricted to the participants of the Teen Sleep, Emotional Well-being and Mental Health study cohort. This research uses qualitative design methods, such as the use of a 30–40-minute interview with up to 12 participants. However, this research also uses demographic data which was used to describe the participants.

Thesis Structure

In general, each chapter begins with an introductory statement and ends with a summary. Chapter one (Introduction) includes background information about adolescent sleep, mental health and emotional well-being. Moreover, it also includes information about adolescent sleep, mental health and emotional well-being in the ANZ context.

Chapter two (Background) explores the connection between sleep, emotional well-being and mental health for adolescents. Chapter three (Methods) describes the qualitative research methods employed and its rationale. Chapter four (Results) will include the themes found within the data and responses related to the aims of the study. Chapter five (Discussion) will talk about what the results show and future avenues for research, policy and interventions in the space of adolescent sleep, mental health and emotional well-being.

Chapter One: Introduction

What is Sleep?

Sleep is essential for survival and everyday human functioning. Carskadon and Dement (2017) mentions that sleep onset is hard to define, however, when asleep, one undergoes behavioural and physiological changes, such as brain activity changes and reduced responsiveness to external stimuli.

The Basics of Sleep

When we sleep, during non-rapid eye movement sleep (NREM), we experience a decrease in body temperature, brain activity, heart rate (Gander, 2003), and respiration rate. Consequently, the body's energy expenditure is lowered when we are asleep (Suni & DeBanto, 2023). Sleep occurs in stages and is physiologically regulated by two independent processes - sleep-wake homeostasis (process S) and the circadian alerting system (process C) (Carskadon & Dement, 2017; Suni & DeBanto, 2023) (see section: Physiological Sleep Regulation).

Sleep Stages

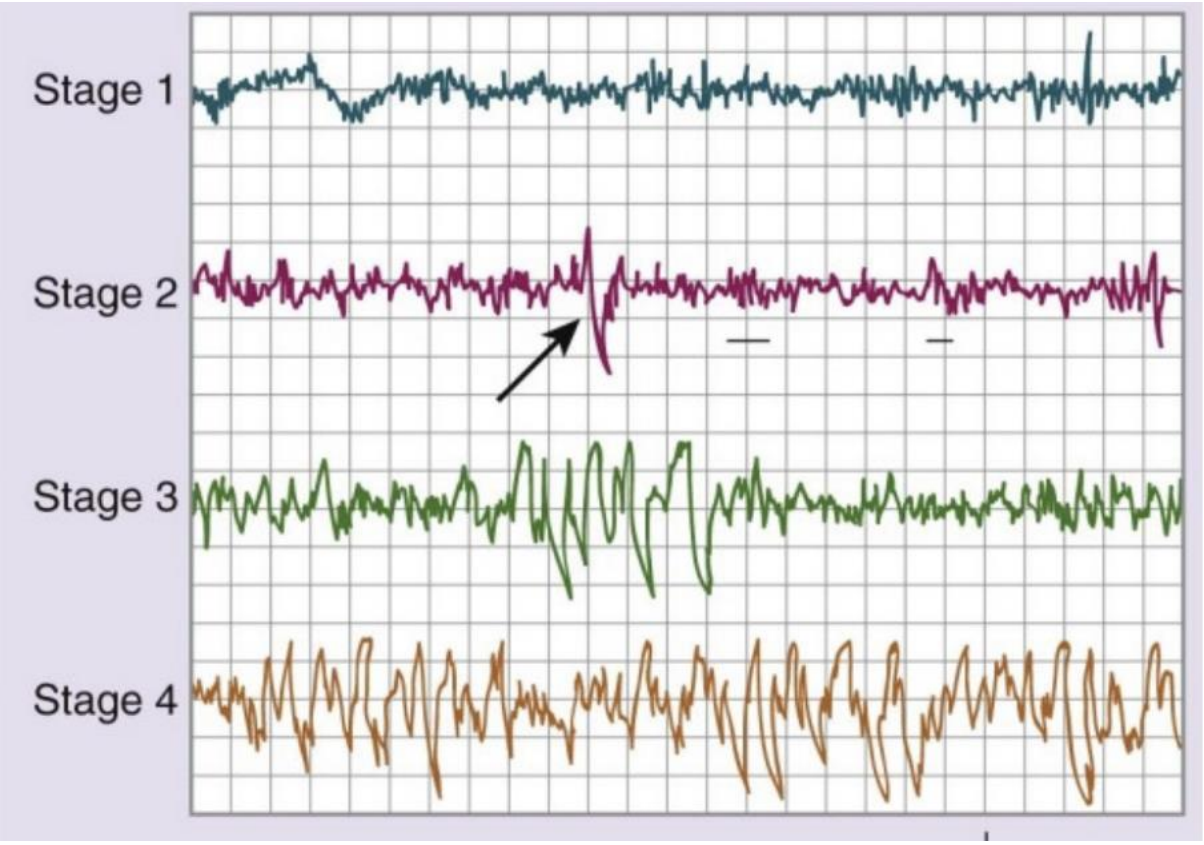
Carskadon and Dement (2017) and Suni and DeBanto (2023), note that sleep is divided into two distinctive types, NREM and rapid eye movement sleep (REM). Further, NREM is divided into three stages, N1, N2 and N3. Sleep is typically entered through stage N1 followed by a progression to N2 sleep, both of which are also known as light sleep due to the ease with which someone can be woken from these stages of sleep. After approximately 20-30 minutes N3 is entered, which is also known as deep sleep due to greater difficulty in waking a person up from this sleep stage. Finally, at the end of a sleep cycle, REM occurs and is associated with dreaming recall. Although the type of sleep and sleep cycles vary in duration and as the night processes, Baranwel and colleagues (2023) note that the structure and pattern (sleep architecture) of a good night's sleep includes 4 to 5 sleep cycles, each cycle lasting around 90 minutes, including light and deep sleep, with an episode of REM sleep. Carskadon and Dement (2011) state that the first episode of REM sleep usually occurs 80 to 100 minutes later from sleep onset.

Stage 1 (N1) is a transitional stage to stage two (N2) sleep lasting around 7-10 minutes (Carskadon & Dement, 2017; Suni & DeBanto, 2023). Baranwel et al. (2023) state that stage one sleep occurs at sleep onset, when we close our eyes and we are usually quite easily woken. Stage one sleep comprises approximately 5% of a full night's sleep.

The following stage of sleep is stage two (N2), this is when we have fallen asleep therefore, it is harder to wake up and lasts around 10-25 minutes (Carskadon & Dement, 2017; Suni & DeBanto, 2023). Baranwel et al. (2023) note that stage two comprises 50% of one's sleep. Stage two sleep is lighter than N3 but slightly deeper than N1, in which one's eyes stop moving and heart rate and body temperature decrease. Usually, when observed with an electroencephalogram (EEG), theta waves (Gandhi & Emmady, 2023), sleep spindles (brain activity waves), and k complexes are characteristic of stage two sleep (Baranwel et al., 2023). This is illustrated in **Figure 1,** where the arrow shows a k complex, while the two sleep spindles are underlined (Carskadon & Dement, 2011). The frequency of the sleep spindles changes during sleep and depends on brain location, where deeper NREM sleep is associated with fewer sleep spindles and lower sleep spindle frequency (Andrillon et al., 2011). EEG patterns of stage two theta waves, k complexes and sleep spindles indicate that their function is uncertain, however, it may be linked to memory consolidation (Baranwel et al., 2023).

Figure 1

Chart Showing EEG Waves During the Four Stages of Sleep, Arrow showing K Complex, Underline showing Sleep Spindles (Carskadon & Dement, 2011)



Stage 3 (N3) sleep is the deepest NREM sleep stage, during which muscle tone decreases, brain activity slows and is considerably different from waking (Carskadon & Dement, 2017; Suni & DeBanto, 2023) and it is hard to be awakened (Baranwel et al., 2023). As Baranwel et al. (2023) note, this stage is characterised by slow waves or delta sleep, which is characterised by having high amplitude slow waves that are more prominent in the first half of sleep. Normally in a healthy young adult, 20 to 25% of sleep is stage three sleep. Stage three sleep decreases in older people, and during this stage, it is believed that the body undergoes repair and strengthening of the immune system.

REM sleep is not divided into stages, however, a distinction between tonic and phasic types of REM can be made (Carskadon & Dement, 2011). The distinction between tonic versus phasic REM sleep is based on short-term events, such as rapid eye movements that tend to occur in clusters separated by episodes of no eye movement activity.

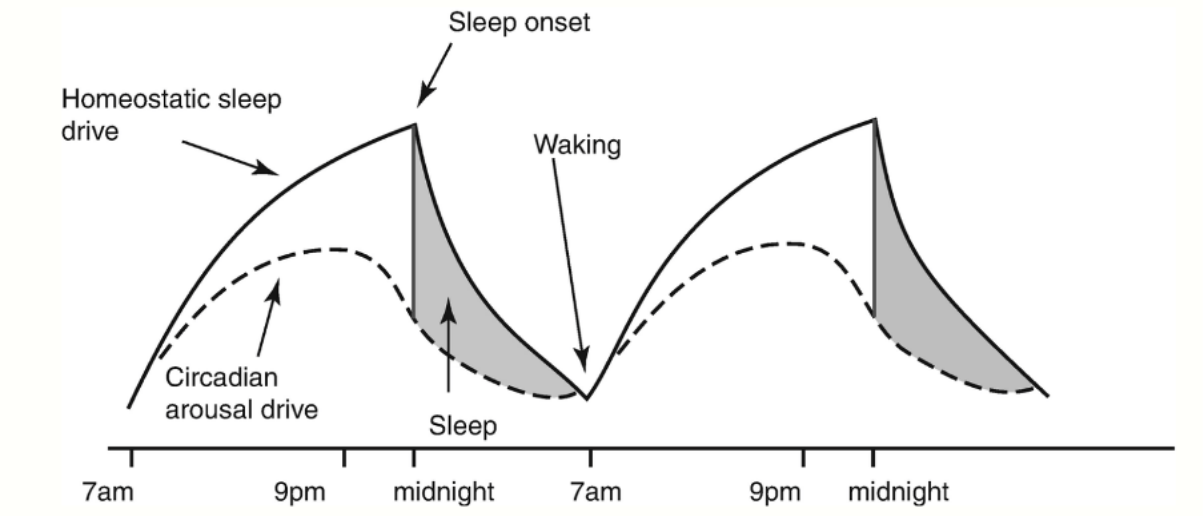
REM sleep dominates during the second half of a normal night, making up around 20% of the total sleep time, with REM sleep making up a greater proportion of sleep cycles as the sleep period progresses (Baranwel et al., 2023). During REM sleep, brain and body activity increases (Suni & DeBanto, 2023). Characteristics of REM sleep include irregular bursts of rapid eye movements and irregular heart rate (Baranwel et al., 2023), the inhibition of the spinal motor neurons by the brainstem, which results in suppressed postural motor tonus, which leaves the brain active while the body is paralysed (muscle atonia) (Carskadon & Dement, 2011). REM sleep is marked by vivid dreaming, although dreams can occur at any stage (Suni & DeBanto, 2023). REM sleep is believed to benefit the brain by aiding memory consolidation (Baranwel et al., 2023) and learning (Suni & DeBanto, 2023).

Physiological Sleep Regulation

There are many brain regions that control, regulate and manage sleep and wakefulness, including the hypothalamus, thalamus, pineal gland, basal forebrain, midbrain, brain stem, amygdala and the cerebral cortex (Suni & DeBanto, 2023). The two key processes that regulate sleep are the Circadian Alerting System (process C) and the Sleep-Wake Homeostatic drive-(process S) (Suni & DeBanto, 2023). These two independent processes work together to create windows for sleep and wakefulness. As shown in **Figure 2,** the Homeostatic process is our brain's drive for sleep which accumulates while awake and dissipates during sleep. Sleep pressure continues to build up the longer that we are awake and similarly the urge to sleep dissipates when we have had sleep (Carskadon et al., 2004). The Circadian process influences our arousal level. When the arousal level starts to decrease and coincides with the peak sleep drive from the Homeostatic process, sleep onset follows. The reason why we don't fall asleep while the Homeostatic drive for sleep increases is because the Circadian arousal signal counteracts this.

Figure 2

Diagram of the Two Process Model by Parker and Shechter (2020), where the Homeostatic Process produces the Sleep Drive, while the Circadian Process influences Arousal Levels throughout the day, Both Work Together to Initiate Sleep Onset



Although the exact anatomical location, neurochemical and neurocellular basis of Process S is unknown, it is believed that adenosine regulation, thalamocortical brain oscillations and gene expression have a role (Carskadon et al., 2004). Crowley and others (2018) note that Process S works by favouring sleep as wake is extended and vice versa, in that, wakefulness is favoured as sleep is extended. Unlike Process C, Process S doesn't depend on the time of day, instead, it depends on prior sleep and wake (Crowley et al., 2018) and with a period of insufficient sleep, one will sleep longer or more deeply due to Process S (Suni & DeBanto, 2023). Process S is thought to be represented in the EEG by slow waves, with a frequency range of between 0.75 to 4.5 Hz (Carskadon et al., 2004). As a person spends more time awake, slow wave activity increases during sleep to keep a balance between sleep and wakefulness (Gradisar et al., 2022).

In contrast, Process C is a genetically regulated internal clock that has a cycle of approximately 24-hours (24.2) (Gradisar et al., 2022) and is independent of prior sleep and wake durations (Crowley et al., 2018). The primary controller for process C, the circadian master clock, is located in the suprachiasmatic nucleus, anterior to the hypothalamus (Gradisar et al., 2022). Process C is responsive and sensitive to light, which helps to entrain it to, or remain in sync with, the 24-hour day and night cycle (Carskadon & Tarokh, 2014).

Carskadon and Tarokh (2014), note that the response to light is phase dependent. When light signals are processed by the clock during the evening and first part of the night, it produces a phase delay by moving sleep onset later. On the other hand, when light signals are late at night and early in the morning, this results in phase advancement and wake up occurs at an early time.

Hormonal Sleep Regulation

There are many hormones, neurotransmitters, substances and chemicals that affect sleep. Cortisol rises when wakened and is also related to stress. The hormone melatonin is secreted by the pineal gland during night and is regulated by process C (Carskadon & Tarokh, 2014). Evening light can delay process C resulting in later timing of core body temperature changes and melatonin secretion, which can make falling asleep harder (Bartel et al., 2015). Morning light resets the biological clock.

Adenosine is another chemical that plays a role in sleep and wakefulness. Basheer and others (2004) note that adenosine levels increase when we are awake and decrease when we have had sleep. Adenosine may promote sleepiness by inhibiting wakefulness promoting neurons. Increases of adenosine A1 receptors may have a role in mediating the longer-term effects of sleep loss. EEG readings show reductions in stage 3 sleep and increased amounts of stage 1 sleep, wakefulness and arousal with caffeine consumption which blocks adenosine (Baranwal et al., 2023; Clark & Landolt, 2017).

What is Sleep Health?

Buysse (2014) describes sleep health as being a multidimensional construct that promotes physical and mental well-being. Sleep health differs for every individual and is dependent on their social and environmental situation. Buysse (2014) proposes five dimensions of sleep health that can be measured in a variety of ways and are all linked to various health and well-being outcomes. These dimensions include firstly sleep duration, which is the total amount of sleep obtained per 24 hours. Secondly, sleep continuity or efficiency which refers to the ease of falling asleep and returning to sleep. Thirdly, timing, which alludes to the placement of sleep within the 24-hour day. Fourthly, alertness and, or sleepiness refers to the ability to maintain attentiveness and wakefulness. Lastly, satisfaction and or quality allows for the subjective assessment of “good” or “poor” sleep. Hence, good

sleep health can be conceptualised through subjective satisfaction, appropriate timing, adequate sleep duration, high efficiency, and sustained alertness when awake.

Why is Sleep Important in Adolescence?

Sleep is vital for every animal and both too little and too much sleep are associated with negative health consequences. The amount of sleep needed not only varies by animal species, but also by the developmental life stage of an animal. Humans spend a lot of time sleeping in infancy and this gradually reduces with age. Adolescents need to spend around one third of their daily lives sleeping (Uccella et al., 2023). However, worldwide millions of adolescents are getting less than eight hours of sleep (Bartel et al., 2015), when the recommended amount of sleep is 8 to 10 hours (Hirshkowitz et al., 2025; Sleep Health Foundation, 2024a), with the average 9 to 9.3 hours of sleep (Gradisar et al., 2022). Generally, Bartel and others (2015) note that adolescents obtain less sleep on school nights. Whereby, only 14% to 27% of adolescents obtain over 9 hours of sleep on school nights and up to 25% get less than 6 hours of sleep. Adolescents try recovering their sleep loss on the weekends, however this “catch up” sleep can result in chronic issues with wake and sleep times which conflict with daily demands. When adolescents are given the opportunity for unrestricted sleep, they often obtain over 9 hours of sleep. In support of this, more sleep was seen amongst adolescents during COVID19 when people did not need to travel in the morning (Gradisar et al., 2022; Gruber et al., 2020).

Supporting adolescents to obtain sufficient sleep is essential as sleep deprivation is shown to result in a number of adverse health conditions and negative impacts on life. Lower academic grades, daytime sleepiness, mood problems, mental health difficulties, behavioural issues, substance use and abuse, weight gain, vehicle accidents and immune system conditions are some consequences of inadequate sleep (Crowley et al., 2019; Bartel et al., 2015). Often, and as Bartel and colleagues (2015) mention in their meta-analytic review, daytime functioning is impaired with inadequate sleep, with inattention, school absenteeism, learning and memory difficulties, deflated motivation and lower intelligence scores often occurring. Furthermore, students who experience severe sleep restriction, of less than six hours of sleep per night, are at increased risk of having interpersonal issues at school, psychological problems such as low self-esteem, low life satisfaction and higher incidences

of drug or substance use. Longer sleep duration, lower daytime sleepiness and better sleep quality has shown to be associated with better school performance.

In general, Grandner (2017) notes, diabetes, metabolic problems, inflammation and cardiovascular disease are all associated with short sleep duration and increased mortality is seen with too little or too long sleep.

As Baranwal and others mention (2023), losing weight or maintaining ideal body weight can help improve sleep. Weight loss can improve sleep disordered breathing, improve one's sleep cycles, patterns and routines and decrease daytime sleepiness. Obesity and weight gain is linked to short sleep over-time (Grandner, 2017). Although short sleep is linked with weight gain for all ages, it's seen more amongst young people and ethnic minorities as opposed to a U-shaped relationship in middle aged people (Grandner et al., 2015; Grandner, 2017). Globally, based on 2022 WHO statistics, over 390 million children and adolescents aged 5 to 19 years of age are overweight (WHO, 2024).

Based on the NZ health survey in 2020 and 2021, around one in three or 34.3 percent of people aged 15 years and over are considered obese (Ministry of Health, 2024). Child obesity (ages 2 to 14) increased from 9.5 percent in 2019-2020 to 12.7 percent in 2020-2021. Children and adults in low socioeconomic areas are most affected by obesity, along with Pacific and Māori populations, due to systemic disadvantage and obesogenic environments, while Europeans and Asians are less affected (Ministry of Health, 2024).

Adolescent Sleep

Adolescence is a time of great change, both mentally and physically. Process S and C, along with hormonal and neuroanatomical changes are some changes that affect adolescent sleep. There are also adolescent sex differences in sleep neurophysiology. In terms of process S, sleep pressure builds more slowly in post-pubertal adolescents, leading to delayed sleep.

Tarokh and colleagues (2019) mention that, during adolescence there is a delayed sleep chronotype, where it becomes particularly difficult for adolescents to wake up in the mornings, while they find it easier to stay up later into the evenings. Carskadon and Tarokh (2014), note that the buildup of sleep pressure while awake is much slower for older adolescents. The need for sleep doesn't necessarily change for younger and older adolescents.

However, school schedules that require an early rise in conjunction with falling asleep later, leads to sleep loss and deprivation particularly for older adolescents. Moreover, in response to chronic sleep deprivation, Gradisar and others (2022) note that older adolescents, similar to adults, do not adapt to sleep loss. Older adolescents still require the same amount of sleep as younger adolescents. Unfortunately, lack of sleep can lead to many health, work and academic complications.

Furthermore, Gradisar and others (2022) mention that, during adolescence, slow wave EEG sleep brain activity decreases by around 40%, around ages 12.5 and 13.5 for both sexes. Carskadon and Tarokh (2014) note that this slow wave decrease is likely due to the reorganisation of the central nervous system (CNS) during adolescence. Whereby the CNS has reductions in cortical thickness, pruning of the cortical synapses which is linked to slow EEG, increases in white matter and myelinated fibre circuits. These neuroanatomical changes may explain why the build of sleep while wake is slower in adolescence.

The belief that older adolescents could be less sensitive to morning light, more sensitive to evening light and melatonin suppression has inconsistent findings (Tarokh et al., 2019). However, in terms of process C, Carskadon and Tarokh (2014) demonstrate that, during adolescence, the timing of melatonin secretion is delayed. In which, the light sensitivity of process C might be different in adolescence, which favours a greater response delay to evening light. Tarokh and others (2019) note that, the homeostatic sleep pressure, that makes adolescents favour the evening and allows them to stay awake longer, is likely to result in more light exposure when the circadian system is particularly sensitive to light. This can therefore lead to sleep phase delay and low melatonin levels which makes it even harder to fall asleep. Additionally, adolescents may also have lower amplitudes of the daily secretion rhythms of melatonin. Adolescents aged 9 to 13 years fell asleep after around one hour from the onset of their melatonin secretion. While older adolescents, aged 15 to 18 years fell asleep after 2 hours from the onset of their melatonin secretion (Crowley et al., 2014; Crowley et al., 2018). It is thought that this difference between older and younger adolescents in the onset of melatonin secretion is due to the slowed accumulation of sleep homeostatic pressure among older adolescents (Crowley et al., 2018). Due to the tendency to stay awake later, adolescents may go on electronics to pass time. Light from electronics may further delay sleep onset, result in poor sleep quality and impair alertness (Baranwal et al., 2023). However, mixed and complicated findings and recommendations regarding technology's impact on sleep exist (see

Psychosocial Factors Affecting Adolescent Sleep and What Adolescents Do to Achieve Good Sleep?).

Tarokh et al, (2019) describes that the internal day length may be longer in adolescents than in adults. A circadian day length that is longer than 24 hours favours individuals with evening tendencies. Early morning waking tendencies are more common amongst those who have a circadian day length that is shorter than 24 hours. Hence, a lengthening of process C as adolescents mature is understandable, based on the evening preferences of adolescents, but is not supported by empirical studies. In fact, there are no differences in circadian day length between late and post-pubertal adolescents, and instead, adolescents show similar circadian day lengths to adults (Crowley & Eastman, 2018), of around 24.2 hours (Tarokh et al., 2019).

Reproductive hormones also change adolescent sleep. Uccella and others (2023) describe that the reproductive hormonal system leads to reduced sleep duration, decreases in slow-wave sleep and a slight increase in REM sleep. Increases in REM sleep during adolescence may have a role in regulating emotional processes that highly depend on the environment. Overall, sleep changes and evening arousal patterns in adolescents last around ages 20 to 21, then begin to become more stable in young, middle and older adulthood (Gradisar et al., 2022).

Sex differences in adolescent sleep waves also occur. Markovic and others (2020) note some, in which, unlike adolescent boys, adolescent girls had significantly more spindle activity, had higher NREM sigma power frequency waves, spindle amplitudes, spindle frequency and spindle density over multiple brain regions. However, the alpha sleep waves during NREM and REM sleep were higher in NREM sleep for boys than in girls, but there were no differences for REM sleep. This suggests that females have greater overall brain connectivity.

Psychosocial Factors Affecting Adolescent Sleep

Apart from biological processes that influence sleep, external factors such as the family environment, diet, exercise, napping, technology use, school times, sleep attitudes and ideologies can all impact sleep.

The sleeping environment should be comfortable in terms of space, temperature and noise. Baranwal and others (2023) note that a dark, cool and quiet sleeping environment is recommended for the best sleep quality such as deep sleep. While noise, sharing beds in crowded and unhealthy living areas, such as dampness, all affect one's sleeping ability.

Our diet affects both our mental and physical health. Unfortunately, caffeine consumption is high amongst adolescents in the form of coffee (Bartel, et al., 2015) and energy drinks, which can further delay sleep onset. In a study with late adolescents, alcohol didn't affect sleep onset but did affect sleep quality with frequent night awakenings (Chan et al., 2013). Vaping also affects adolescent sleep and puts one at risk of engaging in vaping. Baiden et al (2023) found that adolescents who currently used electronic vapes had 1.33 times higher chances of having insufficient sleep. Adolescents who previously used e-vapes had 1.29 times higher chances of having insufficient sleep than adolescents who had never used e-vapes. Sleep deprived adolescents obtaining less than six hours of sleep were associated with using electronic nicotine devices such as vapes (Holtz et al., 2022). The Sleep Health Foundation (2024b) mentions that it is important to not be hungry when going to sleep but also not to have a full stomach, as it can make falling asleep harder. Meals should be eaten at least two hours before going to bed, however, a small snack at bedtime may benefit some people to sleep better.

Being in nature improves mental health for adolescents (Tillmannet al., 2018), and this is similar for sleep. Bartel and others (2015) mentioned that physical activity is likely to benefit sleep, however it is not associated with sleep onset and total sleep duration. Although results are mixed, there is a chance that in extreme cases, such as professional athletes, sleep onset is faster. However, in ANZ, adolescent athletes who have early morning training have shorter sleep (Steenekamp et al., 2021). Thirty minutes of moderate aerobic exercise may help increase sleep quality by increasing the amount of deep sleep as well as sleep duration. Exercise also reduces pre-sleep anxiety and improves sleep for people with insomnia. However, it is unclear how exactly exercise benefits sleep and whether these benefits are seen in all developmental stages (Baranwal et al., 2023; Passos et al., 2010).

Studying times also affect adolescent sleep. Studying in the morning or evening is associated with short sleep duration compared to afternoon study (Felden et al., 2016). Stress can also affect sleep (see section: Links Between Emotional Well-Being and Sleep) gender differences in sleep hygiene also exist (see section: Adolescent Sleep Status in ANZ).

Adolescent sleep nap literature is scarce (Santos et al., 2021). Generally, however, short naps of maximum 30 minutes early in the afternoon should not impact night sleep. However, naps in the evening and later at night can make it harder to get to sleep at night (Sleep Health foundation, 2024b). If naps are early, mid-day and short, they can provide relaxation, reduce fatigue and improve mood and alertness. However, if naps are too long, they can leave one feeling sickly and disorientated when awakened. Furthermore, if one has insomnia, taking naps during the day can make it even more difficult to fall asleep at night (Baranwal et al., 2023). However, for adolescents, a short nap in the afternoon is recommended, with mental and physical benefits without affecting night sleep (Santos et al., 2021). Short naps when adolescents are sleep deprived have shown to increase processing speed (Lim et al., 2017).

As already noted, technology use can be entertaining and soothing, but also increases our risk of psychological harm due to the potential exposure of harmful content or people, along with melatonin release being altered from bright evening light.

Device use before bed, that is greater or equal to 1.5 hours, can impact adolescents' melatonin, circadian and homeostatic sleep systems that reinforce evening tendencies. However, the avoidance of screens the hour before bed has not yet significantly suppressed melatonin among adolescents (Crowley et al., 2019; Wood et al., 2013). On the other hand, the Sleep Health Foundation (2024c), states that bright light affects melatonin release, but the effects of technology are subjective. In that, some people may have sleep issues while watching television in their room (Sleep Health Foundation, 2024c), use technology to cut time or as an emotional regulation strategy to facilitate sleep, such as speaking to friends (Bauducco et al., 2024). Therefore, the effects of technology on sleep and how it is used for sleep will differ based on the activity type and individual.

Owens (2014) mentions that adolescents worldwide use many types of electronics before sleep. However, online peer-to-peer interaction may be non-impactful to adolescent sleep. Playing computer games before sleep results in increased light sleep, even with dim light affecting circadian rhythms, melatonin secretion and shooting games resulting in longer sleep onset and shorter REM sleep. Television before sleep can also result in decreases in verbal memory performance and longer sleep latency. However, the Sleep Health Foundation (2014c), states that passive use of devices such as reading, watching a movie or listening to music have less impact on sleep. While video gaming and more interactive technology use has more impact on sleep. It is recommended when technology is used, to have it on dimmed filtered orange light, as blue light can influence melatonin levels.

Further, in their thematic analysis on what adolescents thought of their technology use, MacKenzie and others (2022) found that peer-to-peer interaction delayed sleep unlike what Owens (2014) notes. In that, along with enjoying social media use, adolescents had the fear of missing out, had the urge to participate in social media and if not, felt that they were not subscribing to social norms. Additionally, adolescents demonstrated a strong urge to check phones, or had habitual use, difficulty in stopping use, lost track of time or used social media to support sleep. However, adolescents knew that their technology, television and gaming engagement was an issue, such as delaying homework which delayed sleep due needing to finish homework resulting in next day tiredness, impacting academics and parents needing to take technology away.

Other factors that affect adolescent sleep include school start times. As noted earlier, adolescents have a preference for staying up and falling asleep later. The potential consequence of this is that adolescents may get insufficient sleep due to needing to get up early for school. Gradisar and others (2022) emphasise that adolescents try to catch up on their sleep on the weekends, however, this can further exacerbate their circadian delay. This is because sleeping in reduces morning light exposure and prevents resetting of the biological clock. This can lead to further difficulties in falling asleep on Sunday nights, waking on Monday mornings and resetting the weekly cycle. There is a push from many to have later school starting times that are better suited towards their natural sleep physiology, especially for older adolescents (Barber et al., 2022).

Both parental and adolescent attitudes and ideologies towards the importance of sleep have effects on adolescent sleep. Alvarado and colleagues (2024) found older adolescents reported more negative sleep attitudes such as placing less importance on prioritising sleep over other activities. Adolescents in fact reported more negative sleep attitudes compared to their parents. More negative sleep attitudes were associated with poorer sleep hygiene behaviours such as irregular sleep timing and evening caffeine use. Furthermore, the sleep attitudes of parents significantly predicted their adolescent's sleep attitudes, even after accounting for family income, education, adolescent age and sex. This suggests that sleep attitudes are important and that these attitudes may develop within the family environment by parental socialisation.

Adolescent Sleep Status in ANZ

There are known sleep inequities between Māori and non-Māori in both the adult and adolescent population in ANZ. While ethnic differences in early morning awakenings still remain regardless of racial discrimination and socioeconomic position in adults (Paine et al., 2016). Māori have greater occurrences of sleep disturbances (Paine et al., 2016), insomnia and excessive daytime sleepiness (Meaklim et al., 2020). Māori, Pacifica, Asian and other adolescent ethnic minorities have shorter sleep, are more likely to go to bed after midnight and wake up earlier in the morning during school weeks than European adolescents. These ethnic sleep health inequities are unjust and avoidable and are driven by a range of systemic inequities including socioeconomic deprivation, housing deprivation and racism (Muller et al., 2024).

Around one quarter of ANZ adults have a chronic sleep problem, 41% reported sleep issues within the past month, with 19% taking sleep medication (Meaklim et al., 2020). In terms of ANZ adolescents, 39% sleep less than is currently recommended, with 57% reporting poor sleep quality (Barber et al., 2022; Galland et al., 2020). Within ANZ, 37.2% of students were having significant sleep issues that lasted longer than a month (Fernando et al., 2013), with only 21% having enough sleep (Dorofaeff et al., 2006). Fernando and colleagues (2013) found that depression and anxiety was seen in 51.7% and 44.8% of students that had sleep problems (further explored in chapter two). Alcohol and substance use was common for students that had sleep issues. Furthermore, the mean rate of significant sleep issues was 37.2% and 50-57% of year 12 and 13 students reported having some degree of sleep issues.

Sleep disorders were common in female students that also had higher rates of anxiety and general health issues, although both sexes showed an association between sleep disorders, anxiety and depression. However, female students with sleep disorders had less delayed sleep-phase disorder than males.

Galland and others (2020) study involved 4,192 adolescents aged 13-17 years, they highlight that, compared to ANZ European adolescents, Māori and Pacific adolescents had later bedtimes by 15 and 41 minutes, with shorter sleep. Protective factors for sleep included interacting with family and friends, exercise and sports before bed that resulted in longer sleep. Time with family, exercise, schoolwork and doing household chores were all linked to better sleep quality. Within their study, McLay and others (2023), found that only 26.6% of their Pacific ANZ participants reported having at least 8 hours of sleep over the past week. Additionally, females and older adolescents reported having more nights with less sleep than 8 hours than males and younger adolescents. Insufficient sleep was associated with depressive symptoms, risking taking and increases in body mass index, highlighting the vital importance of supporting adolescents to sleep well.

Galland and others (2020), found that Asian adolescents reported shorter sleep duration than ANZ Europeans due to sleeping one hour later, having long sleep latency, but had less disturbed sleep and a more eveningness chronotype. Furthermore, 29% of Asians, versus 17% of ANZ Europeans, were sleeping less than the recommended amount. Middle Eastern and African adolescents also slept less than ANZ Europeans. Older adolescents had mixed findings in terms of sleep quality, but reported better sleep efficiency, less sleep disturbance, but significant daytime dysfunction. Bedtimes were later by 15 minutes for Māori and 41 minutes for Pacific adolescents than ANZ Europeans.

Smith et al. (2020) study involved 4,811 adolescents (aged 13-17 years) they found that in the hour to sleep or in bed participants engaged in phone use in the form of texting, emailing, social media, web-browsing, or watched television, videos, went on laptops, tablets, gaming, remixing, listened to music or read on Kindle. However, 88% of participants engaged in social media and texting (77%) on most nights. Further, many participants used phones in bed (86%) and said that they spent too much time on screens (70%). This awareness increased with age. Additionally, being unable to communicate with friends was agreed as the most common barrier to reducing screen time (67%).

In terms of ethnic differences in pre-bedtime activities, Galland and others (2020), noted fewer Asians interacted with friends and family than ANZ Europeans (53% vs 67%), ate less snacks before bed (41% vs 48%) and undertook less sports or exercise (23% vs 33%). Asians did less paid work in the hour before sleep (5% vs 12%) but were more engaged in written schoolwork (59% vs 35%). Web searching was more common in Asians than in ANZ Europeans (89% vs 77%) so was listening to music (67% vs 14%) and remixing (14% vs 10%). Texting and phone usage by Asian adolescents was less common (69% vs 77%). Māori adolescents did more schoolwork than ANZ Europeans (40% vs 35%), listened to more music and remixing (65% vs 14%) and participated in more sports (41% vs 33%). Māori did more household jobs (36% vs 31%), drank more caffeinated drinks (19% vs 13%) and read less books (13% vs 20%). Pacific adolescents did more written schoolwork (52% vs 35%), participated more in sports (46% vs 33%) and did more household jobs (43% vs 31%). Pacific adolescents snacked more (72% vs 48%) and drank more caffeinated drinks before bed than ANZ Europeans (23% vs 13%). Other ethnicities drank more caffeinated drinks (19% vs 13%) and did more schoolwork (46% vs 35%) just before going to bed than ANZ Europeans.

Sex differences and similarities in sleep also exist. Boys and girls have similar amounts of sleep (around 8.25 hours) and similar wake times (Galland et al., 2017) with 37-41% reporting less than 8 hours of sleep (Galland et al., 2020). Galland and others (2020) note that bedtimes are 10 minutes earlier for girls, with no differences for boys in their chronotype. However, low sleep quality is seen more in girls, as girls have higher levels of sleep latency, lower sleep efficiency, more sleep disturbances and more daytime dysfunction. Furthermore, Galland and colleagues (2017) noted that, although 56% of adolescents had poor sleep quality, 63.1% of girls and boys 44.5% reported poor sleep quality. Girls were also having a variety of caffeinated products, such as tea, coffee and chocolate. Girls drank more hot caffeinated drinks after dinner than boys (51.8% vs 38.1%) and although non-significant, boys consumed more energy drinks (12.1% vs 9.2%).

What is Mental Health?

For Overall, mental health is complex and depends on many factors, such as family, school, economic, health conditions, community ideologies and genetics. People hold their own unique views about what mental health is and what it means to them and others.

Definitions of mental health, what it consists of and what is maladaptive or adaptive differ culturally, socially between societies, scholars and scenarios.

For example, the World Health Organization (WHO) (WHO, 2022) defines mental health as a state of mental well-being that allows people to cope up with daily life stresses, realise their abilities, worth, be able to learn and work well, to contribute to their community, be able to make individual and collective decisions and build relationships. Mental health is not only the absence of mental health disorders, but it's experienced differently for everyone. When one has significant psychosocial difficulties, distress, feels less mental well-being or self-harms, they may have a mental health condition.

Like all mental health risk factors, some risk factors affect certain groups more such as sexism and racism due to how society is structured. Mental health risk factors unique to adolescents may include bullying, both online and at schools, harmful relationships (Lukoševičiūtė-Barauskienė et al., 2023), negative family environments, whereby may parents be neglectful, mentally and physically abusing, not listening, valuing, loving and respecting them (Johansson et al., 2007), harsh parenting, poverty, unsafe homing, such as overcrowding, dampness, exposure to violence, work, school and neighbourhood conditions also influence adolescent mental health (WHO, 2021).

Although research is limited, how adolescents view mental health is somewhat in line with WHO's (2022) definition. As shown by semi-structured interviews and using thematic analysis by Lukoševičiūtė-Barauskienė and colleagues (2023), adolescents (aged 11-17) perceived mental health not only emotionally but also behaviourally through their relationships with others. Emotionally, adolescents saw the importance of what they felt inside to be expressed behaviourally. The adolescents expressed the need to show both positive and negative emotions such as happiness, empathy, good mood, sadness, anger and anxiety. Some adolescents viewed mental health as a mechanism that controls and is responsible for one's emotions.

Behaviourally, Lukoševičiūtė-Barauskienė and colleagues' (2023) adolescent participants emphasised that a person with good mental health should not stand out from others around them. Many adolescents said that one should respond to situations in a similar

manner to their peers and conform to social norms, such as learning at the same pace and behaving appropriately when in public.

Adolescents valued positive interactions with their parents, extended family, friends and teachers for positive mental health **(**Lukoševičiūtė-Barauskienė et al., 2023**;** Johansson et al., 2007). In interviews conducted with Swedish adolescents (aged 13-16) by Johansson and others (2007) younger adolescents, at around 13 years old, found the concept of mental health hard to understand and they described their feelings in relation to friends, parents and other people. Older adolescents, at around 16 years old, understood the concept of mental health better, with older girls saying parents are the most important supportive factor, while older boys viewed friends and family as equally important. For young boys, friends were the most important supportive factor. Nevertheless, both young boys and girls talked more about friends being the most supportive figures as compared to older adolescents.

Other factors that adolescents who took part in the study conducted by Lukoševičiūtė-Barauskienė and colleagues (2023) viewed as important to mental health were communication, safe environments and behaviour. Communication with others was seen as vital for good mental health, as one should speak properly in the correct voice, volume, body language and have the ability to accept others opinions and listen. Adolescents said for good mental health, they should help others and be able to ask for help, be able to express oneself, have freedom, have, achieve and pursue goals, have support and the need to have good relationships with family, extended family, teachers and feel safe at school and at home. While risk factors for poor mental health were, being harmful, having negative relationships with family and friends, social media, being bullied and having low self-esteem. Additionally, social isolation, being introverted or behaving destructively were seen as being particularly harmful to mental health and needed help and attention; such as when one is not learning, ignoring people, engaging in substance use, being violent, reckless, impulsive, blaming others for their bad behaviour or engaging in non-suicidal self-injury, therefore highlighting that adolescents have a complex understanding of mental health.

Overall, Both WHO's (2022) definition of mental health and how adolescents view mental health according Lukoševičiūtė-Barauskienė et al. (2023) and Johansson et al. (2007) are similar. Additionally, both WHO's (2022) definition of mental health and how adolescents conceptualise mental health in real life according to Lukoševičiūtė-Barauskienė

et al. (2023) and Johansson et al. (2007) are similar to Park and colleagues' (2023) emotional well–being (EWB) conceptualization, which will be explored in greater detail below in section 1.10.

Adolescent Mental Health Status in ANZ

Systemic social inequities also drive inequities in mental health for adolescents. Unfortunately, poor mental health amongst adolescents is common. The WHO (2021) globally estimates that one in seven 10 to 19-year-olds experience a mental health disorder, with depression, anxiety and behavioural disorders being the most common. Furthermore, although suicide (self-inflected death) does not always indicate an underling mental health disorder, it can indicate poor emotional well-being and distress. Among 15-to-29-year-olds, suicide is the fourth leading cause of death worldwide (WHO, 2021). Menzies and others (2020) mention that 10 to 20 percent of adolescents worldwide will experience some level of mental distress, with this figure being likely underestimated. Moreover, out of the 1.2 billion global youth population, a large number of youth experience symptoms that compromise their mental health. Poor mental health, in combination with adolescents normally being drawn to risky behaviours, further increases adolescents' risks of injuries, self-harm and substance abuse. Hence, it is of great importance to everyone, to support adolescent mental health during this critical developmental stage.

The mental health status in ANZ is poor. Although, suicide rates have dropped year-by-year (Coronal Services of New Zealand, 2022) ANZ had the highest rate of completed youth suicides in the developed world (Fleming et al., 2014). Furthermore, based on data from 2010, ANZ youth suicide rates for adolescents aged 15-19 years was the highest of the 41 *OECD/EU[1] countries (Mental Health Foundation, 2024). More recently, as Te Tāhū Hauora Health Quality and Safety Commission (2021) note, in the period of 2015-2019 there were 2,666 children and young people aged 28 days to 24 years that died, with suicide comprising 24.6 percent of the deaths. For both Māori aged 15–19 years and youth aged 20-24, suicide was the leading cause of death (45% and 43%). As Menzies and others (2020) note from the Ministry of Health (2020), ANZ's mental morbidity rates among both males and females have more than doubled over the last two decades from five percent in 2011 and 2012 to 14.5% in 2018 and 2019. Sutcliffe et al. (2023) observed that mental health rates

[1] * OECD/EU= Organisation for Economic Cooperation and Development/European Union.

have increased rapidly since 2012 among all demographic groups, especially among females, Māori, Pacific, Asian students and those from high-deprivation neighbourhoods. Moreover, suicidal ideation has increased in most demographic groups since 2012, with suicide attempts increasing for males. However, data from 1996 to 2016 from the Ministry of Health indicated that suicide rates for males decreased by 26%, while for females, it didn't change significantly (Mental Health Foundation, 2024).

On the other hand, the Youth19 study by Fleming and others (2020) indicated that, although in 2019 69% of students reported having positive mental health, such as being happy, not depressed and being satisfied with their lives, this figure had decreased, as in 2012 it was 76%. Furthermore, positive mental health was seen more amongst males and younger students than among females and older students. Depression was particularly high for adolescents that were in low decile schools, those living in deprived neighbourhoods and amongst females, 29% as opposed to 17% for males. Overall, for young people, depression symptoms have increased from 13% in 2012 to 23% in 2019.

Trends in mental health vary by many factors, some include ethnicity, systematic inequalities, such as racism, sexism and low SES. For Māori students, the Youth19 study by Fleming and colleagues (2020) indicated that, although most Māori youth had positive mental health, they had high rates of depressive symptomatology and attempted suicides. Rates of positive mental health decreased in 2012 from 75% to 67% in 2019, with depressive symptomatology increasing from 14% to 28%. On the contrary, for Pākehā and other European youth, positive mental health decreased from 76% in 2012 to 70% in 2019, with depressive symptomatology increasing to 20% in 2019 from 13% in 2012, while suicide attempts have not decreased since 2007.

For Māori youth, suicide attempts for the past 12 months increased from 6% to 13%, with Māori females having worse mental and emotional well-being than Māori males. Similarly, 24% of European female students reported depressive symptoms while males reported 15%. Māori youth from areas of high socio-economic deprivation (HSED) had higher levels of depressive symptomatology, 30% compared to 23% from low deprivation areas (LDA). The 12-month suicide attempt rates for Māori students in HSED areas was 13% compared to 7% who live in LDA. For Pākehā and other European students, depressive symptomatology and attempted suicide were high in HSED, 34% and 9%.

Similar mental health trends are seen amongst Pasifika, Asians and the *LGBTQIA+[2] youth. Among Pacific youth, the youth19 study (Fleming et al., 2020) found that depressive symptoms increased from 14% in 2012 to 25% in 2019. The 12-month attempted suicide rate for pacific youth rose from 7% in 2012 to 12% 2019. Furthermore, 33% of females as opposed to 15% of Pacific males had depressive symptomatology.

Those in HSED areas compared to LDA had higher occurrences of depressive symptomatology and attempted suicides, 25% versus 15% and 14% compared to 2%. For Asian youth, 68% reported good well-being in 2019, however, this figure had decreased to 76% in 2012. In 2012, 13% of Asian youth reported depressive symptoms, this rose up to 25% in 2019. Females had higher depressive symptoms than males, 30% versus 19%. For same or multiple sex attracted students, the Mental Health Foundation of ANZ (2024) notes that 53% of students reported significant depressive symptomatology. In the past year, 50% of this group had self-harmed and 13% had attempted suicide.

Perhaps more pressing is the matter that many distressed adolescents don't seek professional mental health support. As Mariu and others (2011) noted, over 80% of students experiencing significant mental health issues had not gotten help from a general practitioner. There could be many reasons for this, such as the stigma associated with mental illness, and that people think that they don't have an issue in the first place. Additionally, in Stubbing and Gibson's (2019) ANZ thematic analysis study, when young people (aged 15–22) were asked how they viewed suicide, their perspective was mainly non-pathological, in that, suicide could be seen as inescapable difficulties, having constant pressure, emotional distress and a message for help. Although young people did view mental health problems contributing to youth suicide, they understood suicide as a complex issue with multiple causes.

In most English-speaking countries Fleischmann and others (2005) found that 88.6% completed youth suicide cases were linked to at least 1 mental health disorder. Mood disorders were most frequent (42.1%), followed by substance-related disorders (40.8%) and disruptive behaviour disorders (20.8%). Along with existing psychopathology, Brent and others (1999) found a history of abuse and gun availability to be linked with suicide.

[2] * LGBTQIA+= lesbian, gay, bisexual, transgender, queer (or sometimes questioning), intersex, asexual, and others.

Additionally, substance abuse that was comorbid with a mood disorder was more common and was a much higher risk for suicide in the older adolescents than younger adolescents. Hence, although debated, many believe if someone died from suicide, that they must have had a mental illness, although this may not always be the case (Stubbing and Gibson, 2019), as dying from suicide can be influenced not only by one's mental health, but by cultural, family, environmental and social factors.

Just like there are many factors that may explain the cause of one's suicide, same applies to mental health. Within ANZ, as indicated by the Youth19 study (Fleming et al., 2020) all ethnic demographic groups expressed ongoing issues with discrimination, cultural incompetence, institutional racism, long-term systemic issues, feelings of exclusion and especially for Māori, colonisation and the effects of intergenerational trauma. Personal and community factors such as adequate family income, housing, food security and future employment, were distressing factors.

On an individual level, Britten (2023) notes that ANZ youth technology use is high. Unfortunately, along with the benefits of socialising, social media can pose issues such as cyberbullying, exposure to negative content and may increase chances of suicide, depression and loneliness. Of concern, is that people that are vulnerable to bullying in real life may be more vulnerable to it online, with effects being worse. In ANZ, Kljakovic et al. (2015) found that Māori were more prone to both school and text bullying than other ethnic groups. This is of great importance, as stated by the WHO (2021) bullying is the number one risk factor for youth in developing mental health conditions. Unfortunately, although bullying rates vary greatly in ANZ, ANZ is claimed to have some of the highest bullying rates amongst the developed countries and much of which goes unreported (Kljakovic et al., 2015).

ANZ also has high obesity rates (Ministry of Health, 2024) and with that comes bullying, along with a general disliking of the self-due to the social desirability of thinness as being attractive. In fact, a ANZ study by Babbott et al. (2023) found that around one-in-three male participants and one-in-two female participants reported body image dissatisfaction. One in four participants reported to have clinically significant symptoms of depression and anxiety. Another ANZ study by Coggan et al. (2003) found links between bullying and youth mental health status. The researchers found that, bullied students had lower self-esteem, were affected more from depression, stress, had hopelessness and had more suicidal thoughts and

attempts than others. What makes matters worse is that ANZ mental health system is poor, under-resourced and not particularly tailored to the individual needs of adolescents. As Britten (2023) notes, adolescents want non-judgemental, helpful support, want control over the supporting process and for Māori especially, want to have reciprocal connections with nurturing relationships from family, friends and professionals.

What is Emotional Well-Being?

EWB is not well defined in both lay language and in the academic literature. What exactly encompasses EWB varies greatly within academic literature and a standardised meaning and term is needed (Park et al., 2023). However, some academics have used the term well-being, subjective well-being, mental well-being (Ekinci, 2024), EWB and mental health (Coverdale & Long, 2014), psychological well-being or flourishing (Park et al., 2023).

When conceptualising EWB, Park and others (2023) propose EWB encompassing how positive an individual feels about life overall. This includes how one feels about day-to-day experiences (hedonic), to having judgments about one's life satisfaction, having a sense of meaning, purpose (eudaimonic) and the ability to pursue both self-goals and goals beyond the self. Park and others also suggest that it is not only the experience of positive emotions that should encompass emotional well-being, but also, the experience of negative emotions. Further, no emotion should become maladaptive to one's everyday functioning. How Park and colleagues attempt to define what encompasses EWB is in line with many other academics that have also included similar components but have encompassed EWB in another term.

However, Park and others (2023) also note that, everyone's emotional well-being will depend on their cultural context, life circumstances, resources and life course. Hence, defining EWB and what it encompasses varies greatly on an individual, societal and group basis. Hence, EWB for adolescents may include everyday life events and stresses like navigating the world and the process of making their own identity, meaning and purpose in life. Life stage stressors an adolescent may face could include arguments between family, peer pressure, having friends and romantic relationships, controlling one's emotions which is particularly difficult in the time of puberty. Work and study stress, financial issues or the

pressure to get into the right degree for university, all affect adolescents' emotional well-being more so than an older person.

To cope with daily life stresses, family and friend support is crucial in adolescence (Coverdale & Long, 2014) as adolescents don't necessarily have the skills to deal with certain situations. Having understanding and trustful adults can help adolescents with dealing through tough life scenarios. However, friends can also relate and understand peers at a similar level to the given individual that family may not, hence the importance of both reliable family and friend support. Additionally, stability, coping ability, happiness, confidence, balance, empathy, being grounded, feeling comfortable with the self, managing and controlling one's emotions and having the confidence to persevere with challenges, all contribute to positive EWB (Coverdale & Long, 2014).

Summary

The key points to note from this section are that there are two processes that control sleep, process C and S. Homeostatic pressure naturally builds slower in older adolescents along with a natural biological shift in circadian timing; whereby, when paired with electronic use or caffeine consumption, further delays adolescents' urge to sleep, resulting in evening tendencies and late bedtimes. This is problematic, as the need to wake up early for school results in many adolescents worldwide, including ANZ, not achieving the recommended amounts of sleep. Getting enough sleep is vital for sufficient emotional well-being and mental health which is particularly poor in ANZ. The next section will look more deeply into the mental health and emotional well-being link with sleep.

Chapter Two: Sleep, Mental Health and Emotional Well-Being Interconnections

As outlined in the previous chapter, many factors can influence adolescents' sleep, emotional well-being and mental health. This chapter will explore background literature on the interconnections between adolescent sleep, emotional well-being and mental health.

The Biological Link Between Sleep and Emotional Well-Being

Sleep is essential for emotional processing and regulation (Tempesta et al., 2018; Palmer & Alfano, 2017). Palmer and Alfano (2017) note that the neurochemicals and associated brain structures that regulate emotions also regulate sleep, hence nearly all mood disorders co-occur with sleep difficulties. A series of studies have investigated how sleep loss affects a person's ability to process emotions. These studies expose individuals who have been deprived of sleep to different emotional stimuli and measure emotional reactivity, evaluation, regulation and expression. Although one night of sleep loss may not significantly impact emotional regulation compared to multiple nights of sleep loss, it can result in difficulties disengaging from negative stimuli, but not positive stimuli.

Tempesta and colleagues (2018) note that any form of sleep loss impairs the ability to discriminate threatening faces at the viscerosensory brain and autonomic level, which leads to an overestimation of a threat. Additionally, any form of sleep loss affects the identification of facial emotions and their intensity particularly for happy and angry expressions, with this effect being particularly true for females. Cleggs and colleagues (2024) also note a shorter total sleep time and longer sleep onset latency is correlated with spending more time looking at threatening stimuli, such as angry faces. Attention to angry faces is also linked to longer sleep onset latency, longer wake after sleep onset and with worse depression symptoms and attention to stimuli (negative attention bias). Moreover, after any form of sleep loss, reacting or responding to emotional stimuli is slower, however, regulating and expressing one's emotions is minimally affected (Palmer & Alfano, 2017). Hence, insufficient sleep may be associated with negative implications for adolescents' ability to navigate social interactions.

Moreover, sleep loss is associated with decreased positive affect (mood or emotional states) (Tempesta et al., 2018). The caudate and putamen within the striatum that is responsible for reward and motivation responses are sensitive to sleep deprivation. During REM sleep, the amygdala, entorhinal cortex, anterior cingulate cortex (Tempesta et al., 2018), hippocampus, inhibition of aminergic neurotransmitters such as norepinephrine and serotonin are active (Palmer & Alfano, 2017). Hence, after sleep loss, especially REM sleep loss, there is not only an exacerbated limbic, emotional and behavioural response in relation to negative emotional stimuli, but even stimuli that are neutral or positive in nature are perceived as more negative. Reduced functional connectivity between the amygdala and the ventromedial prefrontal cortex is believed to cause a hypersensitive limbic response (Tempesta et al., 2018).

There are mixed results regarding REM sleep and emotional memory. Some authors indicate REM sleep enhances emotional memory while preserving emotional reactivity (Baran et al., 2012). REM sleep may also be associated with attenuating emotional processing towards prolonged and intense emotional stimuli (Werner et al., 2015). Palmer and Alfano (2017) note that, according to the "sleep to forget, sleep to remember" model, REM sleep periods strengthen declarative memory (memory of facts and experienced events) components of an emotional experience. This is done by activating the emotion-related brain structures and also attenuating their emotional tone by inhibiting aminergic neurotransmitters, which results in the reactivation and neural integration of emotional events. However, another hypothesis suggests that REM sleep rouses emotional reactivity, by strengthening the emotional aspect of an emotional event (Palmer & Alfano 2017).

In contrast, Morgenthaler and others (2014) found no influence on emotional memory consolidation when REM sleep was reduced. Conversely, Wiesner and others (2015) noted that REM sleep influenced the consolidation of emotional memories but had no effect on one evaluating an emotional reaction to the contents of a remembered stimulus. Therefore, more research into sleep and emotional processing is needed to better understand how REM sleep may influence emotional memory and emotions.

Furthermore, people have been shown to remember pictures more negatively after reduced sleep duration and poor-quality sleep. However, after receiving good sleep people no longer remembered pictures negatively. Hence, this indicates that sleep loss and poor-sleep

quality impacts emotional memory consolidation (Tempesta et al., 2015). Additionally, people that are sleep-deprived to a certain number of hours of sleep for one night show a decreased ability to recall positive, negative and neutral pictures and non-emotional information such as facts compared to both good and poor sleepers (Tempesta et al., 2018; Tempesta et al., 2015).

Moreover, sleep loss may have a greater emotional impact on females more than males (Palmer & Alfano, 2017; Short & Louca 2015; Van Zundert et al., 2015). There is not only observable functional asymmetry of the limbic areas between the sexes, but that females experiencing sleep loss are also more prone to mood disorders, sleep disturbances **(**Tempesta et al., 2018) and insomnia (Zhang & Wing, 2006)**.** However, regardless of sleep deprivation, REM sleep and a daytime nap has shown to decrease this emotional reactivity especially towards fearful expressions such as anger and fear from others; instead, positive expressions are experienced by the individual (Gujar et al., 2011; Tempesta et al., 2018). Furthermore, taking a nap of 90 to 120 minutes increases positive evaluations to stimuli and instead increases memory consolidation of both emotional and neutral material regardless of obtaining REM sleep (Cellini et al., 2016; Tempesta et al., 2018). Hence, napping may be one way to counteract some of the negative emotional effects associated with sleep deprivation.

Adolescent Rumination, Mental Health and Sleep

This section examines the links between rumination, negative attention bias, insomnia and depression. Additionally, it will explore how adolescents are particularly vulnerable to ruminate, which can lead to a cycle of poor sleep and poor mental health.

Li and colleagues (2024) highlight that there are links between rumination, insomnia and depression. Rumination is more common amongst adolescents with insomnia and results in more disturbed sleep when compared to adolescents that sleep well. The relationship between insomnia and depression is believed to be due to spending more time awake in bed, which is free from both visual and auditory distractions, hence more chance for ruminating. This ruminating can, in turn, lead to pre-sleep hyperarousal, which leads to even more difficulties with sleep onset, duration and quality and further increases rumination and sleep issues, leading to depression symptoms. Unfortunately, adolescents are vulnerable to this ruminating cycle, as they have a natural delay in their circadian time keeping system (for

more detail, see the introduction section). Consequently, this greater time staying awake before sleep onset, allows for a greater chance in engaging in rumination and potentially an increased likelihood of low mood.

Adolescents with depression experience greater levels of wakefulness when in bed, take longer to fall asleep, are more awake during the night and report more subjective sleep disturbances (Lovato and Gradisar, 2014; Short et al., 2020). Li and colleagues (2024) also highlighted that females had more insomnia and depression symptoms and engaged more in rumination and unhelpful beliefs about sleep than males. However, rumination, but not unhelpful beliefs about sleep, had a significant relationship between insomnia and depression. Hence, worrying and ruminating can lead to and maintain insomnia and repetitive negative thinking can lead to depressive symptoms. For adolescents, Hiller and colleagues (2014) demonstrated that catastrophizing was linked to greater sleep disturbances, increased sleep latency, depression and indirectly related with anxiety. Two nights of sleep restriction, one of 6.5 hours and another of 2 hours was linked to higher levels of anxiety (Talbot et al., 2010; Palmer & Alfano, 2017) and adolescents rated the likelihood of their catastrophic thoughts coming true as higher (Short et al., 2020: Palmer & Alfano, 2017).

In their meta-analysis, Lovato and Gradisar (2014) mention that adolescents who experience depressive symptoms are 50 percent more likely to develop sleep problems than those who do not report symptoms. Moreover, as noted by Clegg and colleagues (2024) poor sleep leads to negative attention bias which is strongly associated with worse depression symptoms. Furthermore, insomnia can be associated with and be a maintenance factor for depression. Additionally, reduced total sleep time, poor sleep efficiency, increased sleep onset latency, greater wake after sleep onset (Clegg et al., 2024), lighter sleep (more stage 1 and 2), insomnia, hypersomnia, more awakenings, shorter REM sleep latency and more self-reported sleep disturbances (Lovato & Gradisar 2014) are all associated with worse depression symptoms and can put one at risk of developing depression.

As noted by Clegg and colleagues (2024) total sleep time and time spent awake at the start of the night is more closely linked to the development and maintenance of negative attention bias than time spent awake across the night. Sleep onset issues are also linked to repetitive negative thinking, which is related to depression, highlighting the bidirectional nature of sleep, negative thinking and depression. Perfectionistic adolescents have even more

issues with sleep quality, have worse depressed mood and repetitive thinking, insomnia and have three times more issues with sleep onset than non-perfectionistic adolescents (Huang et al., 2020). This has major implications for young people who struggle with perfectionism, particularly given that sleep onset issues are common in adolescence (Li et al., 2024).

What do Adolescents Ruminate and Catastrophize About?

Hiller and colleagues (2014) highlight that adolescents (mean age of 15.1 ± 1.5 years) often catastrophize over factors such as what happened during the day, what will happen in the future and about friendships. They note that seven out of ten adolescents had school concerns, with 50% having thoughts about school performance, 18% about interpersonal aspects of school the rest were concerned about the effects of sleep on their emotions, general sleep health, quality of life and with their relationships such as family members. In contrast, adolescents not experiencing mental health issues and distress worry less about school, around 15%, however 50% worry about the health of their sleep. In another study with young adolescent girls (11-12 years of age), Noone and colleagues (2013) found that sleep quality was associated with catastrophizing. For example, adolescents had concerns about school, mood, with 32% being worried about lack of sleep impacting their friendships and 25% concerned about causing issues with the family and upsetting or worrying their parents. Some adolescents worried that their lack of sleep would make them irritable and so more likely to argue with their families. While some adolescents worried about poor academic school performance, with their parents finding out about their poor performance and this causing the whole family to worry.

Links Between Emotional Well-Being and Sleep

This section provides an overview of literature investigating links between emotional well-being and sleep, including how stress impacts sleep and vice versa, how sleep is linked to social interactions and relationships between sleep and reward-seeking activities. Furthermore, this section explores the link between sleep and mood states such as happiness, anger, anxiety and depression.

Stress, such as stressful life events, have been shown to interfere with sleep architecture, such as decreased delta stage 3 and 4 sleep, reduced REM latency and more REM sleep for adults (Cartwright & Wood, 1991; Williamson et al., 1995). Sleep loss also

can increase stress levels (Tempesta et al., 2018). Although a dated study with adolescents, Williamson and colleagues (1995) found that for the control group that didn't have a mental health diagnosis, that stressful life events were significantly associated with reduced REM latency and increased REM sleep, however this was not the case for adolescents that had been diagnosed with depression. Adolescents that did have depression and had no stressful life events, however, did show a significantly lower REM sleep latency as compared to the control group with no stressful life events. Both groups however did show decreased delta sleep when stressful life events increased. Hence, whether or not adolescents have a mental health diagnosis, stressful life events may impact sleep in the form of decreased delta sleep. This has major implications, as stage three sleep is considered deep sleep which is vital for adequate physical and mental health.

In addition to stress impacting sleep and vice versa, in their review Palmer and Alfano (2017) noted that insufficient sleep can directly affect motivation to seek out and engage in rewarding social activities**.** University students (aged 18-39) with sleep problems often experience social well-being issues, including less frequent and irregular participation in social activities compared to good sleepers (Colleen et al., 2006; Palmer & Alfano, 2017). This has major implications for adolescents' mental health, as it is vital that humans interact with one another for good mental health and emotional well-being. Avoiding social activities can worsen mental health, emotional well-being and general functioning within society. However, for adolescents it is particularly important to socialise and build connections as peer support becomes vital as adolescents develop their own identity (Birrell et al., 2025).

Sleep loss seriously impacts and is linked to mood changes and emotional regulation (Short & Louca 2015; Palmer & Alfano, 2017; Tempesta et al., 2018). Even thinking about whether you have had poor sleep can have a negative impact on your mood (Van Zundert et al., 2015). Pilcher and Huffcutt (1996) found mood to be more affected by sleep deprivation than cognitive or motor performance. Partial sleep deprivation also had more of a profound effect on functioning than long-term or short-term sleep deprivation. Following sleep loss, experiencing more irritability, affective volatility and being less emotionally empathetic than those who have had sleep, are common (Tempesta et al., 2018). Furthermore, Palmer and Alfano (2017) and Guadagni et al. (2014) highlight that it becomes particularly difficult to perceive others' emotions, empathise and relate to other people when one is sleep deprived.

This could be due to the person focusing on irrelevant social cues such as what is happening in the background as opposed to what people are saying and feeling when talking to them. This has potential implications for the quality of adolescents' relationships if they have issues paying attention to the person speaking to them or experience difficulties empathising with the speaker following a period of insufficient sleep.

Furthermore, in both lab- and community-based settings, poor sleep quality or short sleep duration is correlated with an increase in negative emotions, decreases in positive emotions and alterations in the way people understand, express, and modify these emotions (Palmer & Alfano, 2017). While past research only investigated negative mood states associated with sleep loss, recent research indicates that positive mood and emotions are more sensitive to sleep loss than negative moods (Shen et al., 2018). While a single night of sleep loss may not have a major impact on mood, five nights of sleep loss may result in increased tension, anger, fatigue, lower physical vigour and greater likelihood of emotional regulation issues (Baum et al., 2014; Shen et al., 2018). Shorter sleep and sleep disturbances are associated with lower levels of next day happiness, and greater levels of psychological distress such as anxiety and depression after accounting for age, sex and socioeconomic status (Fuligni & Hardway., 2006; Roberts et al., 2001). Within their study with adolescents, Shen and others (2018) found that shorter sleep was associated with lower positive emotions such as happiness, whereas poorer sleep was associated with negative affect. Further, longer sleep was associated with higher positive affect rather than decreased negative affect.

There may be a dose-dependent relationship between sleep loss and mood deficits in adolescents. In that, increasingly greater sleep loss leads to increasingly greater levels of negative mood, such as feeling angry as well as sad and irritated as opposed to just feeling angry (Short et al., 2015; Van Dongen et al., 2003). Palmer and Alfano (2017) note that, 13-to-17-year-olds that were restricted to 6.5 hours of sleep across five nights, as opposed to 10 hours of sleep, reported more negative mood. Furthermore, adolescent sleep deprived samples seem to report greater decreases in positive emotions, as opposed to increased negative emotions. Palmer and Alfano noted in Reddy and others manuscripts that even one night of sleep restriction can result in adolescents being less happy, interested and cheerful, however interestingly there wasn't much difference between feeling gloomy, mad or jittery if they had less sleep.

Within Short and Louca's (2015) three day (two baseline nights with 10-hour sleep opportunities and one night of total sleep deprivation) lab-based study with 12 adolescents, they found all mood states (depression, anger, confusion, anxiety, vigour, and fatigue) significantly worsened following a night without sleep. Again, females had greater depressed mood and anxiety, with males reaching significance for depressed mood at day two. However, both males and females reported being more confused following sleep loss, with the effect again being larger for females. In their systematic review and meta-analysis of 73 studies, including over 360,000 adolescents, Short and colleagues (2020) reported a 55% increase in mood issues with associated sleep loss, with positive mood being affected the most, followed by anger, depression, negative affect and anxiety in all geographical areas. Specifically, they found that shorter sleep durations doubled the likelihood of adolescents having reduced positive affect such as happiness, and increased anger by 83%, depressed mood by 62%, negative affect by 60% and anxiety by 41%.

Similarly, Baum and colleagues (2014) reported adolescents (aged 14-17) having more feelings of tension, anger such as being resentful, annoyed, spiteful, anxiety, being 'on edge,' nervous, greater levels of oppositionality, irritability and restlessness with short sleep (6.5 hours for five nights versus healthy control of 10 hours in bed for five nights). Furthermore, they found that with less sleep, adolescents experienced decreased energy, increased fatigue and confusion, and felt less alert, less efficient, more helpless, forgetful and exhausted. Both parents and adolescents in their study agreed that when adolescents had short sleep, they had issues regulating their emotions, resulting in outbursts and 'over dramatic' responses to small triggers. Short and colleagues (2020) note that, for optimal mood, especially for younger adolescents (13-16 years) and those with underlying mental health concerns, that 9 hours of sleep per-night is essential (Fuligni et al., 2019; Short et al., 2020). However, adolescents worldwide are getting much lower levels of sleep than 9 hours which has many implications for well-being (Bartel et al., 2015) (see section: Why is Sleep Important in Adolescence?).

Moreover, Fuligni and others (2019) found, while too much and too little sleep was associated with higher daily distress, for younger adolescents (13-16 years) and those with higher internalising issues and psychopathy, even more sleep was required for them to have optional next day functioning and mood. Hence, given that mental health issues are common within adolescents (WHO, 2021) and particularly high for adolescents in ANZ

(Sutcliffe et al., 2023) there is an urgent need to support all young people to obtain sufficient sleep for their optional mood. Additionally, adolescents must be informed and have access to evidence-based information about age-specific sleep requirements.

Bi-and Uni-Directional Relationships with Emotional Well-being, Mental Health Disorders and Sleep

This section explores literature on the multi-faceted and multi-directional relationships between emotional well-being, mental health disorders and sleep.

Within adults, Alvaro and others (2017) mention that, although some studies note uni-directional relationships with sleep and mental health, such as anxiety predicting insomnia and insomnia predicting depression, longitudinal studies note bi-directional relationships with sleep, insomnia and depression and with other mental health issues. After controlling for psychological internalising symptoms, some adolescent cross-sectional research has shown no significant relationships between sleep issues, insomnia, panic disorders, social phobias and especially cognitive control beliefs, which are linked with anxiety (Alfano et al., 2009; Alvaro et al., 2017). These findings are limited and have methodological issues. However, in both cross-sectional and longitudinal studies, delayed sleep phase disorder, which is common amongst adolescents, appears to be associated with insomnia, anxiety and depression symptoms (Alvaro et al., 2017). Additionally, longitudinal analyses with 1,420 participants aged 9 to 16 by Shanahan et al. (2014) found that sleep problems predicted increases in the prevalence of later generalized anxiety disorder (GAD) and high GAD and depression symptoms and oppositional defiant disorder (ODD). GAD, depression and ODD also predicted increases in sleep problems over time.

Although the authors don't describe what constituted good sleep quality or sleep disturbances, within adolescents (aged 13–16 years old) Van Zundert and colleagues (2015) noted that while sleep disturbances didn't influence positive and negative affect, sleep quality did. In which, poor sleep quality was associated with greater negative affect and less positive affect for the following day. Additionally, more negative affect and lower levels of positive affect the day before having poor sleep was observed, suggesting that mood may play an important role in how well young people sleep. Greater negative affect and lower levels of positive affect also predicted poorer sleep quality. Interestingly, greater levels of positive

affect were associated with better sleep quality but more frequent night wakings. This could possibly be because there is greater physical daytime arousal caused by positive affect, as people are more likely to exercise when happy, which may result in frequent night waking's but good quality sleep.

Again, non-surprisingly, Van Zundert and others (2015) highlight that girls and people that experience depressive symptoms experienced more issues with their negative affect than boys and people with low depressive symptoms. Furthermore, positive affect and positive affect for the coming day were lower for those who scored higher on depressive symptoms. Fredriksen et al. (2004) and Van Zundert et al. (2015) highlight that girls may experience more negative impacts with their sleep, as girls have more decreases in their sleep quantity over middle school than boys. Girls are also more vulnerable to self-esteem issues (Fredriksen et al., 2004; Van Zundert et al., 2015), show greater levels of negative affect and depressive symptoms than boys during adolescence (Rose & Rudolph,2006; Van Zundert et al., 2015). Additionally, girls use more negative coping styles such as ruminating and worrying which further impacts their sleep and daytime affect (Rose & Rudolph,2006; Van Zundert et al., 2015). Therefore, Van Zundert and colleagues (2015) point to the fact that girls and people experiencing mental health distress and issues are more vulnerable to the bi-directional impacts of poor sleep quality on positive and negative affect.

Roberts and Duong (2013) also noted a bi-directional relationship between chronic insomnia and major depression among 3134 adolescents aged 11 to 17 years. Similarly, Alvaro and others (2017) mention that sleep disturbances can be signs of major depression, GAD and separation anxiety disorder. Within their own study, they found that insomnia symptoms indeed bi-directionally predicted symptoms of depression and vice versa. However, insomnia symptoms uni-directionally predicted symptoms of separation anxiety disorder but separation anxiety symptoms did not predict subsequent insomnia. Symptoms of obsessive-compulsive disorder (OCD) and social phobia uni-directionally predicted symptoms of insomnia but not vice versa. Further, in Bacaro and others (2024) meta-analysis of longitudinal studies, they found that long sleep duration, good sleep quality and low insomnia symptoms were bi-directionally related to lower psychological internalizing and externalising symptoms and led to higher psychological and subjective well-being over time.

Although there is a possible bi-directional relationship between symptoms of insomnia and depression and Vise versa, with improved sleep leading to improved depression and Vise versa. Residual insomnia is a major relapse factor for depression than the association between depression and major depression with poor sleep and insomnia. The underlying mechanisms for the former association in young people are not well understood (Clegg et al., 2024; Roberts & Duong, 2013). Furthermore, Yong and colleagues (2024) found that short sleep of seven hours or less on the weekends, not only correlated as a risk for adolescents to develop depression, but that short sleep throughout the week regardless of weekdays or weekends was a risk factor. Girls, living in the city, being in a higher grade and being an only child were also other factors that were correlated with a higher prevalence of short sleep and depression symptoms. While males had shorter sleep than girls on weekends and had a lower prevalence of depressive symptoms than girls.

Yong and colleagues highlight that, while results are mixed about the sleep, sleep duration with depression and anxiety link within adolescents, it's likely that both too little and too much sleep is associated with an increased likelihood of developing depressive symptoms. Further, the mechanisms underlying anxiety and depression may differ which may explain their mixed results. People with depression also experience more difficulties with emotions, especially with positive affect when they have poor sleep (Palmer & Alfano, 2017). Therefore, this further shows the importance of sleep for mental health, as poor sleep can worsen existing psychological symptoms. Hence, research aimed at better understanding adolescents' experiences, feelings and perceptions of the complex links between sleep, emotional well-being and mental health is warranted.

Mood Disorders, OCD and Sleep Link

This section looks further into other mental health disorders, some including anxiety OCD.

Martinez-Cayuelas and colleagues (2024) note within children and adolescents that sleep fragmentation is associated with self-injury, family issues, restricted and repetitive behaviours, irritability, somatic issues such as body pain, hyperactivity, compulsiveness and risk and sensation seeking behaviour. Whereas short sleep is associated with the need for sameness, repetitive behaviour and social skill difficulties and sleep onset issues are linked

with withdrawal, anxiety and depression. Higher temperatures when trying to sleep are linked to intrusive thoughts, daytime sleeplessness and aggressive behaviour**.** As noted earlier (see section: The Biological Link Between Sleep and Emotional Well-Being) sleep deprivation leads to fear response changes, hence it is believed that sleep deprivation can possibly be associated with playing a role in the maintenance of anxiety disorders such as post-traumatic stress disorder (PTSD) or specific phobias (Tempesta et al., 2018).

Sleep issues, including short sleep duration in children and adolescents, can affect daily functioning (Fulfs et al., 2024) and are correlated with the development of emotional and behavioural issues such as anxiety, depression, conduct problems, inattention, decreased concentration and psychosocial problems (Fulfs et al., 2024; Gregory & O'Connor, 2002; Gregory & Sadeh, 2012). Furthermore, Fulfs and colleagues (2024) noted significant associations between parasomnias and hyperactive/inattentive behaviour as well as significant associations between emotional problems and sleep problems, especially daytime sleepiness, sleep anxiety and parasomnias. For children and adolescents aged 5 to 15 years old, correlations have also been identified between nightmares and experiences of emotional and behavioural problems such as hyperactivity and mood issues. Adolescents that experience disturbing dreams, especially girls, have reported to have higher anxiety scores when compared to adolescents who rarely have disturbing dreams and boys (Gregory & Sadeh, 2012; Nielsen et al., 2000). Importantly, ongoing nightmares during childhood are also believed to be associated with adulthood psychopathology (Fulfs et al., 2024; Hublin et al., 2002).

Gregory and Sadeh (2012) highlight that there are also sleep differences associated with tic disorders and possibly with OCD. People that have OCD have shown to have a shorter total sleeping period along with less stage two sleep. Within adolescence however, disturbed sleep is especially linked to GAD, panic, agoraphobia and social anxiety but not so much with OCD and separation anxiety. Children and adolescents with major depressive disorder (MDD) have also been found to have lower circadian amplitudes, lower light exposure and daytime activity, all of which negatively impact sleep and wake times. This finding has major implications as it indicates that changes in children and adolescents' circadian rhythm could change their sleep architecture and overall psychopathology.

What do Adolescents Think About the Sleep, Mental Health and Emotional Well-being Link?

Much of the qualitative research that has been conducted with adolescents has examined their views on mental health or their sleep behaviours. However, very few studies have conjointly looked at both factors and what adolescents think about the possible connection and influence that sleep, emotional well-being and mental health have on each other. Although limited, past research has indicated that adolescents' attitudes about their sleep and their sleep hygiene behaviours are influenced by their parents' sleep attitudes and sleep hygiene behaviours (Alvarado et al., 2024). As identified by Godsell and White's (2019) qualitative study, adolescents aged between 13–14 years old viewed parents as key sources of information and rule setters for sleep. Although the authors noted that their participants reported insufficient sleep, they understood sleep requirements for their age and appropriate sleep hygiene strategies, for example, engaging in sports or putting on the "do not disturb" function on their phones when trying to sleep. Furthermore, adolescents with a mean age of 16.9 ± 0.9, in the qualitative study conducted by Maskevich and others (2024) highlighted that, to have a good sleep, they would have good sleep hygiene, understand sleep and body cues, try relaxing by engaging in enjoyable activities, manage thoughts and emotions and create a good sleeping environment. Adolescents would avoid sleep interfering activities such as electronic devices, pre-bed thoughts and emotions, homework, extracurricular activities, socialising and activities with family members.

Similarly, within Quante and others' (2019) qualitative study**,** adolescents aged 14–18 years old demonstrated an awareness of the sleep, physical, psychological, psychosocial and emotional well-being relationships. Whereby, sleep was seen as important for being energized, restored, relaxed and to reduce stress. Noland and others (2009) also observed that nearly 60% of adolescents reported increased stress and had difficulties with getting along with others when they didn't get enough sleep. Hence, although adolescents seem to report, experience and may be aware of the effects of poor or good sleep on their emotional well-being and mental health, there is limited past research on how this may be expressed by adolescents. For example, adolescents may be more argumentative, emotional, have less patience and may not want to interact with others if they experience poor sleep. Additionally, adolescents may understand the sleep, emotional well-being and mental health

links, and therefore take preventive actions to support good emotional well-being and mental health for good sleep and vice versa, which the current study aims to explore.

Summary

In summary, there is a biological link between emotional well-being and sleep. In which, sleep deprived individuals have a heightened emotional response to negative stimuli which is associated with the limbic system and REM sleep that may play an important role in the processing of emotional memories. Furthermore, stress and sleep are bi-directionally linked and lack of sleep may negatively affect one's motivation to seek out rewarding social activities as well as mood. Adolescents may be particularly vulnerable to ruminating and therefore to develop anxiety and mood disorders with relationships between sleep and mental health being multi-faceted and complex. However, what is limited within past research is whether adolescents observe and understand a connection between their mental health, emotional well-being and sleep, which this study aims to fill.

Research Aims

The primary aims of the current study are to:

1. Learn more about adolescents' thoughts, experiences and feelings about their sleep
2. Gain a better understanding on what adolescents think about the possible connection between sleep and their emotional well-being and mental health
3. Determine what adolescents already do, or would like to do, to get the best possible sleep.
4. Better understand what adolescents think others (such as family members, friends, service providers and schools) can do to support their sleep.

Chapter Three: Methods

This chapter provides details about the philosophical and theoretical underpinnings of this research. Furthermore, this section outlines the consultation process, the study's design, ethics, data collection procedures and analysis method used.

Researcher Positionality

As the primary researcher for the teen sleep, emotional well-being and mental health study, I have approached this work with my background, knowledge and experiences. My previous experiences, social positioning, worldviews and knowledge shape who I am now, will be in the future and how I understood, engaged in and interpreted the interviews, analysis of the data, and the writing of the thesis. I have been brought up in the same geographical area that the participating school is in. I am of Asian descent, in my 20s and have a Bachelor's degree in Animal Science and Psychology. Currently, I'm completing a Master's in Psychology. In the future, after more study, I aim to work with families, children and adolescents as a Clinical Psychologist, along with lecturing and researching. This is one of my motivations for undertaking this thesis. In conducting this research, I have tried to put aside my preconceptions. After each interview, I wrote reflective notes on what I had learned, what stood out for me, what I could have said or done differently. I was aware that my cultural background was different from many of the participants, therefore we took steps to ensure that the research was inclusive and welcoming for all.

Qualitative Research Methods Rationale

It was decided that experiential qualitative methods, specifically using semi-structured individual interviews to collect data and reflexive thematic analysis (Braun & Clarke, 2022) to analyse data, was the most appropriate method to explore adolescents' views, feelings and experiences of their sleep, mental health and emotional well-being. The experiential orientation places importance on participants' experiences, in which language is seen as a tool reflecting our experiences of reality (Braun & Clarke, 2022; Byrne, 2022; Terry et al., 2017). Focus groups were considered as an alternative data collection tool, however one-on-one interviews provided privacy so that participants could express themselves and share potentially sensitive information in confidence. The latter allowed adolescents to talk about

their sleep, mental health and emotional well-being, which is lacking in academia, thereby empowering adolescents to voice their ideas, feelings and experiences as opposed to alternative perspectives and ideas.

Theoretical Lenses

This research was informed by the 'perfect storm model' of adolescent sleep, in which adolescents naturally have a later desire to go to sleep. However, this natural delayed sleep onset within adolescents becomes even more later due to educational and extracurricular commitments, pre-bed technology use or caffeine consumption (Carskadon, 2011; Crowley et al., 2018; Uccella et al., 2023) (for further details see section: Psychosocial Factors Affecting Adolescent Sleep).

The current study was experiential qualitative research. As noted by Braun and Clarke, (2022), Byrne, (2022) and Terry and others (2017) an experiential orientation places importance on what participants think, feel, their worldview and experience. The experiential orientation to understanding data focuses on how a given phenomenon may be experienced by the participant and the meaning assigned to the phenomenon by the participant, along with the meaningfulness of the phenomenon to them. The current research was experiential in nature as we were interested in adolescents' ideas, thoughts, feelings, views and experiences about their sleep, mental health and emotional well-being.

This approach was based on the belief that language is a tool that communicates a reflection of our articulated meanings and experiences of reality (Braun & Clarke, 2022; Byrne, 2022; Terry et al., 2017). What participants spoke of was assumed as reflecting their lived reality. However, the study had a critical aspect to it, as participants may not be consciously aware or state the connection between their sleep, mental health and emotional well-being, but when talking about it, they could unconsciously have a connection which the researcher could notice. Hence, the researcher has to make sense of the data themselves and unpack its patterns and meanings, as opposed to using what participants consciously said and understood about the connection between their sleep, mental health and emotional well-being.

Study Design/ Semi-Structured Interviews

As seen in the interview guide (see **Appendix A**), the researcher firstly introduced themselves, asked participants if they had any questions about the study processes, checked if their consent form was complete and then asked participants general questions about their sleep. This was done to establish rapport before asking questions about sleep and emotional well-being and sleep and mental health. The last questions asked were about views on supporting adolescents with their sleep, mental health and emotional well-being, such as asking adolescents ”what would you like to do to support your sleep, emotional well-being and mental health?” and ”what do you think others around you (like family, friends, school, and service providers) can do to support you and other teens with their sleep, emotional well-being and mental health?”

Care was taken with the language used during the interviews in order to be respectful, tailored to adolescents and to encourage participants to share their thoughts, feelings and experiences. The researcher tried to make the participants comfortable by sharing their experiences and thoughts and tried to relate to the participants after they shared anything and made the interview an interactive and casual process. Both before and after an interview, the researcher made sure the participant was feeling comfortable by asking them “how they’re day has been”, “if they feel nervous or alright,” or “if they have any questions “and offered them chocolates. If participants experienced difficulties responding to any question, the researcher assisted them, by giving them some personal examples which also contributed to participants feeling more comfortable with the researcher. Once interviews were completed, the participant was thanked, offered more chocolates and asked how they wanted their $35 Prezzy Card. In which, the Prezzy Card could be either given to the school office for collecting later or given in-person by the researcher during morning break or lunchtime once the Prezzy Cards were received by the researcher.

Furthermore, the researcher began by asking a planned question and used further prompts if needed to elicit more detailed or additional information (for more detail on the specific prompts used, see **Appendix A**). Areas of interest in relation to the study’s questions were followed up with additional questions in response to the participants' answer to the planned question or prompts. However, when the researcher noticed that answers to the questions were regressing from the main topic, the researcher gently guided participants back

to the main focus, keeping in mind to also let the participant express their feelings and build rapport. Any new thoughts or ideas that were not already expressed in other interviews by participants were followed up by the researcher, with the aim of gaining new and novel insights in relation to the topic.

Additionally, it was built into the design of the study to take reflexive notes throughout the research process. Being self-reflective of our underlying knowledge, bias, ideologies and these being influenced based on our cultural, political and social space was constantly in the mind of the researcher when listening, doing, interpreting and writing the results. Being self-reflective helped the researcher to truly represent participants' ideas, thoughts, feelings and experiences, while recognising that their interpretation of the views shared was influenced by their own world views and position within the research. Furthermore, the researcher reflected after each interview and took field notes on what things went well, body language, what stood out and what things to improve on and to ask in the next interview. **Table 1** outlines the study's processes from approaching the school, identifying potential participants, through to analysing the data and publishing the results.

Table 1

Summary of the study process

1) Establishing connections	• The researcher approached the school in person and then contacted the school's principal via email. • The school principal connected the researcher with the guidance counsellor. • The guidance counsellor and the researcher worked together throughout the research to support participants and the study.

2) Recruitment	● Guidance counsellor arranged an assembly slot for the researcher to talk to potentially interested adolescents about the study. ● Interested students approached the researcher after the assembly, where contact details were exchanged and study packs handed out or emailed to their email address. ● Any other interested students that were part of the school could email the researcher for a study pack. ● Either 16 to 18 years of age, in year 12 or 13 and that were proficient in spoken English. ● Potential participants that had not contacted the researcher were followed up via email two days after sending their study pack. ● If there was still no response within 2 days, the researcher phoned the participant if a number was available.

3) Interviews	● Timing and days for both face-to-face and online interviews were according to the participant's preference, but were not done during class time, instead during lunchtime, or before or after school or on weekends. ● For safety reasons, face-to-face interviews were done on school grounds, either in the nurse's or guidance counsellor's office where someone from the school staff knew the location, day and time of when the interviews were being undertaken. ● After an initial introduction, the researcher made sure the participant had completed the consent form, read and understood the information sheet and had completed the demographic questionnaire. If the consent form and demographic questionnaire were not completed, the researcher asked the participant to complete them before they undertook the interview. ● Interviews were sound recorded and transcribed on the researcher's computer via Microsoft Teams. ● After the interview was finished, the researcher thanked the participant, offered chocolates. After all interviews were complete, participants were given a $35 Prezzy Card. ● Once an interview was completed, the researcher let this be known to the designated school staff. ● After each interview, the researcher noted personal reflections via field notes, including what stood out, what to do better or ask next time, personal information versus general, participants body language and reactions etc.

4) Transcription	● Interviews were transcribed via Microsoft Teams. ● The researcher double checked transcripts for accuracy against the recordings, made any necessary amendments and de-identified transcripts by removing any personal information. ● A copy of the transcript was emailed to any participants that requested one.
5) Analysis	● Data was analysed using reflexive thematic analysis (Braun & Clarke 2022; Braun & Clarke 2013). ● The process included familiarisation, coding (mainly semantic and minimally latent), generating themes, reviewing themes, defining themes, then reporting findings (illustratively). ● Draft codes, themes and results were refined throughout the research process via discussions with the research team.
6) Publishing	● Study findings will be published as part of the researchers Master thesis requirements on the Massey University thesis website. ● Participants and the school will be able to access the researcher's completed thesis via Massey University thesis website. ● A copy of the completed thesis with its results offered to be sent to anyone that requests it. ● A summary of the results offered to the school and participants (see **Appendix B** for draft). ● Study findings will be published as a future peer-reviewed journal article and conference abstract.

The Consultation Process

Before the researcher started this project, they had regular meetings with their supervisors Professor Leigh Signal and Dr Dee Muller. During the research process, the researcher was in regular contact with their supervisors. Dr John Waldon, a cultural advisory research counsellor was consulted regarding cultural ethical concerns. Mikaela Carter, an adolescent clinical psychologist was consulted regarding psychological safety concerns. The researcher also connected with the local school's principal, who forwarded the researcher's email to the school's guidance counsellor to see if they could support the study. In which, the school's guidance counsellor provided the school's well-being and health and safety policies to the researcher and offered psychological support for the participants if needed.

Recruitment

The researcher spoke to school office staff and requested to talk to the principal. Once the principal considered the research, they directed the researcher to the school's guidance counsellor to see if they could support the research. The guidance counsellor agreed to support the research by being a support and contact person for the participants if needed, along with the school nurse. The school's guidance counsellor arranged for the researcher to attend a school assembly appointment on the 7th of August 2024 so that the researcher could speak to senior students about their research, to identify interested students and to obtain their contact details. Any interested students could also email Kavita Kashyap (researcher) and all students were given a study pack.

In total there were 24 students who expressed an interest in the study and shared their contact details with the researcher. Ethical approval was given for conducting 12 interviews. The decision to recruit up to 12 participants was informed by the Master's time limits, practicality and to ensure data saturation. As Braun and Clarke (2013) note, a sample size of approximately six to 10 for a small study and 10 to 20 for a medium sized study when one-on-one interviews are used for data collection is recommended. In total, fifteen students agreed to an interview and 12 interviews occurred. Limited new ideas were being presented during the last few interviews, hence the researcher stopped conducting further interviews as this indicated data saturation (Braun & Clarke, 2013; Braun & Clarke, 2022). The study pack included an information sheet for both the participants and their guardians that described the study aims, benefits, risks and participants rights (see **Appendix C** and **D** for further details).

Furthermore, the study pack also included a welcome letter, consent form and demographic questionnaire (see **Appendix E, F, G)**. The demographic question included general questions on one's gender, age and ethnicity so that the researcher could describe the participants (see **Appendix G** for further details).

Interviews were offered both online and face-to-face so that participants could choose what they felt comfortable with, however all interviews were face-to-face. Interviews were completed in a private room (nurses or guidance counsellors office) at the local school, where someone always knew the whereabouts of the researcher and participants. This was for general safety reasons (for more information about the studies general safety protocol, see **Appendix H**). Microsoft Teams was used for recording interviews and for transcription. Interviews ranged from 9-12 minutes, however, were scheduled for 30-40 minutes, were semi-structured and consisted of open-ended questions. Semi-structured interviews were used as they provided the benefit of building rapport, going into novel topics and covering questions related to the study as opposed to just research questions as per structured interviews, which can comprise rapport (Mueller and Segal., 2015). Rapport building in the form of being relatable, non-judgemental, genuine care, concern and interest in one is vital, especially within adolescents for them to share information about potentially sensitive topics about their emotional well-being and mental health (Srinath et al., 2019). Interviews were conducted on a day and time that suited participants, but not during class time and were offered to occur either before or after school, lunchtime or weekends. This was done to avoid any study loss for participants. All interviews occurred in the morning break or lunchtime.

The researcher took notes after each interview on what stood out for the interviewer, personal information versus general or group-based information, body language, tone and how the interview felt. If similar things were raised within interviews, this assisted the researcher in determining that sufficient participants had been recruited.

Participant criteria included being 16 to 18 years old, either in year 12 or 13 from the chosen local school and being proficient in spoken English language. Additionally, adolescents over 16 years of age were chosen as they could legally consent to participate. Another reason why older adolescents were chosen was because they have more marked changes in sleep than younger adolescents (see section: Adolescent Sleep). The demographic questionnaire asked a participant’s age, ethnicity and gender (see **Appendix G** more details).

The ethnicity question was formatted in a way to match the Stats NZ, NZ Census (Stats NZ, 2022; Ministry of Health, 2017) and wording the gender question was influenced by the Youth19 study (Fleming & Clark, 2019).

Ethics

Both sections of the ethics application (initial assessment and full application) and the study's documents, were peer reviewed throughout the research process. Potential ethical issues that could occur were identified and shared with supervisors. The researcher and supervisors discussed how to mitigate the identified ethical issues. A full human ethics application for Ohu Matatika 1 (Massey University) was submitted on the 25th of March 2024 HE019 OM1 24/17. After several revisions were made, informed by feedback from the ethics committee, final ethical approval was granted on 30th July 2024 (see **Appendix I**).

Data was kept confidential, whereby all interview transcripts were de-identified and hard copy data and consent forms were stored in password protected filing cabinets at the Sleep/Wake Research Centre at Massey University Wellington. These will be kept for up to five years and then be destroyed. Language used in the information sheets, for both participants and guardians, were written in an adolescent and layperson friendly manner. As part of the research material development process, two non-participating adolescents were invited to review the study flyer and information sheets. They provided feedback that the information sheets were easy to understand, that they liked the study flyer's background and, based on their suggestions, we made the study flyer simpler with fewer words (see **Appendix J**). The participating adolescents were required to read the information sheet and read and sign the consent form to ensure informed consent was provided. Consent forms were either scanned and emailed back to the researcher or handed as a hard copy when face-to-face interviews occurred. Within the consent form, the participants indicated whether they wanted a copy of the results and/or of their interview transcript. If participants wanted to provide feedback or change anything on their transcript, a transcript form **(see Appendix K** for further details) was emailed to the participant by the researcher.

Before commencing each interview, participants were reminded that there are no right or wrong answers when responding to the questions, that their opinions are valid and valuable and that they can ask questions at any-time. Furthermore, participants were reminded that the

interview will be sound recorded, that they can withdraw from the study at any-time, stop the interview at any-time and that participation is completely voluntary. Before conducting the interview, participants were told that if the researcher was uncertain about their safety, they would seek guidance from another research team member and the school's guidance counsellor as per the research safety protocol (see **Appendix H).** In the latter case, and as suggested by the ethics committee, the researcher did not guarantee confidentiality if during the interview it was indicated that one's safety was at risk and the researcher recommended to the participant to see the school's guidance counsellor or visit their **s**chool's nurse**.** A list of supportive resources was also given to participants in the information sheets along with websites to learn more about sleep, emotional well-being and mental health.

The study involved a minor inconvenience for participants which was as a result of completing the interview, reading the study pack and completing the demographic questionnaire. However, this was minimised by making the demographic questionnaire very short and doing the interviews in a time that was convenient to participants. As raised by the ethics committee, the main ethical issues in this research were the power differential between the researcher and the participants. The second ethical issue was the potential safety risks for both participants and the researcher if the participants disclosed thoughts of self-harm or suicide and the need to be well-supported. The latter was very unlikely as there were no direct questions asked during the interview on self-harm or suicidality. However, given there's a recognised relationship between sleep and mental health, the research team took precautionary safety actions.

Firstly, the power differential ethical issue was resolved by the researcher interviewing students from the school in their local area, but not the school that they had attended which may have posed more of a power differential as the researcher would be considered the participants' senior. Furthermore, the researcher was relatively young and a recent school leaver, therefore this lowered the age gap and power differential between participants and the researcher. Additionally, the interview was semi-structured, and participants were encouraged to share whatever they felt comfortable with. The semi-structured nature of the interviews enabled exploration of novel topics in relation to the study's aims.

Secondly, well-being, health and safety ethical issues were influenced by consultation and recommendations from Dr Waldon, the participating school, ethics committee and Ms Carter. As suggested by the ethics committee and by Dr Waldon, the research team made sure that the study was in-line with the participating school's student well-being, health and safety policies. The school's guidance counsellor offered to support participants if any psychological concerns were raised during the interviews. In times of immediate need, such as participants disclosing self-harm or suicidality during the interviews, it was agreed that the researcher would make sure that this was known to the school's guidance counsellor so that they could look after the participants. Additionally, the research team consulted with Ms Carter, an adolescent clinical psychologist for advice and to provide support to the researcher if there were safety concerns. Although this research didn't focus on any particular ethnic group, based on Dr Waldon's suggestions, the research team made sure that this research was inclusive for Māori; by making sure the researcher respected all participants, that all voices were welcomed and that participants could respond in a way that acknowledged their cultural background and context.

Data Analysis

In order to describe the study sample, descriptive statistics were calculated using data collected from the demographic questionnaire (see **Appendix G**), including mean participant age and frequencies for the other demographic variables. Interview data were analysed using Braun and Clarke's (2022) method of reflexive thematic analysis. Whereby, the researcher was aware and reflective of their worldviews, social positioning and experiences throughout the research process. The analysis involved six iterative phases: (1) familiarisation with the dataset, (2) coding, (3) generating initial themes, (4) developing and reviewing themes, (5) refining, defining and naming themes and (6) writing up. Steps taken during the data analysis are pointed below.

As noted by Braun and Clarke (2022), the researcher firstly familiarised themselves with the data, which involved reading, re-reading and listening to the interview recordings multiple times. While listening to the interview recordings, the researcher made amendments to the interview transcript (such as wording), noted breaks using an ellipsis, switches, by point out whether the participant or researcher was speaking and tones, such as explanation marks for excitement, in the data for both the interviewer and participants and made field

notes on general thoughts and feelings. Furthermore, the researcher noticed and noted patterns, things that stood out and started to ask self-reflective questions about the data (Braun & Clarke 2022; Terry et al., 2017) in relation to the study's aims.

After familiarisation with the data, initial codes were assigned using the Microsoft Word comment function, to highlight small sections of data that were interesting and that represented an idea in relation to the study's aims. Predominantly semantic codes were generated, with a few latent codes. As noted by Braun and Clarke (2022), semantic codes consisted of descriptive information of what was said by the participants. In contrast, latent codes tried to identify hidden meanings, underlying assumptions, ideas, concepts, or ideologies that might have shaped or informed the descriptive semantic information or code from the participant. Codes were brief but summarised an idea from a data segment that was specific enough to stand alone. Codes were evaluated on how similar and different they were. There were many revisions of the initial codes, which ones to include, amend, combine and discard until final codes were developed that represented an idea from the data accurately in relation to the study's aims. Initial codes were organised into Excel at the top of a column, with quotes from the interview transcript that supported that idea or concept behind that specific code going down the column. Codes with supporting quotes were then grouped into themes or sub-themes located at the top left-hand side of a column.

After generating initial codes, the researcher then generated initial themes. As Braun and Clarke (2022) describe, clusters of codes were identified and compiled together that shared a broader idea, concept or meaning. If the overarching ideas in all the code clusters were similar and elaborated on each other to contain a central organising concept, this was labelled as a theme. If, within a theme, there were codes that were displaying something different from the other codes, but there were enough codes within the whole data set to support this as a different but similar concept alone, then this became a sub-theme within a theme (Braun & Clarke, 2022; Byrne, 2022; Terry et al., 2017). Braun and Clarke (2022) note that the development of sub-themes depends on the scope of the themes and how different and similar they were from the theme. Themes shouldn't be too broad, as this can lead to less meaningful un-packing of the data. In contrast, sub-themes and themes shouldn't be too narrow, as this can indicate that data is lacking for a given concept. Hence, to keep themes manageable and to allow for deeper interpretation in what participants said, sub-themes were developed.

Once initial themes were generated, the researcher reviewed the themes and made thematic mind maps. As Braun and Clarke (2022), Byrne (2022) and Terry and colleagues (2017) note, codes within each theme were revised, by either adding or removing them from a given central concept (theme) and to make sure they really did inform the given theme. Themes were also revised to see if they informed patterns within the whole dataset and which ones to keep or to make into sub-themes. Additionally, the researcher judged the quality of the themes and whether they truly represented the data and were useful in answering the research questions. Additionally, questions were asked about what the theme included, excluded, whether the theme had enough supportive data codes and whether it was coherent. In that, does each theme capture a shared pattern of meaning, and overall, did themes portray the most important patterns of information across the dataset that truly reflected the study's aims (Braun & Clarke, 2022).

When defining and naming the themes, the researcher described what the themes consisted of, meant and overall showed. Additionally, theme names tried to reflect the theme's meaning, however names were short, accurate, creative and catchy for the reader (Braun & Clarke, 2022). As noted by Braun and Clarke (2022), Byrne (2022), and Terry and colleagues (2017), when writing up the results, the researcher presented illustrative quotes to support the themes. This was done because it was essential to show the diversity, cohesion and richness of a given theme to the reader. Additionally, to help the reader, and to make a coherent discussion, themes were reported in a logical order. The researcher either reported on whether the theme contained descriptive content or if a theme had a deeper meaning behind it. Themes were presented in a way that was logical such as building and supporting on former themes to create a deeper understanding of the story being told within the data, while making sure themes also showed their own uniqueness and stood alone.

As Byrne (2022) and Terry and others (2017) note, when choosing a reporting writing style, the researcher decided to use illustrative methods (writing participants quotes without explaining or supporting them with past research) within the results section as this allowed for showing importance to participants' voices only. A more analytical approach was taken in the discussion section in order to support participants' voices by past research, what it meant for future policy, interventions and how it expands or links in with past research. Research analysis and coding was mainly inductive data driven as opposed to deductive theory driven (Braun & Clarke, 2022; Byrne, 2022; Terry et al., 2017). However, as noted by Braun and

Clarke (2022) and Byrne (2022), no research can be solely inductive, as the researcher will be identifying information in the data that is in relation to the study's questions which is also influenced by the researcher's positionality.

Summary

In summary, using an experiential qualitative study design and reflexive thematic analysis informed by Braun and Clarke (2022) to analyse data, were viewed as the best approaches to explore the topic of adolescent sleep, mental health and emotional well-being. It was assumed that language portrayed adolescents lived experiences. Consultation occurred throughout the study process, power dynamics were minimised, participant well-being and safety was prioritised and the valuable contribution of information and time provided by adolescents was valued and acknowledged. The next chapter will examine the current study's results.

Chapter Four: Results

This chapter includes the participants' demographic details and information about the themes that were generated from this study. Each theme and sub-theme are explained with illustrative quotes to support the definition and scope of the identified themes.

Participant Demographics

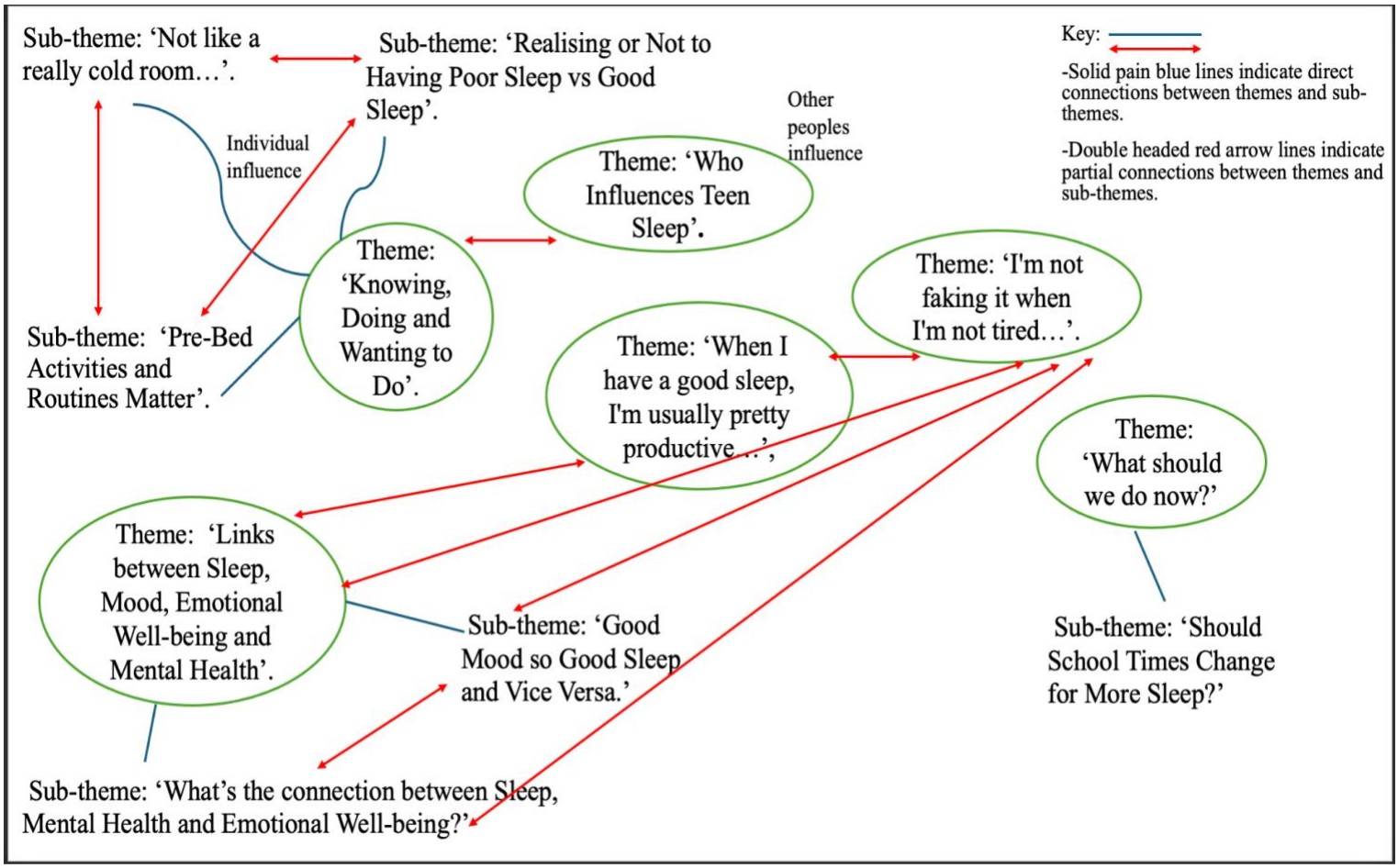
In total there were 12 adolescents from year 12 or 13 that were interviewed. The average age of the participants was M=16.67 years (n = 8 17-year-olds, n = 4 16-year- olds), 4 young people identified as a boy or man, 7 as a girl or woman and 1 identified as non-binary. In terms of ethnic identification, 8 only identified as New Zealand European while other participants identified as Māori or another ethnicity. Ethnicity and student number were used and grouped this way to avoid participant identification due to having a small sample.

Themes

Overall, there were six themes and four sub-themes. The first theme was 'Knowing, Doing and Wanting to Do', which had three sub-themes of 'Sleep Awareness', 'Pre-Bed Activities and Routines Matter' and 'Not like a really Cold Room…'. The next four themes were 'Who Influences Teen Sleep', 'When I have a Good Sleep, I'm usually pretty Productive…', 'I'm Not Faking it when I'm Not Tired…' and 'What's the Connection Between Sleep, Mental Health, Mood and Emotional Well-Being?'. The final theme, 'What Should We Do Now?' had a sub-theme of 'Should School Times Change for More Sleep?'. **Figure 3** shows a mind map on how themes and sub-themes connect with each other and how they were organised.

Figure 3

Mind Map Showing Themes and Sub-Themes and their Connections With one Another



Theme: Knowing, Doing and Wanting to Do

This theme centred around adolescents knowing and understanding what helps their sleep, the actions they took to facilitate their sleep and the things they were not currently doing but wanted to do in the future. Some activities were viewed and used in multiple ways. For example, some participants limited technology use as a sleep supporting strategy. Others used technology to support their sleep such as reducing their stress or distracting themselves from thinking about school commitments. There were a broad range of factors raised by young people in relation to their knowledge, actions and intentions for supporting their sleep, including limiting caffeine consumption, exhausting oneself, taking sleeping supplements and medicines or engaging in helpful pre-bed activities. Some students knew what negatively impacted their sleep such as physically being sick or the stress of school. While others

wanted to be able to listen to their body and know the importance of good sleep. In that, adolescents wanted to be able to recognise that, when they had poor sleep, that meant that they would feel more tired or be in a low mood the next day.

In terms of technology, a few participants found music helped to “calm” the mind and keep them asleep throughout the night, "music...I find it just helps calm my mind a lot… Actually makes me … tired and it helps me stay asleep throughout the night instead of walking up" (Student Nine). For one adolescent, in addition to music helping to facilitate a good night's sleep, drawing also helped to “wear out” the mind "oh. Specifically for me it's like drawing. 'Cause then like sometimes can wear out your mind and stuff, so I usually. Sometimes I would draw before I go to sleep with music” (Student Three).

For other participants, having sound through a video helped with their sleep or watching a video distracted them from thinking about school “but I like to have some sort of sound when I sleep, so that's why I usually put on a YouTube video” (Student Two). "Or school work up until the point where I'm just about to go to bed I’ll maybe watch a video or something on my phone. ...So just to distract myself from like the...stress of school” (Student 12).

Conversely, there were times where technology impacted the participants' sleep but adolescents also identified this as something they could limit to support better sleep "or like, if I maybe haven't spent a lot of time on my phone (during the day), I'd sleep later because I'll be up longer on my phone" (Student 11). "Yeah, umm, probably not watch movies beforehand and like…Don't pick up my computer or phone again" (Student Eight). "And maybe turn tech off like half an hour before I go to sleep" (Student 12).
One young person noted that not going on the phone along with being productive would lead them to being tired which would help to facilitate their sleep, "probably not going on my phone. Being productive throughout the day, so I'm tired" (Student 10).

Some participants knew that technology before sleeping is “probably” “not very good” for their sleep and were already limiting technology use especially on weekdays, while increasing its use on weekends. On weekends, along with phone usage adolescents engaged in reading which helped to support a good sleep:

> And then. Of course, being a teenager, I go on my phone for a bit and like reply to any messages and things. Umm for like probably 20 minutes and then go to sleep, oh especially on the weekends and things where I don't have to wake up. I like to read if I can. So just like, read my book for like 30 minutes or an hour or something. But during the week especially, I often don't have time for that. So it's just phone and then bed…Yeah. I do find reading is like quite relaxing . It gets me into it. Oh, …I don't know. Yeah, I would say, reading and being tired and then not being thirsty…But going on my phone is probably also not very good for me. Umm right before I go to sleep. (Student Seven)

> Yeah. I don't really go on my phone unless it's the weekend. Sometimes I do, but usually I'm pretty good at reading. I like reading… If I don't read before I go to bed, I have horrible sleep. I'm always thinking like, Oh my God, the next chapter. I haven't read it. What am I doing?. (Student Four)

To support sleep, there were a few participants that were already limiting caffeine consumption by having no caffeine past midday and avoiding tea, coffee and chocolates. For one adolescent, sugar consumption resulted in difficult sleep:

> Ummmm, too much caffeine during the day, definitely or like sugar, chocolate, kind of stuff differently…And. I barely drink caffeine. And if so, I have it after water and quite early in the morning, you know, like…Past this time, no. Coffee is entering my system, you know? (Student Four)

Another young person stressed that if they had poor sleep they would need an extra coffee in the morning. For this participant, coffee didn't affect them so much but they did change to tea instead of coffee once it was "past midday":

> If I've had bad sleep, I'll usually need an extra cup of coffee to get me through the day. But otherwise. Nah. No, obvious signs. Usually I'd have one around 7 or 7:15 (AM) and then another one about 10 elevenish…Once it's past midday, I will drink tea. (Student Six)

Whereas another adolescent acknowledged that they consumed caffeine just before sleep and wanted to and understood that if they limited caffeine consumption that they would be able to sleep slightly better and easier:

> Ahh I should probably um. Caffeine's probably a big I should probably drink at least (less) caffeine in the night."... "But um, Coke. That's one that I drink quite a lot of. So maybe if I have less caffeine at night, sleep would be slightly better. Slightly easier to get to sleep. (Student 12)

Some participants noticed that exhausting themselves during the day allowed them to have good sleep. Adolescents took actions to support their sleep, such as exercising while others noticed having a long day wore them out which helped them to have better sleep. "Usually exhausting myself works...Whatever way I see fit that way'' Student One. For example, "umm. Days in which I wake up a bit too early and then wear myself out throughout the day"(Student Three). "Like try and get it out some way like by exercising or going do something I love and that way it works but only for like that short amount" (Student Four). Furthermore, one young person viewed physical activity as being an important way of minimising stress as part of their sleep supporting routines, including going to the gym and riding their horses. "I have my horses and I've got five of them on the go now and then I go to the gym…but I do all these things to make me try and stop thinking and stop stressing" (Student Four).

Some participants recognised that what they were doing was negatively impacting their sleep, hence, they wanted to sort this out by understanding their behaviours, bodily experiences, actions and thoughts. For example, one young person recognised that they got distracted before going to sleep, which resulted in going to sleep much later than intended and feeling tired the next day. Hence, "probably listen to my body a lot more because I'll get, like, distracted by something and then get to sleep a lot later than I originally wanted to, which will then mean I'll be more tired in the morning" (Student Two).

One adolescent wanted to either sleep more or be able to deal with the side effects of poor sleep, but acknowledged that it was difficult to manage getting enough sleep with other commitments:

> I would like to sleep more, which is sometimes hard because it's finding time in the day to sleep…Being able to recognise that when I don't sleep. I enjoy things less that I'm more grumpy with people or and things, so it's either being able to deal with that when I'm tired, or being able to sleep more. (Student Seven)

For another participant, they had an inconsistent sleep schedule due to work and wanted to develop a better sleeping routine by having set sleeping times:

> Umm it's all over the place…It changes throughout the whole week…Probably actually try and find out a good sleep schedule...Have set sleeping times so that it's. Better for my mental health and so I'm not being a bit crazy on certain days where I've had less sleep. (Student Nine)

A number of young people took sleep medicines and sleep supporting herbal supplements when they experienced sleep difficulties, with varying degrees of efficacy. For example "ahh…I occasion. Like if I'm really struggling to go to sleep I take a magnesium tablet occasionally" (Student 12).

> I usually have, like chamomile tea or, like a herbal tea before I go to bed. And I read my book for a good half an hour, an hour…Like I've taken pills and that hasn't really worked. I took them for about a year and it didn't really do much. And then I've tried the herbal side of everything and that didn't do anything. (Student Four)

A few students saw a physical health and sleep connection. For example, sickness negatively impacted their sleep by disrupting sleep continuity, in which "um I very rarely wake up when um I'm feeling alright. So, like, not sick, don't have a cold or anything. I sleep through the whole night" (Student Five).

For some students the stress of school, work and exams negatively impacted their sleep as it was always on their mind and "sometimes if I'm stressing over school or work… And then it's just on my mind a lot" (Student Nine). "Usually just thinking about things, worrying about exams and all that stuff" (Student Six).

One student stressed that they would "hyper focus" on finishing assignments or a task that stressed them out, which meant they focused "less on getting the right amount of sleep", resulting in short sleep:

> Yes, I think if I had. Ahh worse mental health, well occasionally when I've been more stressed or not as mentally healthy. I tend to not sleep less, but focus less on getting the right amount of sleep. Like if I'm...Really stressed about something. Oh, I'll hyper focus on that and I'll like, using history as an example. Do that too. Like 12:00 o'clock at night and then have to wake at like 7 or 6. (Student 12)

Sub-Theme: Sleep Awareness?

This sub-themes central idea is that some participants had awareness of their sleep and whether it was poor, for example short sleep, or good sleep, such as sleeping through the night or not remembering nightmares. However, adolescents wrongly attributed poor sleep as “going in and out of REM”. Some adolescents didn’t necessarily have an evaluation, conscious awareness and understanding of how well they slept and merely described their sleep timings and routines, as seen in the first few examples. However, other participants demonstrated that they knew about sleep and the impact of the things they are doing on their sleep. While young people stated whether they slept late, woke up early, not having bedtimes and wake times that were too early or too late or having early sleep and wake times, they were not always aware if they were meeting sleep requirements. Many adolescents observed variability in their sleep throughout their week, with reasons for this including impacts of school, work, or just out of habit. Many had short sleep while others noticed that their sleep schedule would change while the amount of sleep didn’t.

Many adolescents had shorter sleep than required and were not always aware of this. For example, one student stated that "Umm Nah, it's roughly about the same. Fall to sleep around midnight. Wake up 6 ish” (Student Six). Some participants stated a bedtime and wake time that wasn’t too late or early but were not always aware of this. For example, "ahhh between 9:00 and 10:00 (PM sleep time)...Sometimes around 7 or 8 (AM wake times)” (Student Eight). Conversely, a few adolescents went to sleep early and woke up early but tended to get enough sleep, although not mentioned by the participant. For example, one student went to sleep at around six but woke up after six or seven hours of sleep and then went to sleep again, “but Monday, Monday nights I go to bed at like 6. Yeah, you know, and I sleep a good six hours, 7 hours, and then I wake up and then I'll go back to sleep” (Student Four).

Some adolescents had a consistent sleep schedule, "um. Not really. Honestly. I had the same schedule sort of thing” (Student Two). While others obtained consistent amounts of sleep however the timing of their sleep schedule varied throughout the week. This sleep schedule variability was due to work, out of habit, school or other commitments which meant that participants either slept or woke up later on the weekends:

Ahh. My sleep schedule will, my actual sleep itself won't… So just during the school weeks, like the actually week days, it'll be consistent 8:30 to 9:30 bed time…And waking up at 7:00, o'clock in the morning, 7:30 most days. And weekends. It'll be a little bit later because I work late at night and yeah. (Student Five)

Similarly, for another young person, working resulted in an inconsistent sleeping time in which they would sleep late due to work and have to wake up at 7am for school. The only time this participant could sleep in was on saturday as they had nothing on then, but on sunday woke up at 6am for work:

> Ahhhh, probably 11 to 11:30 depending on depends on the night. So some nights, say like last night I had work until 10 . So by that time I came home and had a shower and had something to eat was later than (other) nights. Right? Maybe. When I don't have something on, so it depends. On what's happening in my life…7:00, o'clock. Every day besides the weekends…Ahh well, one day, Saturdays. I don't have anything on, so I sleep until I wake up, which is usually about 10. And then Sundays, I have work. So I wake up at 6:00 for work. (Student Seven)

Similarly, another adolescent had later wake times during the weekends, however slept late throughout the week.

> Ahhh I think, like recently it's been pretty much the same , like sleeping late throughout…Except for like, Saturdays I wake up in, like, 8:00 o'clock, actually. Yeah!. It's kind of the same. And then Sundays maybe, like, 10:00. O'clock, 11. (Student 11)

A few participants mentioned and knew that they get more or less sleep depending on their day and if they have work after school to do, in which, "it changes throughout the whole week… Depending on what, if I had something to do on a certain day, I either get more or less sleep" (Student Nine). While for other participants, the amount of sleep they got depended on whether they stayed up late or not. "So sometimes I can get a lot of sleep and I'm asleep really early, but lots of time. I stay up late" (Student Eight). Some young people had to get up earlier due to travel distance, which meant that their sleep varied throughout the week as "I live all the way out of town. So I'm up at 4:00 AM...3 mornings a week, and then I'm up at 6...The other two. And then 6:30 is like, as far as I can sleep in" (Student Four).

While others noticed that because they got into the habit of falling asleep late on the weekends, that their sleep only started getting better by mid-week. “Umm, across the week, the weekdays, I'd say Wednesday is when sleep actually gets good cause the weekends, I kind of get into like this habit of sleeping at like late times’’ (Student Three).

One young person noticed that they were in and out of sleep and that their sleep fluctuated throughout the week, with sleep being particularly poor on Sunday nights:

> Not great. I mean, I go to bed quite early, but I seem to like fluctuate in and out of sleep"."it kind of like fluctuates sometimes. So sometimes I have really good sleep. And sometimes, it's very poor… Umm. Usually. Tuesday. Thursday. Saturdays. Monday nights. But like Sunday going into Monday, horrible. (Student Four)

A few students noticed a delay in going to bed and actually falling asleep "well, it could take me about an hour to an hour and a half to fall asleep” (Student Nine).

Participants also knew when they had poor sleep, however wrongly misunderstood and associated this as fluctuating in and out of REM sleep. Many reported having issues with falling asleep, sleep in general and said that their sleep could be “a lot better”. For example, one adolescent rated their sleep poorly, would wake up several times and thought that they weren't getting enough REM sleep; to counteract their daytime tiredness, they took naps during the day:

> Not the best… My scale from one to 10, …I'd probably put it like a four to six…I don't sleep very well. I often wake up several times and I yeah, and I'm not getting the REM sleep that I need…But usually, I'm quite tired and have naps during the day. (Student One)

Whereas for another participant, if they remembered their nightmares, it was wrongly perceived as poor sleep and as going in and out of REM sleep, “um. If I remember my nightmares, usually it was a pretty poor sleep because I was like in and out of. REM. Is it called?” (Student Two).

Distractions before bedtime could lead to poor sleep, "um I mean, it definitely could be better. A lot better. I think I just get like. Really distracted” (Student 11); which for another adolescent meant rushing in the morning due to sleeping in, “oh no. Like yesterday, was so bad… A little bad. I was just a little distracted last night, so I was bit bad of a sleep, slept in accidentally, rushed this morning” (Student Three).

Another student acknowledged that their sleep was short, but perceived themselves as getting enough sleep for them to manage themselves during the day. In terms of "my sleep and well-being, I'd say, well, probably, a bit lack on the sleep side, but it gets me through the day, so it's roughly enough" (Student Six). This perception was in contrast to the adolescent requirement of 8-10 hours of sleep for optimal mental and physical health.

In contrast, although one young person thought they could go to sleep a bit earlier, participants rated their sleep as "pretty good. Like if I had to give it a number rating, I reckon, like. A 7.5" (Student Seven), which for some was based on whether or not they woke up during the night, like "I get good sleep, without, I don't wake up at all, during it um. Like um I could probably go to bed slightly earlier, but...I tend to get like 7 to 8 hours of sleep per night" (Student 12). For example, good sleep for one young person meant they slept through the night with up to 9 hours of sleep depending on sleep depth and when they were not sick. Further nightmares were not remembered if they had good sleep:

> Ahh It's quite peaceful on a day that I'm not sick, it is. I can sleep a good 6 to 8 hours, sometimes 9, depending on how deeply I'm sleeping… I sleep through the whole night...Ahhh. Occasionally I'Il have a drink. Nightmares don't normally come to me. (Student Five)

Sub-Theme: Pre-Bed Activities and Routines Matter

This theme is descriptive and surface level in nature, encompassing how adolescents describe what they do before they go to sleep. Participants described taking responsibility for their sleep and knowing what has to be done to facilitate their sleep and do their best the next day. For example, some students made sure that they were prepared and organised for school the next day by making sure they had everything ready the day before "I normally pack my bag for school for the next day, so I don't have to do that in the morning" (Student Seven). Whereas another adolescent made sure that they were ready for the next day, especially if they had a busy morning, by checking their alarm and making sure their clothes were washed. However, despite being prepared the night before, their sleep was poor on nights where the following mornings were busy:

> like when I go to bed, I'm like, Oh my God. So have I prepared everything is my alarm on and I check that about three times and then I'm like…Have I washed, folded

> and ironed my clothes. You know, if it's like I've got a busy morning the next morning, then usually…Not very good at sleeping. (Student Four)

A few adolescents described mealtimes and personal hygiene activities in the lead up to going to sleep, such as having dinner an hour and a half to two hours before going to sleep, having a shower, brushing their teeth, hair or cleaning their face. For example, “I eat dinner an hour and a half, two hours before I go to bed...have a shower or a bath. And I'll get dressed, brush my hair, brush my teeth". (Student Four). Further, "I have a shower and I have brush my teeth and like cleaning my face and all that” (Student Seven).

Some young people completed homework before going to bed. Many adolescents read before going to sleep, while some drew and used technology to support their sleep. For one young person, they would read sometimes, then would do homework then watch a video. In which, ahhh. Sometimes a bit of reading, sometimes, like if I've been doing homework…Or school work up until the point where I'm just about to go to bed I’ll maybe watch a video or something on my phone” (Student 12).

Whereas others practised music before going to bed, “um like I tend to, like I do music so like I have band practise from like 7 till nine” (Student 12). “Um. Sometimes I'll practise percussion and stuff with like, music and stuff” (Student Three). One participant would pray as part of their religious routine before going to sleep, "umm. So I am a religious person, so I will pray as a part of my nightly routine” (Student Five). Whereas one young person described connecting with siblings and listening to music before going to bed, "talk with my siblings. Bond with them a bit and then just listen to some music to just chill out” (Student Nine).

Many young people described using some form of technology before going to sleep. This included scrolling on their phones, messaging friends, watching TV, listening to music or watching a movie. For example, "I go on my phone for a bit and like reply to any messages and things. Umm for like probably 20 minutes and then go to sleep, oh especially on the weekends” (Student Seven). I "Normally just watch TV or listen to music” (Student Six).

Sub-Theme: "Not like a really Cold Room…"

For many participants, their sleeping environment influenced how long and how well they slept. Adolescents took actions to create a sleeping environment that facilitated their sleep, including managing the cleanliness and tidiness of their room, temperature, airflow, sound and light. For example, one adolescent needed a clean bedroom in order to sleep well, whereas another needed to see the outside world to prevent feeling claustrophobic and have a bedroom that was cold in conjunction with a bed that was quite warm:

> Um most definitely because. I have this I can only sleep in a clean space…So I, I struggle to sleep in nature the first night so, but when I'm in a bedroom, it has to be clean…Cause otherwise my mind will just say I've got to get up. I've got to clean it. (Student Five)

> So this is really weird...but my windows have to be open. Even in winter . And my curtains have to be open and my room has to be really cold…But my bed has to be quite warm, you know? … So I have a hot like, I have an electric blanket and a hottie…And. And I have to have like, 2 pillows, but one pillow I sleep on and one pillow. Like I hug to the side…If I don't, 'cause I sleep by a window, so if I can't see the outside, it's so weird. If I can't see the outside…it's just, it kind of like freaks me out and like. OK…I feel a little bit like claustrophobic. (Student Four)

Similarly, another adolescent wanted a comfortable room that wasn't too warm but nor cold, "not like a really cold room, but I like to be able to be like snuggled up in all my blankets. So not like a warm room" (Student Eight). For one student, keeping a water bottle near their bed so that they wouldn't have to get up in the middle of the night for a drink helped with having a good sleep. For example, "I always keep like a water bottle by my bed. If I when will, like if I go away or something and I don't" (Student Seven). For another young person, they used to have a light in their room, but now what helps them to sleep well is having sound, which is why they put on a YouTube video:

> Um I mean, I used to sleep with a light on, but since I moved houses. Um I haven't had as much as a problem with that so, um but I like to have some sort of sound when I sleep, so that's why I usually put on a YouTube video. (Student Two)

Theme: "Who influences Teen Sleep?"

A few students stressed the fact that family, friends and even people at school can influence their sleep, by encouraging them to sleep more or by supporting their sleep by being quiet and leaving them alone when they are trying to sleep. For example, for one adolescent their family helped them prioritise sleep by letting go of other commitments:

> Like being able to like, say for family, being able to be like hey, remember, like, go to sleep, not just being like, oh, well, they're doing stuff just like I know my parents ahhh recognise that obviously I have stuff to do, but they're pretty good at like when they're going to bed. If I'm still like, up doing school work or whatever, they're like, OK, like, enough's enough. I actually go to bed soon. And so I think that's definitely something that helps because it's easy to become fixated. Like, oh I need to get that stuff done or whatever. But having that support from. From your family, or even like if people at school are seeing you tired, then being like, OK, just like go sleep. (Student Seven)

Similarly, another young person saw family as “a big factor” in supporting them to sleep longer:

> Um my parents are kind of really strict about sleep…Um I think family that's there's a big, like they can do a lot like by encouraging you to go and sleep more…But I think yeah. Family's a big, a big factor. (Student 11)

For a few adolescents, their parents helped them with sleep and waking, either by encouraging them to go to sleep, or as emphasise by one adolescent, "I wake up at the same time. Usually to alarm or one of my parents wakes me up” (Student One). For another student, their family would leave them alone when they were trying to sleep, in which, “if they know how much you're trying to go sleep, they let me be” (Student Nine).

However, young people also had ideas about what families could do to support their sleep, such as "ahh. Be quiet if I'm trying to sleep” (Student 12), and "my parents could probably turn the TV down at night" (Student Four). Another young person mentioned that friends can be supportive and positive for their sleep, mental health and emotional well-being by not texting at night and not being over at night when they are tired. Whereby, “umm. Just helping to being supportive and like positive. I guess like in the morning 'cause, like if I'm

tired...Not like over in the afternoon. Like at night...Not wanting to keep texting" (Student Eight).

Theme: "When I have a Good Sleep, I'm usually pretty Productive…"

Many young people observed that when they had good sleep, they usually had better concentration, focus, attention, were more productive and had more energy which ultimately affected their daily functioning positively. For one young person, poor sleep meant that they experienced issues with attention and concentration and would fall asleep in class. In that, "I am more likely to get tired in class if I have had poor sleep, so I would have a harder time paying attention, so harder time concentrating. I fall asleep" (Student Two).

For one participant, good sleep meant that they could keep on doing a task. For example, "Good sleep. I can. I'll be reluctant to start something at first, but once I've started it, I can keep going" (Student Five). Similarly, for another young person, good sleep meant that they were focused and motivated in doing schoolwork, while the opposite was true with poor sleep:

> So if it's a good sleep, then I, like at school, I wanna do my work and I can concentrate and like everything seems to flow better...Because if I've had a bad sleep, then I don't really. I just can't get focused, I just can't get into it. (Student Eight)

Adolescents also described being more productive, not being tried, "you know, like, when I have a good sleep, I'm usually pretty productive, you know, and get stuff done. But I've had a bad sleep. I like a bit more mopey" (Student Four). Additionally, not being lethargic and feeling energetic with good sleep. Having a low mood, low energy and feeling sickly with poor sleep was also observed among participants:

> If I'm not super dopey and tired in the morning, it usually means I've slept pretty well...Lot of it depends, so it's a little bit difficult, but usually my energy levels are higher than what they'd usually be. You know, when you have a good sleep. (Student One)

One young person stressed that poor sleep resulted in them being physically sore and exhausted. In which, **"**Umm. Bad sleep. I normally (have) physically bad sleep. I normally have something sore or I am, physically exhausted" (Student Five). For another adolescent,

good sleep meant that they had the energy to finish school, go to the gym or swim instead of not bothering and just going home when they experienced poor sleep:

> Whereas when you've had good sleep, you feel good the whole day and it's like I'll finish school. I'll be like, oh, yeah, I'll, like, go to the gym or go for a swim at the pool or whatever, whereas, if I've had bad sleep. I'm like, oh, I just want to go home. I can't be bothered doing any of those other things. (Student Seven)

Theme: "I'm Not Faking it when I'm Not Tired…"

Many young people observed that having good sleep positively impacted their interactions with others, in which they either had more interactions or more quality interactions, while the opposite was true for poor sleep. Overall, many adolescents reported being "more tolerant", thoughtful and patient when interacting with others when they had good sleep. In contrast, when adolescents had poor sleep, they became more aggravated, had less patience and tolerance, especially over small things, were not as thoughtful, had fewer social interactions and poorer quality interactions with others. For one young person, poor sleep meant that they were trying and "faking" to be "positive" to people, while liking people came "genuinely" with good sleep. Furthermore, they got annoyed "way easier…by little things" with poor sleep and had low tolerance and patience for other people which meant that they struggled to have interactions:

> Like I try even if I'm tired, to be positive to other people. But it's not like. I'm not faking it when I'm not tired, you know? Like if I've had that good sleep, I'll genuinely like people. Whereas when I've had that worst sleep, it's like I'm tolerating…I'd say when I've had bad sleep, it's like I get annoyed way easier. It's like ,when I've had good sleep, I am kind of what I was saying before, a lot more tolerant of things. Whereas when I've had bad sleep, I find I get annoyed by little things a lot easier. So like, if I'm like sitting in class and someone's like tapping, that's gonna drive me nuts if I'm tired or if someone's just like if I'm trying to organise things with someone or whatever and they're and I'm tired, things they do might annoy me a lot more, which means I probably have less patience for people and so probably struggle more to have those… (interactions). (Student Seven)

Adolescents described good quality sleep supporting their social interactions, including being able to use humour and being less easily annoyed by others. Whereas poor sleep could result in heightened social anxiety, avoiding others and not talking to others in a planned, polite and thoughtful manner. For example, "When I have bad sleep, I try to avoid socialising with others because I do have a thing when, when I'm not paying attention to what I'm doing, I have a thing about saying something wrong" (Student Five).

> Ahh. I'm more open to joking around and I'm. Aggravated less easily, like I'm not, like, annoyed by everything. Like when I am, when I have poor sleep…Ah well, I have social anxiety, so if I've had poor sleep, I have a lot harder time just talking in general, even to people I am friends with. (Student Two)

Poor sleep could also make it more difficult to perceive social cues and deal with social conflict. For example, one participant stressed that having poor sleep meant that when they were interacting with their friends, they would feel that their friends were negatively targeting them, in which the young person dealt with this by just leaving the situation. “And so these days, when I'm, I'll go for a walk with friends. And one might like slightly insinuate something…towards me. I'm like, I'm not even dealing with this today. Goodbye’’ (Student Four).

Theme: What’s the Connection between Sleep, Mental Health, Mood and Emotional Well-Being?

Many Participants observed links between their sleep, mental health, Mood and emotional well-being. Adolescents observed that good sleep impacted their mood in a positive way, such as being happier, “more excited about the day”, feeling content, enjoying things, being optimistic about the day and feeling less stressed and grumpy. The opposite was true when students had poor sleep, which resulted in a more negative mood, such as getting agitated easily, feeling tired and grumpy. Additionally, good sleep could make it easier to get up and get the most out of the day, whereas not having enough sleep could result in agitation and reduced motivation:

> I feel great, but not like, not physically, I just feel? Not as annoyed to get up...I think it’s better, I'm happier...Like more excited about the day...Yeah. more sleep puts me in a better mood. And when I get less sleep, I'm agitated and I don't want to do anything. I'm just tired. (Student 10)

Furthermore, some adolescents noticed that poor sleep resulted in them having a low mood, which meant that they would get easily grumpy with people. However, they didn't always have the capacity to support more sleep. Hence, participants wanted to be always self-aware of their poor sleep leading to their poor mood and poor interactions with people so that they could therefore adopt strategies to mitigate its side effects:

> I would like to sleep more, which is sometimes hard because it's finding time in the day to sleep…Being able to recognise that when I don't sleep. I enjoy things less that I'm more grumpy with people or and things, so it's either being able to deal with that when I'm tired, or being able to sleep more. (Student Seven)

One Student viewed having a set sleeping routine as beneficial for their mental health as they wouldn't be as "crazy" on days when they had less sleep:

> Umm it's all over the place…It changes throughout the whole week…Probably actually try and find out a good sleep schedule...Have set sleeping times so that it's. Better for my mental health and so I'm not being a bit crazy on certain days where I've had less sleep. (Student Nine)

Similarly, one adolescent described their mood as "quite peaceful" with good sleep versus feeling "quite grumpy most of the time" after poor sleep "ahh my mood is quite peaceful… Quite grumpy most of the time" (Student Five). Other adolescents saw sleep supporting positive mental health by resting and giving a "break between the days" and fixing the mind or brain and viewing mental health as the brain. Additionally, "Sleep will fix your mental health because sleep is good for your brain...Mental health is your brain" (Student 10). Young people also paired good sleep with a good day and vice versa. In that, "I think, I mean, if you have a bad sleep, you have a pretty bad mediocre day. And if you have a great sleep, yeah, pretty good. Good day" (Student Four).

> Umm. It's actually like. I think sleep does help a lot with mental health. Majority of the time because like. But for one sleep's healthy, and then to it, like allows your mind to rest (participant meaning to say if one sleeps healthy and actually does sleep, that it allows your mind to rest). So it gives you that little break between the days and everything. So, like, encourages your mental health to go up against to like a more positive point. (Student Three)

Sleep reduced stress and stress impacted sleep. Sleep was described as influencing the degree of optimism and stress experienced by adolescents. In which, "Um much more optimistic about...The day...Getting a lot of sleep helps a lot… But on a day by day basis, more sleep

tends to help reduce, reduce my stress levels" (Student 12). Participants also saw stress impacting their sleep and saw anxiety as bringing "different stressors" which will ultimately impact one's sleep:

> But say if someone's struggling with things like anxiety, like I was saying before, it's hard to sleep if you're stressed about things and if you're dealing with things like anxiety, you're going to be struggling to sleep because that's going to bring different stressors. (Student Seven)

Many participants noticed some form of mental health and emotional well-being connection with sleep. In that, they noticed that when they had more stress or worse mental health that their sleep suffered and that this relationship was bidirectional. For example, one young person noticed that when they went through a tough time that their sleep was affected. Conversely, when they were able to get themselves out of that situation, their sleep got better due to having better mental health:

> Um Yeah, I don't know how to explain it, so I put it in words, but I find depending on my mental health 'cause, I have gone through a tough time that it did affect my sleep a lot...And then I was able to pull myself out of that situation and. Yeah, I find I get better sleep because my mental health is a lot better. (Student Nine)

A few participants observed a curvilinear relationship between sleep and mood in other people, in which too little or too much sleep seemed to result in low mood:

> Quite often that I see people who are only get one to two hours of sleep really like are down, not really happy, just quite an upset person, but I've also seen that with people who get lots of sleep. (Student Six)

While another participant noticed a curvilinear relationship with mental health and sleep, whereby poor mental health can affect sleep length, in which too little and too much sleep can be a result of poor mental health:

> Um I think your mental health can really depend on, like it can be affected by your sleep and also like if you're not having a good mental health that can affect your sleep in that way, like some people don't sleep because they're not like having, like their mental health is not good or like they oversleep too much. (Student Eight)

Whereas some students noticed that people with depression just slept and did little else. So "um, I've seen people that. Have been diagnosed with depression. Yes, sleep and. You either really doing is sleeping" (Student Six).

Some young people saw a one-sided connection with mental health and sleep, in which mental health affects their sleep but not vice versa. Whereas, one participant saw an indirect relationship with sleep and mental health in that, poor sleep results in low mood and energy levels therefore leading to less desire to do physical activity, which will ultimately impact your mental health:

> I feel it's a factor, it impacts your mental health, but not in a major way...'cause. I do have a mental health history..."But I don't feel it impacts. With what happens with my mental health too much… The mental health...Does impact my sleep..."But the sleep component doesn't affect your mental health. It's not. (Student Two)

> I'd say they go pretty hand in hand, I think. It's about kind of those energy levels where the sleep itself like obviously you need the sleep to be refreshed with if you've had bad sleep then that's a lot harder to have high energy and be positive and. Kind of what I was saying before. Like do those other things that are good for you, like your physical health and things. So it's not necessarily. Like, what am I trying to say, like not having sleep doesn't necessarily meet your mental health will go down. But not having good sleep does mean you're going to. That's going to impact your lives. life in other ways which are going to affect your mental health. (Student Seven)

The sleep and mood association was also observed to differ based on the individual, with lots of sleep resulting in a good mood for some people but having the opposite effect on others:

> And I feel like it kind of also depends on the person that you are like. If you get a certain amount of sleep, your mental health is good, or if you get a certain amount of sleep, your mental health is bad. Like if you get too much. For some people, they like, it's not good for them and like for others, it's really good. Like they'll be really happy when they have a lot of sleep. Like for others it’s like, oh, they get like grumpy or something. (Student 10)

While another student saw the mental health and sleep connection depending on the individual. In which, if someone is “sad or unmotivated” they won’t do anything in the day so will stay awake as they won’t be tired. Furthermore, if someone doesn't like socialising, they will likely spend more alone time and therefore be awake in order to cover up during their busy day during nighttime:

> Umm well, If you're like unmotivated or sad, you're gonna be doing nothing the whole day, and so you'll be more inclined to stay awake. Or if you've had like a busy day and you don't really like people and stuff. You're going to want to stay up to have alone time. (Student 10)

Theme: What Should We Do Now?

Many students wanted more sleep, mental health and emotional well-being education at school. Many participants wanted the education to be tailored to themselves, have real life examples and what they and “young ones” can do to help with their sleep or understand the importance of sleep, mental health and emotional well-being in relation to themselves. One adolescent voiced that education about sleep and how impactful it is should be more accessible. "Yeah, I think it should. Should be more accessible to learn about. How much your sleep has an impact” (Student Two).

One student said it would be good if someone external spoke about sleep at school but thought if it was incorporated in class that people wouldn't care. "But Some. I mean, it would be good if, like, someone came to talk about sleep at our school. But if it was incorporated into class, if I don't think anyone would care” (Student 10). While another young person did their own research in this area and thought that education in this area was important as there was a shortage of knowledge. This participant went on to say that education may help people improve their sleep and that they may even encourage and educate others to do the same:

> Umm. Education around this area is quite important as. I know that there in our country there is a shortage of people knowing knowledge under area and I’ve gone ahead and done quite a bit of my own research in this area and field…Um I reckon it can affect it and they would have an attempt at improving them themselves and maybe even encouraging others and educating others on their own findings. (Student Six)

Many students not only wanted more education about sleep, mental health and emotional well-being but wanted information that was useful and tailored towards them. For example, one student said that the health classes in school can stress the importance of sleep and mental health but that it should show what this looks like in reality. As for "some of those. Health classes and things actually stressing the importance of that sleep because it's

easy to go. Like oh, we need to care for our mental health. But it's like, what does that actually look like?" (Student Seven).

One young person saw a religious link with sleep and mental health. Furthermore, this adolescent voiced that it was important to look at the social aspects of what impacts one's sleep, mental health and emotional well-being, which is often overlooked:

> About this topic, I feel like we could provide a little bit more aspects on it. So most people think more about mental health, but there's also the religious and. We don't look too much at the social sometimes as well. (Student Five)

Similarly, another student wanted information that could help them to sleep better and what they could do. "Umm. More like information to know about it and what I could try myself to make my sleep better...Just like, yeah, ideas of what I could do. What information of what could help" (Student Eight). For another adolescent, they suggested providing education to “help young ones’’ understand their feelings about sleep, mental health, emotional well-being and “everything” "Umm Maybe some? Anything that can, like help young ones to try and know what they're feeling with their mental health and everything" (Student Nine). While another participant said that education would allow people to know what affects sleep and how it affects you on a “daily basis”, highlighting the perceived links between sleep and emotional well-being. "Yeah. 'cause then people are more aware of what actually affects our sleep and what. How people get more sleep and so feel better on a daily basis” (Student 12).

Another young person said that education about sleep, mental health and emotional well-being is important especially during exams when people stay up late which is unhealthy:

> Yeah, I think also when it comes to like exam prep and like tests and stuff, it's important to, like talk about that because...A lot of people stay up late the night before and it's not really like healthy when it comes to tests. (Student 11)

Sub-Theme: Should School Times Change for More Sleep?

Some adolescents wanted school start times to be later, which wasn’t necessarily related to improving their sleep. For example, "I would like that to be later (school times)...I'd like to start like maybe. 9:30” (Student 10). "I don't know. But my brain activates like 12:00

o'clock...I'd be hopeful, like 10:00. O'clock...Start because that gives you time to, like, get the brain going and everybody listening" (Student One). Other participants wanted school to be either earlier or shorter with shorter class times to shorten the school day for others. Some young people were happy with the existing school schedule and particularly liked the fact that on Tuesdays and Thursdays their school started at ten past nine. This allowed adolescents to catch up on their sleep, sleep in and naturally wake up at a time that suited them and to have enough time to sign into school.

One participant wanted school to be "less than four hours" long "So, like, my whole day could fit in, like, less than four hours...1:30, 2 maybe. Yeah. 1:30 (school finish time)" (Student 10). One young person mentioned that they would be happy to start school earlier at around "7 thirty ish 8" so that it was out of the way. They also thought that school was long and it was hard for many people to pay attention for six hours:

> Honestly, personally I could start earlier and finish early, like I could start at instead of starting at 10 past nine. I could start at 7 thirty ish 8 get, it done, get it out of the way, finish it whatever time it would be, and then I'd have more time in the afternoon to get all my stuff done before it gets dark. But that's just me. Umm I think with a lot of people find it hard. Paying attention and you know. Being here necessarily not ditching for six hours is very hard for a lot of people. (Student Four)

Few students were happy with the current school schedule and start times and thought later school times would harder, and impact students focus:

> Umm I think what we have with like late starts 'cause we have Monday, Wednesday and Friday school starts at 8:45 and then Tuesday and Thursday school starts at 10 past nine. I feel like that's a good thing so that people aren't just waking up early every single day. And then yeah, I think it's good that they have that time. So people can catch up on their sleep…I think later on in the day it might. People might not be as focused, you know?...Like if you start your day off earlier with school and then you just get it done earlier, it will be a lot easier than maybe starting school later and finishing at like 4-5 o'clock. (Student Eleven)

One adolescent found the school time "reasonable" as they would wake up at seven anyway even if it wasn't a school day. "Ah I think what quarter to nine is reasonable like I'd probably wake up at 7:00...Anyway, even if school wasn't on...Ah so I think it's a reasonable

time for. Yeah" (Student Twelve). For another participant, starting at 10 past nine was convenient as it allowed people to get buses and to at least sign into school in time if they slept in:

> Our school starts at 10 past nine, so it gives kids on buses and stuff enough time to actually get to school and stuff. We'll see decent. And if you sleep in and you wake up at like 8:45 or something, it might give you time to at least sign into the office at like 9 ish. (Student Three)

Summary

In summary, participants knew, were already doing and willing to do activities that supported their sleep. For example, technology was used but also limited to support sleep. Adolescents also knew what impacted their sleep, such as school and work stress, limited caffeine consumption, exhausted themselves and took sleep supporting supplements. Adolescent pre-bed activities ranged from getting ready the next day for school, personal hygiene, reading which helped to support sleep, music practice, homework, talking to siblings and technology use. Although some adolescents had an idea of whether they had poor or good sleep, some didn't state this evaluation of their sleep. Participants either had short or efficient sleep, sleep varied throughout the week, with good sleep seen as staying asleep throughout the night. Distractions before bed, later weekend bedtimes out of habit, having issues with falling asleep and pre-bed stress were indicators of poor sleep. Many young people found their sleeping environment impacted their sleep. Adolescents took actions, such as creating a room that was clean, spacious, having some noise and light, proximity for a drink and the right temperature for their sleep. Family, friends and even people at school were seen by adolescents to either support or negatively impact their sleep.

With good sleep, young people noticed they had better concentration, focus, attention, motivation, productivity and had more energy, with the opposite being true for poor sleep which affected their daily functioning. Good sleep positively impacted adolescents' interactions with others. For example, having more interactions, more quality interactions, being "more tolerant", thoughtful, patient and enjoying interactions with others was associated with good sleep; the opposite was true for poor sleep. Adolescents viewed links between sleep, mood, mental health and emotional well-being. Good sleep made participants happier, "more excited about the day", feeling content, enjoying things, being optimistic and

feeling less stressed and grumpy; the opposite was seen with poor sleep. Some young people noticed that too little or too much sleep was associated with low mood in others. Some adolescents noticed the mood and sleep association to differ based on the individual, with observations that for some people lots of sleep increased their positive affect while having the opposite effect for others. Participants viewed either an indirect, bidirectional or unidirectional link with mental health and emotional well-being.

Young people wanted more accessible education at school, either through an external spokesperson, as some thought if it was incorporated into classes that people wouldn't care about it or only provided in health classes. Education was wanted in regards to how to improve their and other peoples sleep, mental health and emotional well-being. Furthermore, education on how impactful and important sleep, mental health and emotional well-being is and to be able to recognise the signs by giving real life examples that were tailored towards them were desired. Some adolescents wanted school start times to be either later, earlier or shorter with shorter class times to shorten the school day for others. However, this change wasn't necessarily related to improving their sleep. Participants were happy with the school schedule starting at ten past nine for two days a week, as it allowed them to catch up on their sleep, suited them and gave them enough time to get to school.

The following chapter (Discussion) will explore what these results mean in relation to past and future research, along with the studies' strengths, limitations and future directions.

Chapter Five: Discussion

This chapter discusses the study findings, their implications, limitations, strengths and-future directions of this research. This study aimed to learn about adolescents' thoughts, experiences and feelings about their sleep and what they think about the possible connection between their sleep, emotional well-being and mental health. This study also aimed to determine what adolescents already do, or would like to do, to get the best possible sleep and what adolescents think family members, friends, service providers and schools can do to support their sleep.

Six themes and four sub-themes were identified as follows: The first theme was 'Knowing, Doing and Wanting to Do' which consisted of three sub-themes of 'Sleep Awareness', 'Pre-Bed Activities and Routines Matter' and 'Not like a really Cold Room…'. The next four themes were 'Who Influences Teen Sleep', 'When I have a Good Sleep, I'm usually pretty Productive…', and 'I'm Not Faking it when I'm Not Tired…' and 'What's the Connection Between Sleep, Mental Health, Mood and Emotional Well-being?' Lastly, the theme 'What Should We Do Now?' consisted of a sub-theme of 'Should School Times Change for More Sleep?'.

What do Adolescents Think About Their Sleep and the Possible Connection Between Sleep, Mental Health and Emotional Well-Being?

An identified theme within this study was that adolescents saw many connections between their sleep, mental health and emotional well-being. Consistent with past research (Bartel et al., 2015) adolescents in the current study noticed that when they had poor sleep, they experienced difficulties focusing and concentrating. They also described experiencing low mood and lower energy levels. Having lower energy levels meant that adolescents would avoid exercising, doing schoolwork and socialising, with the opposite being true when adolescents experienced good sleep.

The participants within the current study described poor sleep as frequently walking up in the middle of the night, struggling to fall asleep or having short sleep. The opposite was observed with good sleep, whereby adolescents slept through the night without walking up and achieved sufficient sleep. In terms of the sleep and mood association, participants

noticed that with poor sleep they felt more aggravated, had less patience and tolerance over small things, were not as thoughtful when speaking to others, and had fewer and poorer quality social interactions. For example, when participants had poor sleep, some either thought that their friends were insinuating something negative towards them or that they would be “less likely to joke around”. Kechter and Leventhal (2019) also found links between sleep problems and worsening tolerance, with the current findings adding to this and suggesting what sort of things adolescents may be less likely to tolerate when they have less sleep. One of the mechanisms that can explain this tolerance change is that sleep deprivation is linked to a heightened amygdala response and leads to heightened arousal to negative stimuli (Tempesta et al., 2018). This may explain why participants would insinuate that their friends are saying something negative towards them and that they would just leave the situation rather than effectively dealing with it. Similarly, Gruber and others (2017) investigated determinants of sleep behaviour in eighteen high-to-middle SES adolescents with a mean age of 14.9±1.5 years. In their interviews, the authors observed that their participants' interactions with friends and parents were negatively impacted with poor sleep, where participants would say upsetting things to their friends.

Past research has also shown bi-directional links between sleep and social interactions. Mi and Lei (2023) note that sleep deprivation can lead to social avoidance, hypervigilance to social threats and negative affect. Highlighting the potential longer-term implications of poor sleep, in which avoiding socialising or not having meaningful interactions may lead to loneliness in the long run. In a longitudinal study with adolescents aged 17–18 years old, Doane and Thurston (2014) found that high daily stress was associated with shorter sleep duration. Whereby, prior day stress was associated with shorter sleep duration, but poor sleep duration and sleep efficiency were associated with higher levels of stress the following day. Loneliness was a significant moderator between daily stress, sleep duration and latency; in which lonely individuals had shorter sleep durations and interestingly, shorter sleep latencies particularly after stressful days. Gordon and others (2021) note that adolescent boys who are more isolated and have fewer social networks report more insomnia symptoms. However, being a ‘popular’ girl has been associated with shorter sleep duration and higher ratings of inadequate sleep. For adolescents with complex needs, the impact of poor sleep health may be amplified. For example, adolescents with ASD may be even more vulnerable to negativity in peer relationships when they have poor sleep and have more daytime sleepiness (Phung & Goldberg., 2017).

Tu and Cai (2020) longitudinally found bi-directional associations with positive peer relationships associated with reducing sleep problems and vice versa**.** Hence, it is critical that adolescents not only get enough sleep that is of good quality so that they have better mood and sleep but also be able to interact with others and maintain positive friendships. This has major implications, as noted by Birrell and others (2025), positive socialisation with peers and with the right people is particularly important for adolescents' mental health as peer influence increases. Therefore, targeting adolescent social networks can benefit their mental health. Additionally, positive mental health and the ability to understand and empathise with one another is vital for fruitful relationships which can be diminished with poor sleep (Tempesta et al., 2018; Palmer and Alfano., 2017). Hence, it is crucial to support and provide interventions that foster more sleep and positive mental health for adolescents by working with them and their peers (Birrell et al., 2025).

Interestingly, adolescents in the current study described “faking” to be nice and not being as thoughtful when talking to others when tired, along with avoiding social interactions. Future research could investigate what other strategies adolescents use when trying to interact with others when having poor sleep.

One participant noted that not having enough sleep may mean you are unable to do things that help support positive mental health, such as physical activity. The links between physical health and mental health are well documented, however results are mixed. For example, He and others (2018) noted that active adolescents had significantly lower chances of having mood disorders, bipolar II disorder and general psychological distress than less or inactive adolescents. However, adolescents who participated in organised sports were more likely to have a lifetime alcohol use disorder, bulimia, generalized anxiety disorder and posttraumatic stress disorder. In contrast, Bell and others (2019) found no significant links between physical activity leading to better mental well-being or reduced symptoms of mental health disorders in adolescents. The authors however, found higher levels of physical activity for ages 12–13 to be associated with lower scores on the emotional problems subscale at age 15–16 years; suggesting that physical activity has the potential to reduce symptoms of depression and anxiety.

In their review, Biddle and Asare (2011) noted small beneficial links between physical activity and mental health, however many studies in this area are limited and of poor quality. However, physical activity potentially has a beneficial effect in reducing depression, a small beneficial effect for reducing anxiety, improving self-esteem in the short term, small and inconsistent improvements in cognitive performance and academic achievement. Furthermore, there were consistent findings on sedentary screen-time with poorer mental health (Biddle & Asare, 2011).

The present study found that physical activity positively impacted sleep, emotional well-being and mental health. Physical activity allowed participants to become tried which allowed them to obtain good sleep, which meant that they were in a good mood and had the energy to do activities that they enjoyed, such as socialising or swimming. However, sedentary behaviour impacting sleep, emotional well-being and mental health were not discovered, hence warrant further examination.

In terms of mood, adolescents in the current study noticed that when they had poor sleep they felt more agitated and stressed. The opposite was true when participants had good sleep, in which they reported feeling happy, less stressed and optimistic for the next day, which is consistent with past research (Shen et al., 2018; Baum et al., 2014; Short & Louca., 2015; Short et al., 2020). Additionally, participants understood that when they were tired, they enjoyed things less the next day. Similarly, Quante and others (2019) conducted focus groups with 27 ethnic diverse adolescents aged between 14–18 years old which lived in low to middle-income neighbourhoods in Boston. The authors found that their participants seemed to have an awareness of the link between sleep and physical, psychological, psychosocial and emotional well-being. Further, sleep was seen as an important factor for being energized, relaxed, for reducing stress and as restorative. Furthermore, sleep was also viewed as important in order to promote growth, concentration and memory, while poor sleep was seen as having negative effects on mood, patience, memory and energy levels.

Similarly, the present study expressed ideas of poor sleep being associated with low mood, energy, concentration and patience. While with good sleep, participants were less stressed, energized and viewed sleep as allowing the brain to have rest and recharge for the upcoming day(s). There is limited research on how everyday experiences of sleep affect mood in adolescents rather than mental health disorders. For example, someone finding

tapping on the desk by others very irritating due to them experiencing poor sleep, as indicated in the present study. However, within the present study, adolescents not only saw connections between mental health disorders and sleep, such as people with depression sleeping most of the day**,** but many saw sleep affecting their experiences during the day and mood. As said by participants, good sleep meant a good day, while poor sleep was associated with low patience, agitation, not being open to joking around with others or not being bothered to do activities that were good for them mentally.

Furthermore, a few participants also mentioned that one's mood depended on the individual, as for some people, less sleep would result in low mood while having the opposite effect for others. Participants also mentioned this same curvilinear relationship in terms of mental health. Therefore, these findings highlight that sleep is not a one-size-fits all scenario and nor are experiences of how sleep and mental health are inter-connected. In fact, too little and too much sleep is associated with adverse physical health, mood and mental health outcomes (Crowley et al., 2018; Bartel et al., 2015). Similarly, using thematic analysis, Godsell and White (2019) investigated adolescent perceptions of sleep and influences on their sleep behaviour. They conducted focus groups with 33 English adolescents aged 13–14 years old. Participants thought that sleep need was subjective, as certain people would cope better with less sleep than others. Many adolescents in the current study experienced bi-directional relationships with their sleep, mental health and emotional well-being, which was consistent with past research (Van Zundert et al., 2015)**.** Furthermore, some adolescents saw one-sided connections with sleep and mental health, such as their mental health affecting their sleep but not Vise versa, which was also consistent with past research (Alvaro et al., 2017).

The Role of Family and Friends

In this study, participants viewed family as an important factor influencing their sleep. However, not all families were involved with their adolescents' sleep and only a few families were intensively sleep supportive. Whereby, families had a role in their adolescents' sleep by having set bed and wake times, encouraging adolescents to let go of other commitments, which resulted in adolescents going to bed earlier and sleeping more, or being quiet to allow their adolescent to sleep without disturbances. Hence, other participants voiced that their family could be quiet when they are trying to sleep, or that all parents should tell their adolescent to go to sleep earlier to promote them to sleep more. Owens and others (2006)

used a mixed methods approach with young adolescents aged 10.0 to 14.5 years about their sleep practices, attitudes and beliefs. The authors similarly observed that parents should have an input on their adolescents' sleep, where adolescents said parents should tell them to go to bed instead of just leaving them. Additionally, the authors noted that friends had a role in influencing adolescents' sleep, such as delaying bedtime to text or play with friends.

Participants in the present study also indicated that friends could stop texting and staying over when they are trying to sleep. Although past research is limited, it has indicated similar findings, in that, family interventions, such as having set bedtimes increases sleep amongst adolescents (Gaarde et al., 2020) however parental intervention often decreases across this age-group (Owens et al., 2006) due to adolescents wanting more autonomy. Due to adolescents wanting more sleeping autonomy and family sleep interventions decreasing, this can lead to less parental awareness of when their adolescent goes to sleep and what they do before they go to sleep. This often leads to later adolescent bedtimes, therefore parental interventions should possibly increase to allow for more adolescent sleep. However, the practicality of increasing parental interventions for adolescent sleep will likely differ and depend on the individual and based on families. For example, a highly autonomous or technology dependent adolescent may rebel against technology being temporally confiscated before sleep. Therefore, before promoting increased parental intervention for adolescent sleep, future research should investigate how effective parental sleep inventions are for adolescent sleep and how it differs by culture, families and individuals.

Godsell and White (2019) also note that parents and peers had a role in adolescents' sleep, whereby parents were considered key ‘sleep messengers’ and rule setters. Gaarde and others (2020) investigated adolescents' perceived barriers and facilitators of sleep. They interviewed and surveyed 142 adolescents aged 14 to 19 years of age from three Californian schools. Similarly, the authors found loud TV noises from family members of low income where participants may not have their separate room impacting their sleep. In the present study however, we didn’t ask about income and sleep. Gaarde and colleagues, however, did find that parents set bedtimes for their adolescents, spoke about the effects of poor sleep and would encourage their adolescent to go to sleep earlier rather than doing homework. In the present study, parents encouraging their adolescent to go to sleep earlier and put other commitments aside, such as homework, were only found.

Additionally, Bai and others (2022) found that family, friends and socialisation had an impact on adolescents' sleep, a theme that was also found in the present study. Bai and colleagues found youth that got along with their parents and had good quality interactions slept 26 minutes longer; while youth who reported higher levels of family stress had lower perceived sleep quality. Bai et al. (2022) and Tavernier et al. (2017) note that on days when 11-to-18-year-olds spend more time with family, they observed longer sleep latencies while shorter sleep latencies were observed with spending time with friends. Additionally, longer time spent interacting with friends was associated with higher sleep efficiency among younger adolescents. While for older adolescents, longer family time was associated with higher sleep efficiency (Tavernier et al., 2017). Longer sleep latencies can be an indicator of poorer sleep whereas higher sleep efficiencies may mean better quality sleep, however it should be viewed with caution. This is because if people don't get adequate sleep on an ongoing basis, then sometimes the sleep they get becomes more efficient. Hence, it is vital to get both an adequate amount of sleep and sleep that is undisputed and of good quality. Students in the present study also reported a delay in falling asleep, many students reported short sleep, while other students reported consistent and/or adequate sleep.

Hispanic adolescents moving from high school into university, and adolescents who spent more time connecting with their parents, slept longer, especially for those who had better family communication. Further, on a day-to-day basis, adolescents also slept longer on days when they spent more time connecting with their siblings. (Bai et al., 2022; Sasser et al., 2021). Hence, this highlights the importance for older adolescents moving into university, which is stressful, to have quality family communication which can alleviate stress and provide an opportunity for connection which can therefore benefit their sleep.

Hence, although all families may not be able to provide a sleep conducive environment and sufficient good quality family time; it is important to support and create opportunities for families to develop a sleep conductive environment and to connect to and spend time with their adolescent as important for supporting their sleep, especially amongst older adolescents. Within the present study, all forms of stress negatively impacted adolescent sleep. The family environment has a major influence on adolescents' emotional well-being and mental health (Lukoševičiūtė-Barauskienė et al., 2023). Therefore, promoting good quality family interactions may not only promote more sleep for older adolescents, but promote better mental health and emotional well-being. This is vital, not only because of the

sleep, mental health and emotional well-being link, but also adolescents worldwide have high rates of poor sleep (Gariepy et al., 2020) and mental health issues (WHO, 2021).

How Adolescents Perceived and Described their Sleep

Within the present study, participants either described their sleep as good or bad sleep, with sleep and wake times varying greatly from night-to-night to individually. Sleep and wake times varied depending on school, extracurricular activities, out of habit and work commitments. Many participants had short sleep, while for others, the timing of their sleep schedule would change but not the duration of sleep. There was a misalignment between participants' perceptions of sleep health with current recommended guidelines. While some participants understood whether or not they had sufficient and good or bad sleep, for some students, it was unclear if they had that understanding. For example, one participant described that their sleep was “roughly enough” as it got them through the day, however this fell outside of the current recommended range for optimal mood. This is concerning in multiple aspects, while some adolescents understand and get enough sleep, many do not. Further, some adolescents may not understand or know their sleep, mental health and emotional well-being requirements. Therefore, this highlights the importance of providing accurate information, in formats that are appealing and accessible to young people, about what constitutes healthy sleep for them so that they can be informed and empowered to prioritise and value their sleep.

Similarly, although Owen and others (2006) did not observe if their participants understood their sleep requirements, they also observed that there was a gap between how much sleep was needed than actually obtained by adolescents. Similarly, Cavalcanti and others (2021) found that 53 percent of their adolescent participants reported poor sleep quality. Worldwide and within ANZ, a large portion of adolescents are not getting enough sleep (Bartel et al., 2015; Galland et al., 2020).

Pre-bed activities varied greatly on an individual basis. Along with technology use, adolescents engaged in reading, exercising, chores, eating dinner, made sure that they were ready for school the next day and did personal hygiene activities before bed. Some participants interacted with their siblings, prayed, completed homework or practised music. Past research within ANZ has indicated that adolescents spend a lot of time on their phones,

with 33 percent spending four or more hours online on an average day (Pacheco & Melhuish., 2018). Prior research also shows that pre-bed activities that adolescents within ANZ are engaged in include technology use, snacking on caffeinated products such as energy drinks for boys and coffee or chocolate seen mostly amongst girls (Galland et al., 2017)**,** socialising with family and friends, doing homework, household chores, extracurricular activities or exercise (Galland et al., 2020). However, the present study demonstrated that adolescents limit technology and caffeine use and to make sure that they are prepared for the next day.

What Adolescents Do to Achieve Good Sleep?

Within this study, participants took actions to create a sleeping environment that facilitated their sleep health. These varied between participants and included a range of things including opening a window, having a clean, not too cold or warm room with some noise, adjusting lighting levels and having a water bottle near bed that participants either described as being useful or did themselves in order to create a comfortable sleeping environment. Caddick and others (2018) indicate that a cool, dark, quiet sleeping environment is optimal for good sleep. Although the authors didn't note that having some noise supported sleep, they note that loud noises disturb sleep, with the level of disturbed sleep depending on noise type, such as human voices or familiar sounds. Further, in terms of lighting, light usually disturbs sleep. While having high CO2 levels and low O2 can also disturb sleep. In the present study, for some students', ambient noise or noise from a video helped them to sleep. Past research on preschoolers similarly indicated that low levels of family background noise helped them to fall asleep (Muller et al., 2019). For another student in the current study, opening the window allowed airflow control, hence allowed for some control over CO2 and O2 levels. While for one participant, having light in the room helped them to sleep. Therefore, as the present study demonstrated, it is likely that what makes a sleeping environment comfortable varies individually even if it is not empirically supported.

There is limited prior research showing that adolescents understand what helps them with their sleep and that they take actions to support their sleep. However, Maskevich and others (2024) investigated 205 adolescents longitudinally with a mean age of 16.9 ± 0.9 to look at barriers and facilitators for sleep. The authors demonstrated that adolescents were able to identify a range of sleep supporting strategies and actions, including having good sleep hygiene, understanding internal sleep cues, following body cues, winding down by engaging

in enjoyable and relaxing activities, managing thoughts and emotions and creating a good sleeping environment. Furthermore, avoiding activities interfering with sleep, bedtime planning and parental electronic device restrictions during bedtime was positively associated with adolescent sleep health. While factors leading to poor sleep were pre-bed thoughts and emotions, a non-supportive sleeping environment, activities interfering with sleep such as homework, extracurricular, socialising, inconsistent routines and activities with family members. Within the present research, participants actively took actions to create a comfortable sleeping environment for good sleep, while poor sleep was observed when participants' sleeping environment didn't suit them. Furthermore, homework and inconsistent sleep schedules due to habit or work were also seen as barriers to sleep, with adolescents wanting to listen more to their body cues.

In terms of technology use, some participants in the current study reported that technology use delayed their sleep, while for others, technology use supported their sleep. Some participants tried to relieve their stress of school or life by distracting themselves with technology such as watching a video or listening to music which calmed them down or distracted them and resulted in them having good, undisturbed sleep and better mental health. Although past research indicated music having negative effects on sleep such as issues with falling asleep and having nightmares (Arora et al., 2014) newer findings indicate the relationship is more complex. Listening to certain types of music can aid sleep, reduce sleep problems and, within adult samples, can help with falling asleep and improve sleep quality (Dickson & Schubert, 2022; Scarratt et al., 2023). Most adolescents would still fall asleep if listening to music or reading an e-book. However, lower percentages of adolescents fall asleep when watching TV or playing video games which cause arousal (Bauducco et al., 2024; Eggermont & Van den Bulck, 2006). However, except for e-books, adolescents using technology as a sleep aid reported later bedtimes, shorter sleep duration and more tiredness (Bauducco et al., 2024), unlike the present study. Longitudinally, sleep issues predicted increased TV and online social networking, but increased TV and online social networking was not linked to sleep issues (Bauducco et al., 2024; Tavernier & Willoughby, 2014). While other studies found support for both directions, with internet use also being associated with bedtime problems, sleepiness and preferences for morning or eveningness were linked to technology use (Bauducco et al., 2024; Richardson et al., 2021).

Additionally, Bauducco and others indicated that technology can be used as a distracting and unstressing tool for adolescents from intrusive thoughts and negative emotions, especially for those with sleep outset issues. In which, 62% of adolescents reported using technology as a distraction to avert attention away from negative or intrusive thoughts (Bauducco et al., 2024; Daniels et al., 2023) and as a comforting mechanism which could help with falling asleep during times of stress (Bauducco et al., 2024; McNally & Harrington, 2017). As Bauducco and others (2020) note, although technology use can aid sleep for some and downplay anxious emotions by speaking to someone or seeking information: in the long term, sleep issues due to light exposure or sleep displacement can occur. Similarly, in the current study, adolescents watched a video to stop thinking about the stress of school and to calm them down. However, unlike the review by Bauducco and others, within the current study, watching a video as a distraction from stress didn't affect some participants' bedtimes and instead helped with better sleep quality, especially listening to music.

Moreover, many participants in the current study themselves took actions to limit technology in order to support their sleep. Although research on whether adolescents take actions to reduce their technology use are scarce, Godsell and White (2019) noted that young adolescents from England themselves would use the "do not disturb" function on their phones when they were trying to sleep. However, the authors noted that, while participants recognised sleep supporting strategies, few wanted to implement them. This was somewhat seen in this study, as some participants already took actions to limit technology, noticing that technology impacted their sleep and recognised that they should limit its use and knew what they needed to do to improve their sleep, mental health and emotional well-being. However, whether participants really do what they are willing to do to support their sleep, mental health and emotional well-being is another matter.

Past research notes adolescents staying up late due to technology use (Akçay & Akçay, 2018; Nosetti et al., 2021) and as a key barrier to poor and short sleep (Quante et al, 2019). As stated by the sleep health foundation (2014) passive technologies, such as music and reading have less impact on sleep. Future research should investigate if certain technologies can benefit sleep and in what ways adolescents use technology to support their sleep, as research on the adolescent perspective is limited. As demonstrated in the current study, technology does not have to be viewed in a simplistic way as either being good or bad for sleep, as it depends on the individual and how it is used. Similarly, often adolescents are

judged for not valuing their sleep or doing anything to look after it. However, adolescents in the present study not only limited technology use to benefit their sleep, by only used it for texting or replying to emails on weekdays. Adolescents also used technology for entertainment or as a distraction from thinking about the stress of school and as a calming tool, which alleviated stress, consequently supporting young people to have a good sleep.

Furthermore, within this study, adolescents already limited caffeine consumption or knew that they needed to limit caffeine consumption. Again, past research indicates the reverse, in which adolescents have high caffeine consumption (Quante et al, 2019). Within the current study, participants also exhausted themselves to support their sleep, such as going to the gym. This was also observed in Hedin and others' (2020) qualitative study exploring the barriers and facilitators of good sleep which involved focus groups with 45 Swedish adolescents aged 16–18 years. Whereby, physically exhausting oneself through daily activities, physical activity at school or sport was seen as supporting good sleep. However, in their review Dolezal and others (2017) note that, while many studies concluded that exercise improved sleep quality or duration, some found no difference and one reported a negative impact of exercise on sleep. Results varied by age, health status, mode and intensity of the exercise, with results being more mixed for adolescents while mainly stable for adults. The current study did not investigate exercise's effect on sleep, therefore didn't uncover any age or health status associations. More study should investigate exercise's role for adolescent sleep.

Participants in the current study also took sleep medicines or sleep supporting supplements to help with their sleep. Some participants found sleep medicines and supplements helpful while others found them as ineffective. This was also found with Quante and others (2019) study, where participants found sleep medicines ineffective in supporting their sleep.

Many participants saw reading before going to sleep as helpful in supporting a good night's sleep. Research on whether pre-bed reading influences sleep is scarce within adolescents. In adults, Finucane and others (2021) found that people that read a book in bed before going to sleep reported better sleep quality by 8-to-22 percent more than the control group. Within adolescence, the link is yet to be confirmed. The current study highlighted that adolescent sleep is impacted by many factors. Participants' sleep was impacted by physical

health, the stress of school or that they got distracted before going to sleep which resulted in a later bedtime. Having later bedtimes due to getting distracted was also seen in Gaarde and others (2020) study.

Limitations

Like with any study, this study carries with it some limitations. Firstly, this qualitative study was conducted within the contexts of ANZ and a school and geographical area that can be considered predominantly to have medium SES. Hence, results of this study may not be transferable to all contexts such as adolescents from higher or lower SES backgrounds and or living in another country. There was a small amount of data loss due to recording issues with the first interview. All other interviews were recorded, which allowed transcripts to be checked.

Like with any qualitative research, from the questions asked to analysing the data, the researchers' background informed the study's investigation, how they interacted with participants and biassed how they interpreted knowledge in regards to the study's aims. Hence, if another researcher analysed the data, they may come up with different themes, as everyone holds different values, ideas and backgrounds which affects how knowledge is interpreted.

Additionally, asking and recruiting random participants about their sleep, mental health and emotional well-being runs the risk of the information being said to be biased, such as response bias, recall bias and self-selection bias. Firstly, although the interview questions were open-ended to allow whatever adolescents wanted to share, at times, when participants did not share much, the interviewer prompted participants to ask further questions. The prompting may have led to certain information being raised within the interviews that the researcher was interested about rather than natural or novel surfacing ideas that adolescents would freely speak and think about. Hence, they may be leading questions and so leading responses within this research.

Furthermore, there was some misinterpretation bias for some participants in what the interview questions were really asking, which further limited research findings, as responses were misunderstood and non-related to the study. Furthermore, responses to the interview

questions may be further biased from recall bias. In which, participants may, or may not recall information accurately about their experiences, feelings and ideas about their sleep, mental health and emotional well-being.

Sharing bias could have further biased participants' responses, although at minimum, due to the researcher's age, there was a small power differential between the researcher, seen as the expert and the participant. Furthermore, interviews were brief, hence, along with the small power differential and the researchers ethnicity not always aligning with the participants, this could have led to a lack of trust between both the researcher and participant, ultimately leading to participants sharing limited information. Additionally, within ANZ, Māori have unfortunately been treated unfairly in many aspects of life, this also includes the academic space which has led to mistrust amongst Māori in Eurocentric methods of doing research. Therefore, building trust to openly share information that is accurate may be harder with Māori participants because of the fear of misuse and misunderstanding.

Qualitative research runs the risk of response bias whereby participants try to figure out the purpose of the study and therefore respond accordingly. Participants may say things to the researcher that makes one more favourable and what the researcher would like to hear. However, within this study, the researcher tried to limit response bias by creating a non-judgmental environment. For example, when one student was on their phone late at night, the researcher said “that sounds amazing” as opposed to "that's bad”, this was said to try to encourage the participant to talk more about that topic, as adolescent technology use is negatively evaluated, hence participants hide information in the fear of being negatively judged. Therefore, the researcher always showed positivity towards the participants to encourage sharing. Participants were also free to answer and share whatever they felt comfortable with. Furthermore, due to western social norms and stigma, there was not so much detailed information in terms of one's mental health and emotional well-being. Especially for boys, as boys need to be seen as tough and showing emotion is seen as a feminine trait (Vogel et al., 2011; Gough & Novikova, 2020) hence this could explain why there were more girls than boys in this study.

The researcher spoke to potential participants about their study and shared some possible questions they would be asking during the interview about a week prior to actually conducting interviews. Hence, although minimal, a possible bias that could have affected the

results could be that participants had some time to think about their responses to the questions asked during the interview. This could have exaggerated and made the results richer as opposed to answers that are made on the spot and not as thought out.

Conversely, since interviews were done during lunchtime, participants may have wanted to finish as soon as possible, which might have meant that topics covered did not contain a lot of depth as they were rushed. Additionally, adolescents in general may not share a lot compared to adults, hence this could explain why the mean interview length was around ten minutes as opposed to the scheduled 30-40 minutes. However, the chocolates, warm and relatable nature of the researcher and gift cards would have helped to recruit and create reciprocity within this study.

This study used a convenience sample and adolescents were not selected based on any specific criteria other than age, which introduced self-selection bias. Self-selection bias occurs when people that are interested would decide to take part in the study and they might already have knowledge in this field. There were a few students that were interested because they wanted to do psychology, or their parents were doing psychology. Hence, this may bias the results to be exaggerated as participants were more likely to have knowledge in this field and know what things to do to support their sleep, mental health, and emotional well-being. Furthermore, as indicated to the researcher by the participants, there were some students that were very talkative within the school that participated. Therefore, results may vary for those that are not talkative and are shy. However, not all participants had an interest in psychology and were popular and talkative, as there were some that were the opposite of that and just wanted to be helpful.

Strengths

This research had a number of strengths. Firstly, a key strength of this research was that it gave opportunities for adolescents to voice their experiences, ideas and feelings. Secondly, participants were recruited from a local high school and interviews occurred at school. This school was classified as having medium SES and was of mixed sex, hence this makes the results more transferable to other ANZ medium SES and mixed sex schools. Furthermore, participants had a broad range of sleep and mental health experiences, which further enhanced the transferability of findings. Having a local school participate in the

research not only allowed the benefit for researcher to better familiarisation themselves with the data, but allowed for relationship building, reciprocity, to form contacts and to work collaboratively with the school in conducting the research, which is often harder to do at a distanced location. The interviewer was also of similar age to the participants, which meant there was a lower chance of power differentials, higher approachability and greater ability to relate to participants, which ultimately allowed participants to feel comfortable enough to share information and to be interested in the research.

All the interviews were face-to-face which not only allowed for interacting and relationship building, but body language could be interpreted, which allowed for easier and deeper understanding of what was being said by participants, such as participants getting excited by a topic which meant a lot to them. Additionally, as indicated by a few participants, because interviews were conducted face-to-face, a few participants shared more as opposed to if interviews were only done online. However, the option of online interviews was given to anyone that was more comfortable with an online interview than face-to-face, thus limiting the power imbalance by giving participants control over the process. All interviews were offered at a day and time that suited participants, however times were either morning break or lunchtime. The reason why interviews were done during morning, and lunchtimes was to minimise school learning loss.

One person, the interviewer, conducted interviews, edited transcripts and analysed the data. The interviewer analysed the data and edited the transcripts themselves which allowed for consistency in interpretation, as opposed to different people doing them, but allowed the interviewer to become very familiar with the data which helped with understanding the content in depth. Conversely, if different people interviewed, edited the transcripts or analysing the data, this could have resulted in a higher risk of misunderstanding what participants really mean. Furthermore, having different people doing the interviewing, transcript editing and analysis also increases the risk of inconsistencies and differences between all three stages in not only meaning, but also what to include, not include, what is important and unimportant information.

Another strength of this research is the sample size, although not considered large, it was medium in size and therefore allowed for sufficient data saturation. Furthermore, when the interviewer conducted the interviews, they felt twelve was more than enough, as very few

new ideas were disclosed during the last few interviews which indicated data saturation. Although within qualitative research the number of participants to add power is not emphasised as in a quantitative study, having a medium sized sample size allowed for both depth and breadth of findings. Interviewing a small number of participants may have led to missing out on understanding potentially important aspects of lived experience in relation the investigated topic. While having a too large sample size may lead to the inability to dive deeper into a given topic which may result in a superficial analysis. Although interviews only lasted around ten to twelve minutes, we allowed interviews to run for 30-40 minutes so that adolescents could share whatever they felt comfortable with. We were also willing to run interviewers for longer, given adolescents were sharing valuable insights about their sleep, mental health and emotional well-being.

Furthermore, as indicated in the methods chapter, all the research study documents, and interview questions used language that was tailored and understandable to adolescents. Within the interview, all the questions were open-ended to allow adolescents to share whatever they felt comfortable with. The age bracket for participating adolescents was kept narrow to avoid a wide range of developmental differences in relation to experiences of sleep and mental health, thus enhancing the interpretation and transferability of the findings. A strength of focusing on older rather than younger adolescents not only included obtaining just consent as opposed to assent, which made ethics approval a bit easier to receive, but also it lessens the likelihood of a range of sleep changes due to puberty. Older adolescents have also been shown to have the ability to think critically, reflect, evaluate and put their thoughts and ideas into words better than compared to younger adolescents (Nippold et al., 2020; Wallis et al., 2021).

Additionally, participants were also given the option to provide feedback on their transcript if they wanted to. Respect, reciprocity and generosity were shown throughout the research process by not only providing a gift card to participants but also chocolates to everyone involved. The research gave the option and opportunity to learn more about adolescent sleep, mental health and emotional well-being to participants. As per standard practice, this research's study design was informed by consultation with a Māori health researcher and was conducted in accordance to the participating school's policies, including corroborating with the school's guidance counsellor to ensure participant safety. Overall, this research gave a chance for adolescents to voice their ideas and perspectives, which is often

scarce in academia whereby non-adolescent researchers provide adolescent sleep, mental health and emotional well-being understandings and recommendations without consulting what adolescents themselves do, think and know. In whole, participants shared a wide variety of valuable insights regarding the topic of sleep, mental health and emotional well-being.

Future Research

Although the present study enabled adolescents to voice what they think, feel and experience about their sleep, mental health and emotional well-being and whether they see a connection between them; it was not expansive, therefore more research should be done. This research did not uncover many long-term relationships between sleep, mental health and emotional well-being. For example, disclosure of an anxiety diagnosis from an early age and observing longitudinal sleep alterations or Vise versa. The present study showed that adolescents really do see a connection between their sleep, mental health and emotional well-being. However, further research should be conducted on whether adolescents also see long-term effects and connections with their sleep, mental health and emotional well-being. The latter could possibly be achieved by following adolescents longitudinally.

Furthermore, although this was not the sole aim of this research, it is likely what adolescents do before going to bed not only changes by generations, but may vary depending on country, ethnicity and social norms. Hence, in terms of gaining further insights, a large multi-national quantitative or qualitative study(s) could be useful to know whether certain activities, such as reading before bed always do tend to help with sleep or are bound to individual traits. Additionally, we could also find out what pre-bed activities not only support better sleep, but also one's mental health, emotional well-being and whether these differ by country, ethnicity and sex. As certain cultures may place more value on certain things than other cultures, such as healing through waiata (song) or spiritual means rather than Western ways of healing. For example, for one student, listening to music helped them stay asleep while also calming them in tough situations, therefore helping them with their mental health and emotional well-being needs.

To further expand knowledge in adolescent sleep, mental health and emotional well-being, having the opinion, ideas and feelings of family, siblings or caregivers experience with their adolescents' sleep, mental health and emotional well-being and whether they see a

connection between all three factors is also vital. Furthermore, it is important that the thinking of both caregivers and adolescents themselves align to some extent to allow both parties to agree on healthy sleep hygiene and rules, as adolescents may view a bedtime of 10pm as too early while adults may view it as ideal. Family sleep attitudes and interventions are critical and have major implications, as indicated in the introduction (section Psychosocial Factors Affecting Adolescent Sleep) and within this research, the family placing importance on sleep will likely lead to adolescents going to bed earlier (Alvarado et al., 2024). Furthermore, if both adolescents and their caregivers work together to have some level of agreement on what they want to do to improve on and improve their understanding of their sleep, they can therefore create an understanding and positive environment to support better sleep, mental health and emotional well-being. An understanding environment is vital, as adolescents are commonly misunderstood for always going on technology and that they can't go to sleep because of it, when many other factors such as school stress leads to poor sleep. If both parties, caregivers and adolescents, understand each other, such as adults understanding the adolescents sleep is naturally delayed not only because of technology and adolescents understanding why adults may take technology away, this can alleviate judgement, support better sleep and family relationships and therefore possibly better mental health and emotional well-being for all.

Additionally, Alvarado and colleagues (2024) found older adolescents to have more negative sleep attitudes than their parents, which lead to poor sleep hygiene and placing less importance on sleep. The current study didn't uncover differences between family and adolescent sleep attitudes, hence warrants further investigation. However, if older adolescents' sleep attitudes are more negative than their parents, then it would be beneficial to examine why this may be, where do older adolescents get their sleep information and practises from as this may explain their negative sleep attitudes. In the current study, while participants valued and gave importance to sleep, whether adolescents worry and stress about getting the right amount of sleep was not demonstrated at length; hence further inquiry is paramount.

Limited research has been conducted that places adolescents at the centre and asks for their opinions and perspectives. It's also widely known that sleep and pre-bed activities differ by ethnicity and SES (section: Adolescent Sleep Status in ANZ). Although this study indicated that school was a stressing factor that impacted sleep, mental health and emotional

well-being, it would be interesting to see what adolescents think the effects of racism and SES have on sleep, pre-bed activities, emotional well-being and mental health and whether they see a connection at all. Although not a focus of this study, it's likely there are differences between races and different SES groups in the things adolescents do before going to sleep (Galland et al., 2020) it would be interesting if adolescents are aware of this.

Additionally, although this study interviewed adolescents about their sleep, mental health and emotional well-being, there are very few qualitative and quantitative studies that look at all three factors together within adolescence. Future research, using both quantitative and qualitative approaches, would be useful to see if results are similar and show similar conclusions. For example, quantitative studies could possibly measure how much sleep deprivation is needed to result in observable mental health and emotional well-being issues and what mental health and emotional well-being issues are experienced? This could be supplemented by qualitatively asking what mental health and emotional well-being issues are experienced by adolescents when they have sleeping issues and how do they deal with them?

Furthermore, as indicated in the interviews, although there were some participants that disclosed that they were diagnosed with a mental health or sleeping issue, this study was not specifically designed to focus on a clinical population. Therefore, further research investigating whether there are differences and similarities between clinical samples and non-clinical samples on how adolescents view sleep, mental health and emotional well-being would be advantageous. The results of the current study indicated that many participants viewed mental health as in mood states, which is seen in past research (sections: What is Mental Health? And Links Between Emotional Well-Being and Sleep). However, many participants in this research did not speak to clinical symptoms such as depression exacerbating with poor sleep, experiencing a depressive episode or relapsing with poor sleep.

Within this study and due to the mixed results of past research in relation to academic performance and late school start times (Marx et al., 2017), future study should investigate this further before enforcing later school start times. Additionally, it might not be the case of changing school times to be later, but making classes shorter to allow for naps and possibly better attention, as some participants in this study found it hard to focus in class due to long hours. Some participants did however like the fact that school started later on Tuesdays and Thursdays as this allowed them to catch up on their sleep or get to school on time. Whatever

the proposed change is, one needs to see if it really does affect students' productivity, focus, sleep, mental health and emotional well-being.

Within the present study, the interviewer asked participants ‘what do they think others around them, like the school, can do to support their sleep, followed by, would later school times help’. Within the interviews, while some students said that later school times would be beneficial, it wasn’t always related to wanting more sleep, more for wanting to shorten overall class and school times. This could be because adolescents don't know that they need more sleep or don’t fully understand the adverse health side effects of having short or poor sleep. Furthermore, although adolescents value sleep, with some participants wanting to sleep more, participants might not see sleep as important enough to change systemic and institutional factors such as school times. Additionally, U.S high schools that started later than 8:30 am allowed 60% of their students to get eight hours of sleep (Wahlstrom et al., 2014). In the current study, the school already had a late start time of 8:45am and 9:10am, while schools in the U.S start much earlier (Barber et al., 2022), hence, ANZ adolescents may not observe much improvement in their sleep, although for optimum mood nine hours of sleep is required (Short et al., 2020).

Furthermore, participants in the current study felt if school times were later, that this would instead impact students' focus and so productivity as school would finish at 4 or 5 pm. Many Participants liked the fact that the current school start time allowed for them to get school “out of the way” and finish by 3pm which allowed them enough time to engage in other activities. Changing school times to be later has been proposed by many and supposedly leads to up to 34 minutes more sleep, 4.5 percent improvement in grades, improvement in attendance and reduction in social jet lag (Dunster et al., 2018). Furthermore, there are significant decreases in daytime sleepiness, depressed mood, caffeine use (Boergers et al., 2014) and for 16-to-18-year-olds, the chance of a car crash goes down by 70 percent (Wahlstrom et al., 2014) when school start times are delayed. However, as noted by Marx and others (2017) systematic review, there are mixed findings in relation to later school start times with academic outcomes, absenteeism and student alertness.

Within ANZ, Barber and others (2022) noted that later school times are not that common. However, most schools provide later starts once a day during the mid-week, but it would benefit adolescents the most if there was also a later school start time either on

Monday or Friday. One Wellington school, since 2006 has offered their year 12 and 13 students a later start time of 9:45 am Monday to Friday and 10:20 am start on Wednesdays. Results indicated benefits to students' sleep and alertness. Additionally, the school was able to do this change while still maintaining the same finishing time (Barber et al., 2022; Borlase et al., 2013). However, there should be more research within ANZ on how later school times affect adolescents' academic performance, mood and peer relationships as information about this topic is limited.

Future Directions

As indicated by the views shared by adolescents in this study's 'What Should We Do Now Theme', education may help adolescents improve their sleep, mental health and emotional well-being. Just knowing about sleep, mental health and emotional well-being may also relieve adolescents' stress about the stigma associated with mental health, and that it's okay to be different which may improve their emotional well-being and mental health. As indicated by Jorm (2000) there is misinformation about mental health and negative social attitudes and stigma towards mental health can hinder its recognition and the ability to get appropriate help. Furthermore, Vidourek and Burbage (2019) indicated that education on mental health was needed for improving stigma-related attitudes and to increase compassion towards people that have mental health issues. Within the Vidourek and Burbage study, students said that education would increase awareness, hence increase positive mental health and decrease mental health stigma. Additionally, students noted that media portrayals of people with mental health issues should improve. Within the current study, participants wanted to better understand their thoughts, ideas, feelings and behaviours when they went through a tough situation and that their sleep and mental health were negatively affected and vice versa. Furthermore, participants wanted to recognize their body cues such as feeling tired hence then going to sleep. Participants also wanted to understand that, when they have poor sleep, that they have low affect the next day, in which education in this area was viewed as being helpful.

In terms of actually providing sleep, mental health and emotional well-being education, as indicated by this study's participants, providing it in junior health classes or as a guest speaker at school may be useful. Additionally, educational classes must be tailored to adolescents, such as giving real life examples like sleep being negatively impacted during exam time. As indicated by participants in this study, thought will have to be put into how to

properly incorporate sleep, mental health and emotional well-being education at school that actively engages and interests' students. Van Rijn and others (2020) evaluated an interactive school-based sleep education program and found no changes in adolescents' sleep; however, the authors noted that this could be because the follow-up was during exams. Rijin and others concluded that sleep education will have to be combined with later school times and parental involvement to allow for sleep behaviour changes. Similarly, Otsuka and others (2020) study on school-based sleep hygiene education found no significant differences between intervention and control groups in poor subjective sleep quality, excessive daytime sleepiness and late bedtimes. However, the authors did find that the intervention group had a significantly higher prevention from insomnia symptoms and short sleep duration. Similarly, providing educational workshops to teachers about adolescent sleep and its links with mental health may lower adolescents' mental health issues and overall improve adolescents' mental health (Lima et al., 2021). Possibly adolescents can co-design sleep and mental health resources and classes in order to achieve best outcomes.

Furthermore, although wanting more education about sleep, mental health and emotional well-being was stressed in this study, it's not always necessary that this could be through school. For example, there could be school, news and societal promotion about adolescent sleep, mental health and emotional well-being where everyone, especially adolescents and their families have access to reliable knowledge and know where to get this knowledge. Regardless of how and where education is provided, it must be inclusive and be accessible to all, as many people in low SES may not own a computer to find knowledge and have other barriers to their health and education.

Implications and Conclusion: Why does it Matter?

This research not only has implications for the health sector, adolescents and their families, but also, the general population, as when adolescents grow up, the effects of poor sleep, mental health and emotional well-being can be long lasting. The effects of poor sleep and mental health not only holds an economic health and work cost, but also, people's health, families and especially society's future is at risk. Worldwide, adolescents are sleep-deprived and there is a high rate of mental health and emotional well-being issues within their population. To make matters worse, within ANZ there is a shortage in mental health staff and especially services tailored and accessible towards adolescents (Coggan et al., 2003) in which

many significantly distressed adolescents don't seek professional mental health support (Mariu et al., 2011)**.** Furthermore, the thoughts, ideas, feelings and experiences of adolescents in academic literature are scarce. In both academic literature and society, technology use by adolescents is seen as a major reason for them to have difficult sleep.

The current study supports this, however technology affected adolescents' sleep and mental health both negatively and positively. Hence, there needs to be a shift in the framing of adolescent health care advice from viewing adolescents as not understanding what affects their sleep, mental health and emotional well-being to acknowledging their understanding of the topic. Therefore, interventions should involve adolescents in policy and health care advice by working with adolescents instead of working for adolescents. As from the current study, it is evident that adolescents not only understand what influences their mental health, emotional well-being and sleep, but also know what works for them in order to have good sleep, mental health and emotional well-being and know how to mitigate the negative effects of poor sleep, mental health and emotional well-being. Additionally, involving adolescents in mental health support can allow for an adolescent friendly approach to mental health which may promote more adolescents to seek professional mental health support.

Both good and poor sleep quality was reported in this study. There were students that had short sleep and didn't necessarily recognize that they needed more. Furthermore, there were participants where technology use negatively impacted their sleep. However, this research also indicated that adolescents understand and take actions to support their sleep, they know when to use technology to support their sleep and that technology can impact their sleep hence limit its use. Adolescents know what works for them, in terms of creating a comfortable sleeping environment to limiting caffeine, doing exercising or reading to support sleep. Family seems to have both a positive and negative influence on adolescent sleep and are seen as important facilitators for adolescent sleep. Some impacting factors for sleep included the stress of school, distractions, technology, work, physical health and the inability to shut down. Adolescents see a complex link between sleep, mental health and emotional well-being which can be bi-directional or for some one-sided. Adolescents observe a link between sleep, mood, social interactions and with cognition, such as focus and attention. Within society, teens are seen as irresponsible or "hard to deal with". The present study

challenges that ideology, whereby teens understand, know, want to do or are already doing the things that are right for them.

References

Alfano, C. A., Zakem, A. H., Costa, N. M., Taylor, L. K., & Weems, C. F. (2009). Sleep problems and their relation to cognitive factors, anxiety, and depressive symptoms in children and adolescents. *Depression and Anxiety*, *26*(6), 503-512. https://doi.org/10.1002/da.20443

Akçay, D., & Akçay, B. D. (2018). The influence of media on the sleep quality in adolescents. *The Turkish Journal of Pediatrics*, *60*(3), 255-263. https://doi.org/10.24953/turkjped.2018.03.004

Alvarado, G., Hilton, A., Montenegro, A., & Palmer, C. A. (2024). Passing on the Zzz's: Adolescent sleep attitudes are associated with sleep behaviors and parental prioritization of sleep. *Sleep Health, 10*(3), 286-290. https://doi.org/10.1016/j.sleh.2023.12.006

Alvaro, P. K., Roberts, R. M., Harris, J. K., & Bruni, O. (2017). The direction of the relationship between symptoms of insomnia and psychiatric disorders in adolescents. *Journal of Affective Disorders*, *207*, 167-174. https://doi.org/10.1016/j.jad.2016.08.032

Andrillon, T., Nir, Y., Staba, R. J., Ferrarelli, F., Cirelli, C., Tononi, G., & Fried, I. (2011). Sleep spindles in humans: Insights from intracranial EEG and unit recordings. *Journal of Neuroscience*, *31*(49), 17821-17834. https://doi.org/10.1523/JNEUROSCI.2604-11.2011

Arora, T., Broglia, E., Thomas, G. N., & Taheri, S. (2014). Associations between specific technologies and adolescent sleep quantity, sleep quality, and parasomnias. *Sleep Medicine*, *15*(2), 240-247. https://doi.org/10.1016/j.sleep.2013.08.799

Babbott, K. M., Consedine, N. S., & Roberts, M. (2023). Eating behaviour, body image, and mental health: Updated estimates of adolescent health, well-being, and positive functioning in Aotearoa New Zealand. *Journal of Primary Health Care*, *15*(4), 297-307. https://doi.org/10.1071/HC23048

Baiden, P., Spoor, S. P., Nicholas, J. K., Brown, F. A., LaBrenz, C. A., & Spadola, C. (2023). Association between use of electronic vaping products and insufficient sleep among adolescents: Findings from the 2017 and 2019 YRBS. *Sleep Medicine*, *101*, 19-27. https://doi.org/10.1016/j.sleep.2022.10.005

Bai, S., Buxton, O. M., Master, L., & Hale, L. (2022). Daily associations between family interaction quality, stress, and objective sleep in adolescents. *Sleep Health*, *8*(1), 69-72. https://doi.org/10.1016/j.sleh.2021.11.006

Baran, B., Pace-Schott, E. F., Ericson, C., & Spencer, R. M. (2012). Processing of emotional reactivity and emotional memory over sleep. *Journal of Neuroscience*, *32*(3), 1035-1042. https://doi.org/10.1523/JNEUROSCI.2532-11.2012

Baranwal, N., Phoebe, K. Y., & Siegel, N. S. (2023). Sleep physiology, pathophysiology, and sleep hygiene. *Progress in Cardiovascular Diseases*, *77*, 59-69. https://doi.org/10.1016/j.pcad.2023.02.005

Barber, C., Hetrick, S., Edmonds, L., Taylor, R., Alansari, M., Oldehaver, J., Signal, L., Haszard, J., & Galland, B. (2022). Sleep-in to stay well: Addressing school start times for the health and wellbeing of teens in Aotearoa. *New Zealand Medical Journal, 136*(1568), 98-104. https://researchspace.auckland.ac.nz/handle/2292/63407

Bartel, K. A., Gradisar, M., & Williamson, P. (2015). Protective and risk factors for adolescent sleep: A meta-analytic review. *Sleep Medicine Reviews*, *21*, 72-85. https://doi.org/10.1016/j.smrv.2014.08.002

Basheer, R., Strecker, R. E., Thakkar, M. M., & McCarley, R. W. (2004). Adenosine and sleep–wake regulation. *Progress in Neurobiology*, *73*(6), 379-396. https://doi.org/10.1016/j.pneurobio.2004.06.004

Bauducco, S., Pillion, M., Bartel, K., Reynolds, C., Kahn, M., & Gradisar, M. (2024). A bidirectional model of sleep and technology use: A theoretical review of how much, for whom, and which mechanisms. *Sleep Medicine Reviews*, *76.* https://doi.org/10.1016/j.smrv.2024.101933

Baum, K. T., Desai, A., Field, J., Miller, L. E., Rausch, J., & Beebe, D. W. (2014). Sleep restriction worsens mood and emotion regulation in adolescents. *Journal of Child Psychology and Psychiatry*, *55*(2), 180-190. https://doi.org/10.1111/jcpp.12125

Bell, S. L., Audrey, S., Gunnell, D., Cooper, A., & Campbell, R. (2019). The relationship between physical activity, mental wellbeing and symptoms of mental health disorder in adolescents: a cohort study. *International Journal of Behavioral Nutrition and Physical Activity*, *16*, 1-12. https://doi.org/10.1186/s12966-019-0901-7

Biddle, S. J., & Asare, M. (2011). Physical activity and mental health in children and adolescents: A review of reviews. *British Journal of Sports Medicine*, *45*(11), 886-895. https://doi.org/10.1136/bjsports-2011-090185

Birrell, L., Werner-Seidler, A., Davidson, L., Andrews, J. L., & Slade, T. (2025). Social connection as a key target for youth mental health. *Mental Health & Prevention*, *37*. https://doi.org/10.1016/j.mhp.2025.200395

Boergers, J., Gable, C. J., & Owens, J. A. (2014). Later school start time is associated with improved sleep and daytime functioning in adolescents. *Journal of Developmental & Behavioral Pediatrics*, *35*(1), 11-17. https://journals.lww.com/jrnldbp/abstract/2014/01000/later_school_start_time_is_associated_with.2.aspx

Borlase, B. J., Gander, P. H., & Gibson, R. H. (2013). Effects of school start times and technology use on teenagers' sleep: 1999–2008. *Sleep and Biological Rhythms*, *11*(1), 46-54. https://link.springer.com/article/10.1111/sbr.12003

Braun, V., & Clarke, V., (2013). *Successful qualitative research: A practical guide for beginners / Virginia Braun & Victoria Clarke.* London: Sage.

Braun, V., & Clarke, V., (2022). *Thematic analysis: A practical guide / Virginia Braun and Victoria Clarke.* London: Sage Publications Ltd.

Brent, D. A., Baugher, M., Bridge, J., Chen, T., & Chiappetta, L. (1999). Age-and sex-related risk factors for adolescent suicide. *Journal of the American Academy of Child & Adolescent Psychiatry*, *38*(12), 1497-1505. https://doi.org/10.1097/00004583-199912000-00010

Britten, Y. (2023). *Young People's Voices on Mental Health and Wellbeing in Aotearoa New Zealand* [Masterate dissertation, University of Auckland]. Auckland University Research Online. https://researchspace.auckland.ac.nz/bitstream/handle/2292/67462/Britten-2023-thesis.pdf?sequence=1&isAllowed=y

Buysse, D. J. (2014). Sleep health: Can we define it? Does it matter? *Sleep*, *37*(1), 9-17. https://doi.org/10.5665/sleep.3298

Byrne, D. (2022). A worked example of Braun and Clarke's approach to reflexive thematic analysis. *Quality & Quantity: International Journal of Methodology, 56*(3), 1391-1412. https://doi.org/10.1007/s11135-021-01182-y

Caddick, Z. A., Gregory, K., Arsintescu, L., & Flynn-Evans, E. E. (2018). A review of the environmental parameters necessary for an optimal sleep environment. *Building and Environment*, *132*, 11-20. https://doi.org/10.1016/j.buildenv.2018.01.020

Carney, C. E., Edinger, J. D., Meyer, B., Lindman, L., & Istre, T. (2006). Daily activities and sleep quality in college students. *Chronobiology International*, *23*(3), 623-637. https://doi.org/10.1080/07420520600650695

Carskadon, M. A. (2011). Sleep in adolescents: the perfect storm. *Pediatric Clinics*, *58*(3), 637-647. https://www.pediatric.theclinics.com/article/S0031-3955(11)00019-8/abstract

Carskadon, M. A., Acebo, C., & Jenni, O. G. (2004). Regulation of adolescent sleep: Implications for behavior. *Annals of the New York Academy of Sciences*, *1021*(1), 276-291. https://doi.org/10.1196/annals.1308.032

Carskadon, M.A., & Dement, W.C. (2011). Monitoring and staging human sleep. In M.H. Kryger, T. Roth, & W.C. Dement (Eds.), *Principles and Practice of Sleep Medicine* (5th ed., pp 16-26). St. Louis: Elsevier Saunders. http://apsychoserver.psych.arizona.edu/jjbareprints/psyc501a/readings/Carskadon%20Dement%202011.pdf

Carskadon, A. M., & Dement, C. W. (2017). Normal Human Sleep: An Overview. In M. Kryger., T. Roth., & W. C. Dement (Eds.), *Principals and Practices of Sleep Medicine* (6th ed., pp. 15-24). Elsevier.

Carskadon, M. A., & Tarokh, L. (2014). Developmental changes in sleep biology and potential effects on adolescent behavior and caffeine use. *Nutrition reviews*, *72*(S1), 60-64. https://doi.org/10.1111/nure.12147

Cartwright, R. D., & Wood, E. (1991). Adjustment disorders of sleep: the sleep effects of a major stressful event and its resolution. *Psychiatry research*, *39*(3), 199-209. https://doi.org/10.1016/0165-1781(91)90088-7

Cavalcanti, L. M. L. G., Lima, R. A., Barros, M. V. G. D., & Soares, F. C. (2021). Constructs of poor sleep quality in adolescents: Associated factors. *Cadernos De Saude Publica*, *37*(8). https://doi.org/10.1590/0102-311X00207420

Cellini, N., Torre, J., Stegagno, L., & Sarlo, M. (2016). Sleep before and after learning promotes the consolidation of both neutral and emotional information regardless of REM presence. *Neurobiology of Learning and Memory*, *133*, 136-144. https://doi.org/10.1016/j.nlm.2016.06.015

Chan, J. K., Trinder, J., Andrewes, H. E., Colrain, I. M., & Nicholas, C. L. (2013). The acute effects of alcohol on sleep architecture in late adolescence. *Alcoholism: Clinical and Experimental Research*, *37*(10), 1720-1728. https://doi.org/10.1111/acer.12141

Clark, I., & Landolt, H. P. (2017). Coffee, caffeine, and sleep: A systematic review of epidemiological studies and randomized controlled trials. *Sleep Medicine Reviews*, *31*, 70-78. https://doi.org/10.1016/j.smrv.2016.01.006

Clegg, I., Notebaert, L., & Richardson, C. (2024). Negative attention bias and attentional control as mechanisms in the association between insomnia and depression in young people. *Behaviour Research and Therapy*, *179*, 104569. https://doi.org/10.1016/j.brat.2024.104569

Coggan, C., Bennett, S., Hooper, R., & Dickinson, P. (2003). Association between bullying and mental health Status in New Zealand adolescents. *International Journal of Mental Health Promotion*, *5*(1), 16–22. https://doi.org/10.1080/14623730.2003.9721892

Coronal Services of New Zealand: Purongo O te Ao Kakarauri. (2022). *Suicide: Suicide statistics.* https://coronialservices.justice.govt.nz/suicide/suicide-statistics/

Coverdale, G. E., & Long, A. F. (2015). Emotional wellbeing and mental health: An exploration into health promotion in young people and families. *Perspectives in Public Health*, *135*(1), 27-36. https://doi.org/10.1177/1757913914558080

Crowley, S. J., & Eastman, C. I. (2018). Free-running circadian period in adolescents and adults. *Journal of Sleep Research*, *27*(5). https://doi.org/10.1111/jsr.12678

Crowley, S. J., Van Reen, E., LeBourgeois, M. K., Acebo, C., Tarokh, L., Seifer, R., ... & Carskadon, M. A. (2014). A longitudinal assessment of sleep timing, circadian phase, and phase angle of entrainment across human adolescence. *PloS One*, *9*(11). https://doi.org/10.1371/journal.pone.0112199

Crowley, S. J., Wolfson, A. R., Tarokh, L., & Carskadon, M. A. (2018). An update on adolescent sleep: New evidence informing the perfect storm model. *Journal of Adolescence*, *67*, 55-65. https://doi.org/10.1016/j.adolescence.2018.06.001

Daniels, A., Pillion, M., Rullo, B., Mikulcic, J., Whittall, H., Bartel, K., ... & Bauducco, S. V. (2023). Technology use as a sleep-onset aid: are adolescents using apps to distract themselves from negative thoughts?. *Sleep Advances*, *4*(1). https://doi-org.ezproxy.massey.ac.nz/10.1093/sleepadvances/zpac047

Dickson, G. T., & Schubert, E. (2022). Musical features that aid sleep. *Musicae Scientiae*, *26*(3), 497-515. https://doi.org/10.1177/102986492097216

Doane, L. D., & Thurston, E. C. (2014). Associations among sleep, daily experiences, and loneliness in adolescence: Evidence of moderating and bidirectional pathways. *Journal of Adolescence*, *37*(2), 145-154. https://doi.org/10.1016/j.adolescence.2013.11.009

Dolezal, B. A., Neufeld, E. V., Boland, D. M., Martin, J. L., & Cooper, C. B. (2017). Interrelationship between sleep and exercise: A systematic review. *Advances in Preventive Medicine*, *2017*(1). https://doi.org/10.1155/2017/1364387

Dorofaeff, T. F., & Denny, S. (2006). Sleep and adolescence. Do New Zealand teenagers get enough? *Journal of Paediatrics and Child Health*, *42*(9), 515-520. https://doi.org/10.1111/j.1440-1754.2006.00914.x

Dunster, G. P., de la Iglesia, L., Ben-Hamo, M., Nave, C., Fleischer, J. G., Panda, S., & de la Iglesia, H. O. (2018). Sleepmore in Seattle: Later school start times are associated with more sleep and better performance in high school students. *Science Advances*, *4*(12). https://doi.org/10.1126/sciadv.aau6200

Eggermont, S., & Van den Bulck, J. (2006). Nodding off or switching off? The use of popular media as a sleep aid in secondary-school children. *Journal of Paediatrics and Child Health*, *42*(7-8), 428-433. https://doi.org/10.1111/j.1440-1754.2006.00892.x

Ekinci, N. (2024). Mental well-being in adolescence: A systematic review. *Psikiyatride Güncel Yaklaşımlar-Current Approaches in Psychiatry, 16*(1), 102-110. https://doi.org/10.18863/pgy.1315698

Felden, É. P. G., Filipin, D., Barbosa, D. G., Andrade, R. D., Meyer, C., & Louzada, F. M. (2016). Factors associated with short sleep duration in adolescents. *Revista Paulista De Pediatria*, *34*(1), 64-70. https://doi.org/10.1016/j.rppede.2015.10.007

Fernando, A., Samaranayake, C., Blank, C., Roberts, G., & Arroll, B. (2013). Sleep disorders among high school students in New Zealand. *Journal of Primary Health Care*, *5*(4), 276-282. https://doi.org/10.1071/HC13276

Finucane, E., O'Brien, A., Treweek, S., Newell, J., Das, K., Chapman, S., Wicks, P., Galvin, S., Healy, P., Biesty, L., Gillies, K., Noel-Storr, A., Gardner, H., O'Reilly, M. F., & Devane, D. (2021). Does reading a book in bed make a difference to sleep in comparison to not reading a book in bed? The People's Trial—an online, pragmatic, randomised trial. *Trials*, *22*, 1-13. https://doi.org/10.1186/s13063-021-05831-3

Fleischmann, A., Bertolote, J. M., Belfer, M., & Beautrais, A. (2005). Completed suicide and psychiatric diagnoses in young people: a critical examination of the evidence. *American Journal of Orthopsychiatry*, *75*(4), 676-683. https://doi.org/10.1037/0002-9432.75.4.676

Fleming, T., & Clark, T. (2019). *Youth19 rangatahi smart survey questionnaire.* https://static1.squarespace.com/static/5bdbb75ccef37259122e59aa/t/6095032e5aea1713674e3614/1620378422679/Y19+Final+questionnaire_+for+website_RADS+not+shown.pdf

Fleming, T. M., Clark, T., Denny, S., Bullen, P., Crengle, S., Peiris-John, R., Robinson, E., Rossen, F. V., Sheridan, J., & Lucassen, M. (2014). Stability and change in the mental health of New Zealand secondary school students 2007–2012: Results from the national adolescent health surveys. *Australian & New Zealand Journal of Psychiatry*, *48*(5), 472-480. https://doi.org/10.1177/000486741351448

Fleming, T., Tiatia-Seath, J., Peiris-John, R., Sutcliffe, K., Archer, D., Bavin, L., Crengle, S., & Clark, T. (2020). *Youth19 Rangatahi Smart Survey, Initial Findings: Hauora Hinengaro / Emotional and Mental Health.* The Youth19 Research Group, The University of Auckland and Victoria University of Wellington, New Zealand. https://static1.squarespace.com/static/5bdbb75ccef37259122e59aa/t/5f338e4cfb539d2246e9e5ce/1597214306382/Youth19+Mental+Health+Report.pdf

Fredriksen, K., Rhodes, J., Reddy, R., & Way, N. (2004). Sleepless in Chicago: tracking the effects of adolescent sleep loss during the middle school years. *Child Development*, *75*(1), 84-95. https://doi.org/10.1111/j.1467-8624.2004.00655.x

Fulfs, T., Poulain, T., Vogel, M., Nenoff, K., & Kiess, W. (2024). Associations between sleep problems and emotional/behavioural difficulties in healthy children and adolescents. *BMC Pediatrics*, *24*(1), 15. https://doi.org/10.1186/s12887-023-04487-z

Fuligni, A. J., Bai, S., Krull, J. L., & Gonzales, N. A. (2019). Individual differences in optimum sleep for daily mood during adolescence. *Journal of Clinical Child & Adolescent Psychology*, *48*(3), 469-479. https://doi.org/10.1080/15374416.2017.1357126

Fuligni, A. J., & Hardway, C. (2006). Daily variation in adolescents' sleep, activities, and psychological well-being. *Journal of Research on Adolescence*, *16*(3), 353-378. https://doi.org/10.1111/j.1532-7795.2006.00498.x

Gaarde, J., Hoyt, L. T., Ozer, E. J., Maslowsky, J., Deardorff, J., & Kyauk, C. K. (2020). So much to do before I sleep: investigating adolescent-perceived barriers and facilitators to sleep. *Youth & Society*, *52*(4), 592-617. https://doi.org/10.1177/0044118X18756468

Galland, B. C., De Wilde, T., Taylor, R. W., & Smith, C. (2020). Sleep and pre-bedtime activities in New Zealand adolescents: Differences by ethnicity. *Sleep Health*, *6*(1), 23-31. https://doi.org/10.1016/j.sleh.2019.09.002

Galland, B. C., Gray, A. R., Penno, J., Smith, C., Lobb, C., & Taylor, R. W. (2017). Gender differences in sleep hygiene practices and sleep quality in New Zealand adolescents aged 15 to 17 years. *Sleep Health*, *3*(2), 77-83. https://doi.org/10.1016/j.sleh.2017.02.001

Gander, P. (2003). Chapter 2: The Circadian Clock. In P. Gander (Eds.), *Sleep in the 24-Hour Society* (pp. 7-31). Astra Print.

Gandhi, M. H., & Emmady, P. D. (2023). *Physiology, K Complex.* StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK557469/

Gariepy**,** G., Danna, S., Gobiņa, I., Rasmussen, M., de Matos, M. G., Tynjälä, J., Janssen, I., Kalman, M., Villerusa, A., Husarova, D., Brooks, F., Elgar, F. J., Klavina-Makrecka, S., Smigelskas, K., Gaspar, T., & Schnohr, C. (2020). How are adolescents sleeping? Adolescent sleep patterns and sociodemographic differences in 24 European and North American countries. *Journal of Adolescent Health*, *66*(6), 81-88. https://doi.org/10.1016/j.jadohealth.2020.03.013

Grandner, M. A. (2017). Sleep, health, and society. *Sleep Medicine Clinics, 12*(1), 1-22. https://doi.org/10.1016/j.jsmc.2016.10.012

Gradisar, M., Kahn, M., Micic, G., Short, M., Reynolds, C., Orchard, F., Bauducco, S., Bartel, K., & Richardson, C. (2022). Sleep's role in the development and resolution of adolescent depression. *Nature Reviews Psychology*, *1*(9), 512-523. https://doi.org/10.1038/ s44159-022-00074-8

Gregory, A. M., & O'connor, T. G. (2002). Sleep problems in childhood: a longitudinal study of developmental change and association with behavioral problems. *Journal of the American Academy of Child & Adolescent Psychiatry*, *41*(8), 964-971. https://doi.org/10.1097/00004583-200208000-00015

Gregory, A. M., & Sadeh, A. (2012). Sleep, emotional and behavioral difficulties in children and adolescents. *Sleep Medicine Reviews*, *16*(2), 129-136. https://doi.org/10.1016/j.smrv.2011.03.007

Grandner, M. A., Schopfer, E. A., Sands-Lincoln, M., Jackson, N., & Malhotra, A. (2015). Relationship between sleep duration and body mass index depends on age. *Obesity*, *23*(12), 2491-2498. https://doi.org/10.1002/oby.21247

Gruber, R., Saha, S., Somerville, G., Boursier, J., & Wise, M. S. (2020). The impact of COVID-19 related school shutdown on sleep in adolescents: a natural experiment. *Sleep Medicine*, *76*, 33-35. https://doi.org/10.1016/j.sleep.2020.09.015

Gruber, R., Somerville, G., Paquin, S., & Boursier, J. (2017). Determinants of sleep behavior in adolescents: A pilot study. *Sleep Health*, *3*(3), 157-162. https://doi.org/10.1016/j.sleh.2017.03.004

Godsell, S., & White, J. (2019). Adolescent perceptions of sleep and influences on sleep behaviour: A qualitative study. *Journal of Adolescence*, *73*, 18-25. https://doi.org/10.1016/j.adolescence.2019.03.010

Gordon, A. M., Carrillo, B., & Barnes, C. M. (2021). Sleep and social relationships in healthy populations: A systematic review. *Sleep Medicine Reviews*, *57*. https://doi.org/10.1016/j.smrv.2021.101428

Gough, B., & Novikova, I. (2020). *Mental health, men and culture: how do sociocultural constructions of masculinities relate to men's mental health help-seeking behaviour in the WHO European Region?* (Report No. 70). https://eprints.leedsbeckett.ac.uk/id/eprint/7159/1/MentalHealthMenAndCulturePV-GOUGH.pdf

Guadagni, V., Burles, F., Ferrara, M., & Iaria, G. (2014). The effects of sleep deprivation on emotional empathy. *Journal of Sleep Research*, *23*(6), 657-663. https://doi.org/10.1111/jsr.12192

Gujar, N., McDonald, S. A., Nishida, M., & Walker, M. P. (2011). A role for REM sleep in recalibrating the sensitivity of the human brain to specific emotions. *Cerebral Cortex*, *21*(1), 115-123. https://doi.org/10.1093/cercor/bhq064

Ministry of Health Manatū Hauora, Health Information Standards Organisation (HISO) Paerewa Pārongo Hauora. (2017). *Ethnicity Data Protocols, HISO 10001:2017, Version 1.1.* https://www.tewhatuora.govt.nz/assets/Our-health-system/Digital-health/Health-information-standards/HISO-10001-2017-Ethnicity-Data-Protocols.pdf

Hedin, G., Norell-Clarke, A., Hagell, P., Tønnesen, H., Westergren, A., & Garmy, P. (2020). Facilitators and barriers for a good night's sleep among adolescents. *Frontiers in Neuroscience*, *14*, 92. https://doi.org/10.3389/fnins.2020.00092

He, J. P., Paksarian, D., & Merikangas, K. R. (2018). Physical activity and mental disorder among adolescents in the United States. *Journal of Adolescent Health*, *63*(5), 628-635. https://doi.org/10.1016/j.jadohealth.2018.05.030

Hiller, R. M., Lovato, N., Gradisar, M., Oliver, M., & Slater, A. (2014). Trying to fall asleep while catastrophising: What sleep-disordered adolescents think and feel. *Sleep Medicine*, *15*(1), 96-103. https://doi.org/10.1016/j.sleep.2013.09.014

Hirshkowitz, M., Whiton, K., Albert, S. M., Alessi, C., Bruni, O., DonCarlos, L., Hazen, N., Herman, J., Katz, E. S., Kheirandish-Gozal, L., Neubauer, D. N., O'Donnell, A. E., Ohayon, M., Peever, J., Rawding, R., Sachdeva, R. C., Setters, B., Vitiello, M. V., Ware, J. C., Hillard P. J. A. (2015). *National Sleep Foundation's sleep time duration recommendations: methodology and results summary. Sleep Health, 1*(1) 40-43. https://doi.org/10.1016/j.sleh.2014.12.010

Holtz, K. D., Simkus, A. A., Twombly, E. C., Fleming, M. L., & Wanty, N. I. (2022). Sleep deprivation and adolescent susceptibility to vaping in the United States. *Preventive Medicine Reports*, *26.* https://doi.org/10.1016/j.pmedr.2022.101756

Hublin, C., Kaprio, J., Partinen, M., & Koskenvuo, M. (1999). Nightmares: familial aggregation and association with psychiatric disorders in a nationwide twin cohort. *American Journal of Medical Genetics*, *88*(4), 329-336. https://doi.org/10.1002/(SICI)1096-8628(19990820)88:4<329::AID-AJMG8>3.0.CO;2-E

Huang, I., Short, M. A., Bartel, K., O'Shea, A., Hiller, R. M., Lovato, N., Micic, G., Oliver, M., & Gradisar, M. (2020). The roles of repetitive negative thinking and perfectionism in explaining the relationship between sleep onset difficulties and depressed mood in adolescents. *Sleep Health*, *6*(2), 166-171.https://doi.org/10.1016/j.sleh.2019.09.008

Johansson, A., Brunnberg, E., & Eriksson, C. (2007). Adolescent girls' and boys' perceptions of mental health. *Journal of Youth Studies*, *10*(2), 183-202. https://doi.org/10.1080/13676260601055409

Jorm, A. F. (2000). Mental health literacy: Public knowledge and beliefs about mental disorders. *The British Journal of Psychiatry, 177*(5), 396-401. https://www.cambridge.org/core/journals/the-british-journal-of-psychiatry/article/mental-health-literacy/5563369643662EC541F33D1DD307AD35

Kechter, A., & Leventhal, A. M. (2019). Longitudinal association of sleep problems and distress tolerance during adolescence. *Behavioral Medicine*, *45*(3), 240-248. https://doi.org/10.1080/08964289.2018.1514362

Kljakovic, M., Hunt, C., & Jose, P. E. (2015). Incidence of Bullying and Victimisation among Adolescents in New Zealand. *New Zealand Journal of Psychology, 44*(2), p57-67. https://eds.p.ebscohost.com/eds/pdfviewer/pdfviewer?vid=2&sid=3aa9949a-dda4-4abf-a2c4-0aad8a7a28d5%40redis

Lima, R. A., de Barros, M. V. G., Bezerra, J., Dos Santos, S. J., Monducci, E., Rodriguez-Ayllon, M., & Soares, F. C. (2021). Universal school-based intervention targeting depressive symptoms in adolescents: A cluster randomized trial. *Scandinavian Journal of Medicine & Science in Sports*, *32*(3), 622-631. https://doi.org/10.1111/sms.14115

Lim, J., Lo, J. C., & Chee, M. W. (2017). Assessing the benefits of napping and short rest breaks on processing speed in sleep-restricted adolescents. *Journal of Sleep Research*, *26*(2), 219-226. https://doi.org/10.1111/jsr.12497

Li, S. H., Corkish, B., Richardson, C., Christensen, H., & Werner-Seidler, A. (2024). The role of rumination in the relationship between symptoms of insomnia and depression in adolescents. *Journal of Sleep Research*, *33*(2). https://doi.org/10.1111/jsr.13932

Lovato, N., & Gradisar, M. (2014). A meta-analysis and model of the relationship between sleep and depression in adolescents: Recommendations for future research and clinical practice. *Sleep Medicine Reviews*, *18*(6), 521-529. https://doi.org/10.1016/j.smrv.2014.03.006

Lukoševičiūtė-Barauskienė, J., Žemaitaitytė, M., Šūmakarienė, V., & Šmigelskas, K. (2023). Adolescent perception of mental health: It's not only about oneself, It's about others too. *Children*, *10*(7), 1109. https://doi.org/10.3390/children10071109

MacKenzie, M. D., Scott, H., Reid, K., & Gardani, M. (2022). Adolescent perspectives of bedtime social media use: a qualitative systematic review and thematic synthesis. *Sleep Medicine Reviews*, *63*, https://doi.org/10.1016/j.smrv.2022.101626

Mariu, K. R., Merry, S. N., Robinson, E. M., & Watson, P. D. (2011). Seeking professional help for mental health problems, among New Zealand secondary school students. *Clinical Child Psychology and Psychiatry*, *17*(2), 284-297. https://doi.org/10.1177/1359104511404176

Markovic, A., Kaess, M., & Tarokh, L. (2020). Gender differences in adolescent sleep neurophysiology: a high-density sleep EEG study. *Scientific Reports*, *10*(1), 15935. https://doi.org/10.1038/s41598-020-72802-0

Martinez-Cayuelas, E., Gavela-Pérez, T., Rodrigo-Moreno, M., Losada-Del Pozo, R., Moreno-Vinues, B., Garces, C., & Soriano-Guillén, L. (2024). Sleep problems, circadian rhythms, and their relation to behavioral difficulties in children and adolescents with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, *54*(5), 1712-1726. https://doi.org/10.1007/s10803-023-05934-7

Marx, R., Tanner-Smith, E. E., Davison, C. M., Ufholz, L. A., Freeman, J., Shankar, R., Newton, L., Brown, R. S., Parpia, A.S., Cozma, L., & Hendrikx, S. (2017). Later school start times for supporting the education, health, and well-being of high school students: A systematic review. *Campbell Systematic Reviews*, *13*(1), 1-99. https://doi.org/10.4073/csr.2017.15

Maskevich, S., Shen, L., Wiley, J. F., Drummond, S. P., & Bei, B. (2024). What helps and what hurts adolescents' sleep? An intense longitudinal ecological momentary assessment of daily facilitators and barriers of sleep on school and non-school nights. *Sleep Medicine*. https://doi.org/10.1016/j.sleep.2024.12.035

McLay, L., Tautolo, E. S., Iusitini, L., Richards, R., Galland, B., & Schluter, P. J. (2023). The relationship between sleep duration and health among Pacific adolescents within New Zealand: Findings from the Pacific Islands families study. *Australian and New Zealand Journal of Public Health*, *47*(2), 100021. https://doi.org/10.1016/j.anzjph.2023.100021

McNally, J., & Harrington, B. (2017, June). How millennials and teens consume mobile video. In *Proceedings of the 2017 ACM International Conference on Interactive Experiences for TV and Online Video* (pp. 31-39). https://doi.org/10.1145/3077548.3077555

Meaklim, H., Jackson, M. L., Bartlett, D., Saini, B., Falloon, K., Junge, M., Slater, J., Rehm, I. C., & Meltzer, L. J. (2020). Sleep education for healthcare providers: Addressing deficient sleep in Australia and New Zealand. *Sleep health*, *6*(5), 636-650. https://doi.org/10.1016/j.sleh.2020.01.012

Mental Health Foundation. (2024). *Statistics on suicide in New Zealand: What does the data tell us?* https://mentalhealth.org.nz/suicide-prevention/statistics-on-suicide-in-new-zealand

Menzies, R., Gluckman, P., & Poulton, R. (2020). *Youth mental health in Aotearoa New Zealand: Greater urgency required.* https://www.asa.org.nz/files/youth-mental-health-in-aotearoa-nz.pdf

Ministry of Health: Manatū Hauora. (2024). *Obesity statistics.* https://www.health.govt.nz/nz-health-statistics/health-statistics-and-data-sets/obesity-statistics

Mi, Y., & Lei, X. (2023). Sleep loss and lack of social interaction: A summary interview. *Brain-Apparatus Communication: A Journal of Bacomics*, *2*(1). https://doi.org/10.1080/27706710.2022.2163593

Morgenthaler, J., Wiesner, C. D., Hinze, K., Abels, L. C., Prehn-Kristensen, A., & Göder, R. (2014). Selective REM-sleep deprivation does not diminish emotional memory consolidation in young healthy subjects. *PloS one*, *9*(2). https://doi.org/10.1371/journal.pone.0089849

Mueller, A. E., & Segal, D. L. (2015). Structured versus semistructured versus unstructured interviews. *The encyclopedia of clinical psychology*, 1-7. https://www.researchgate.net/profile/Daniel-Segal-6/publication/313966231_Structured_versus_Semistructured_versus_Unstructured_Interviews/links/599a13bcaca272e41d3ec727/Structured-versus-Semistructured-versus-Unstructured-Interviews.pdf

Muller, D., Paine, S. J., Wu, L. J., & Signal, T. L. (2019). “We're doing the best job we can”: maternal experiences of facilitators and barriers to preschoolers sleeping well in Aotearoa/New Zealand. *Sleep Health*, *5*(3), 248-256. https://doi.org/10.1016/j.sleh.2019.01.005

Muller, D., Signal, T. L., Shanthakumar, M., Fleming, T., Clark, T. C., Crengle, S., Donkin, L., & Paine, S. J. (2024). Inequities in adolescent sleep health in Aotearoa New Zealand: Cross-sectional survey findings. *Sleep health*, *10*(4), 385-392. https://doi.org/10.1016/j.sleh.2024.05.007

Nielsen, T. A., Laberge, L., Paquet, J., Tremblay, R. E., Vitaro, F., & Montplaisir, J. (2000). Development of disturbing dreams during adolescence and their relation to anxiety symptoms. *Sleep*, *23*(6), 1-10. https://doi.org/10.1093/sleep/23.6.1

Nippold, M. A., LaFavre, S., & Shinham, K. (2020). How adolescents interpret the moral messages of fables: Examining the development of critical thinking. *Journal of Speech, Language, and Hearing Research*, *63*(4), 1212-1226. https://doi.org/10.1044/2019_JSLHR-19-00168

Noland, H., Price, J. H., Dake, J., & Telljohann, S. K. (2009). Adolescents’ sleep behaviors and perceptions of sleep. *Journal of School Health*, *79*(5), 224-230. https://doi.org/10.1111/j.1746-1561.2009.00402.x

Noone, D. M., Willis, T. A., Cox, J., Harkness, F., Ogilvie, J., Forbes, E., Sterr, A., & Gregory, A. M. (2014). Catastrophizing and poor sleep quality in early adolescent females. *Behavioral Sleep Medicine*, *12*(1), 41-52. https://doi.org/10.1080/15402002.2013.764528

Nosetti, L., Lonati, I., Marelli, S., Salsone, M., Sforza, M., Castelnuovo, A., Mombelli, S., Masso, G., Ferini-Strambi, L., Agosti, M., & Castronovo, V. (2021). Impact of pre-sleep habits on adolescent sleep: an Italian population-based study. *Sleep Medicine*, *81*, 300-306. https://doi.org/10.1016/j.sleep.2021.02.054

Otsuka, Y., Kaneita, Y., Itani, O., & Tokiya, M. (2020). A school-based sleep hygiene education program for adolescents in Japan: a large-scale comparative intervention study. *Sleep and Biological Rhythms*, *18*, 27-36. https://link.springer.com/article/10.1007/s41105-019-00240-1

Owens, J., Adolescent Sleep Working Group, Committee on Adolescence, Au, R., Carskadon, M., Millman, R., Wolfson, A., Braverman, P. K., Adelman, W. P., Breuner, C. C., Levine, D. A., Marcell, A. V., Murray, P. J & O'Brien, R. F. (2014). Insufficient sleep in adolescents and young adults: An update on causes and consequences. *Pediatrics*, *134*(3), 921-932. https://doi.org/10.1542/peds.2014-1696

Owens, J. A., Stahl, J., Patton, A., Reddy, U., & Crouch, M. (2006). Sleep practices, attitudes, and beliefs in inner city middle school children: a mixed-methods study. *Behavioral Sleep Medicine*, *4*(2), 114-134. https://doi.org/10.1207/s15402010bsm0402_4

Pacheco, E., & Melhuish, N. (2018). *New Zealand teens' digital profile: A Factsheet. New Zealand Teens' Digital Profile: A Factsheet (2018).* http://dx.doi.org/10.2139/ssrn.3134305

Paine, S. J., Harris, R., Cormack, D., & Stanley, J. (2016). Racial discrimination and ethnic disparities in sleep disturbance: The 2002/03 New Zealand health survey. *Sleep*, *39*(2), 477-485. https://doi.org/10.5665/sleep.5468

Palmer, C. A., & Alfano, C. A. (2017). Sleep and emotion regulation: An organizing, integrative review. *Sleep Medicine Reviews*, *31*, 6-16. https://doi.org/10.1016/j.smrv.2015.12.006

Parker**,** C. P., & Shechter, A. (2020).*The two process model of sleep-wake regulation.* https://my.visme.co/view/8r9o40qv-the-two-process-model-of-sleep-wake-regulation

Park, C. L., Kubzansky, L. D., Chafouleas, S. M., Davidson, R. J., Keltner, D., Parsafar, P., Conwell, Y., Martin, M. Y., Hanmer, J., & Wang, K. H. (2023). Emotional well-being: What it is and why it matters. *Affective Science*, *4*(1), 10-20. https://doi.org/10.1007/s42761-022-00163-0

Passos, G. S., Poyares, D., Santana, M. G., Garbuio, S. A., Tufik, S., & Mello, M. T. (2010). Effect of acute physical exercise on patients with chronic primary insomnia. *Journal of Clinical Sleep Medicine*, *6*(3), 270-275. https://doi.org/10.5664/jcsm.27825

Phung, J. N., & Goldberg, W. A. (2017). Poor sleep quality is associated with discordant peer relationships among adolescents with Autism Spectrum Disorder. *Research in Autism Spectrum Disorders*, *34*, 10-18. https://doi.org/10.1016/j.rasd.2016.11.008

Pilcher, J. J., & Huffcutt, A. I. (1996). Effects of sleep deprivation on performance: a meta-analysis. *Sleep*, *19*(4), 318-326. https://doi.org/10.1093/sleep/19.4.318

Quante, M., Khandpur, N., Kontos, E. Z., Bakker, J. P., Owens, J. A., & Redline, S. (2019). “Let's talk about sleep”: a qualitative examination of levers for promoting healthy sleep among sleep-deprived vulnerable adolescents. *Sleep Medicine*, *60*, 81-88. https://doi.org/10.1016/j.sleep.2018.10.044

Richardson, C., Magson, N., Fardouly, J., Oar, E., Johnco, C., & Rapee, R. (2021). A longitudinal investigation of sleep and technology use in early adolescence: does parental control of technology use protect adolescent sleep?. *Sleep Medicine*, *84*, 368-379. https://doi.org/10.1016/j.sleep.2021.06.003

Roberts, R. E., & Duong, H. T. (2013). Depression and insomnia among adolescents: a prospective perspective. *Journal of Affective Disorders*, *148*(1), 66-71. https://doi.org/10.1016/j.jad.2012.11.049

Roberts, R. E., Roberts, C. R., & Chen, I. G. (2001). Functioning of adolescents with symptoms of disturbed sleep. *Journal of Youth and Adolescence*, *30*(1), 1-18. https://link-springer-com.ezproxy.massey.ac.nz/content/pdf/10.1023/A:1005230820074?pdf=openurl

Rose, A. J., & Rudolph, K. D. (2006). A review of sex differences in peer relationship processes: Potential trade-offs for the emotional and behavioral development of girls and boys. *Psychological Bulletin, 132*(1), 98–131. https://doi.org/10.1037/0033-2909.132.1.98

Sasser, J., Lecarie, E. K., Park, H., & Doane, L. D. (2021). Daily family connection and objective sleep in Latinx adolescents: The moderating role of familism values and family communication. *Journal of Youth and Adolescence*, *50*(3), 506-520. https://link.springer.com/article/10.1007/s10964-020-01326-7

Santos, J. S., Beijamini, F., & Louzada, F. M. (2021). Napping behavior in adolescents: consensus, dissents, and recommendations. *Sleep and Vigilance*, *5*, 189-196. https://doi.org/10.1007/s41782-021-00155-3

Scarratt, R. J., Heggli, O. A., Vuust, P., & Sadakata, M. (2023). Music that is used while studying and music that is used for sleep share similar musical features, genres and subgroups. *Scientific Reports*, *13*(1). https://www.nature.com/articles/s41598-023-31692-8

Shanahan, L., Copeland, W. E., Angold, A., Bondy, C. L., & Costello, E. J. (2014). Sleep problems predict and are predicted by generalized anxiety/depression and oppositional defiant disorder. *Journal of the American Academy of Child & Adolescent Psychiatry*, *53*(5), 550-558. https://doi.org/10.1016/j.jaac.2013.12.029

Shen, L., van Schie, J., Ditchburn, G., Brook, L., & Bei, B. (2018). Positive and negative emotions: Differential associations with sleep duration and quality in adolescents. *Journal of Youth and Adolescence*, *47*, 2584-2595. https://doi.org/10.1007/s10964-018-0899-1

Short, M. A., & Louca, M. (2015). Sleep deprivation leads to mood deficits in healthy adolescents. *Sleep Medicine*, *16*(8), 987-993. https://doi.org/10.1016/j.sleep.2015.03.007

Short, M. A., Booth, S. A., Omar, O., Ostlundh, L., & Arora, T. (2020). The relationship between sleep duration and mood in adolescents: A systematic review and meta-analysis. *Sleep Medicine Reviews*, *52*, 101311. https://doi.org/10.1016/j.smrv.2020.101311

Sleep Health foundation. (2024a). *How much sleep do you really need?* https://www.sleephealthfoundation.org.au/sleep-topics/how-much-sleep-do-you-really-need

Sleep Health foundation. (2024b). *Sleep Hygiene: Good sleep habits.* https://www.sleephealthfoundation.org.au/sleep-topics/sleep-hygiene-good-sleep-habits

Sleep Health foundation. (2024c). *Technology and sleep.* https://www.sleephealthfoundation.org.au/sleep-topics/technology-and-sleep

Smith, C., de Wilde, T., Taylor, R. W., & Galland, B. C. (2020). Prebedtime screen use in adolescents: a survey of habits, barriers, and perceived acceptability of potential interventions. *Journal of Adolescent Health*, *66*(6), 725-732. https://doi.org/10.1016/j.jadohealth.2019.12.007

Srinath, S., Jacob, P., Sharma, E., & Gautam, A. (2019). Clinical Practice Guidelines for Assessment of Children and Adolescents. *Indian Journal of Psychiatry, 61*(2), 158-175. https://doi.org/10.4103/psychiatry.IndianJPsychiatry_580_18

Stats NZ Tatauranga Aotearoa, Te Kāwanatanga o Aotearoa New Zealand Government. (2022). *Design of forms for the 2023 Census.* https://www.stats.govt.nz/reports/design-of-forms-for-the-2023-census/

Steenekamp, T., Zaslona, J., Gander, P., Rowlands, D., & Signal, T. L. (2021). Sleep/wake behaviour of competitive adolescent athletes in New Zealand: insight into the impact of early morning training. *Sleep Medicine*, *77*, 88-95. https://doi.org/10.1016/j.sleep.2020.11.023

Stubbing, J., & Gibson, K. (2019). Young people's explanations for youth suicide in New Zealand: A thematic analysis. *Journal of Youth Studies*, *22*(4), 520-532. https://doi.org/10.1080/13676261.2018.1516862

Suni, E & DeBanto, J. (2023). *How sleep works: Understanding the science of sleep.* Sleep Foundation. https://www.sleepfoundation.org/how-sleep-works#:~:text=The%20body%20regulates%20sleep%20with,of%20the%20homeostatic%20sleep%20drive

Sutcliffe, K., Ball, J., Clark, T. C., Archer, D., Peiris-John, R., Crengle, S., & Fleming, T. (2023). Rapid and unequal decline in adolescent mental health and well-being 2012–2019: Findings from New Zealand cross-sectional surveys. *Australian & New Zealand Journal of Psychiatry*, *57*(2), 264-282. https://doi.org/10.1177/0004867422113850

Talbot, L. S., McGlinchey, E. L., Kaplan, K. A., Dahl, R. E., & Harvey, A. G. (2010). Sleep deprivation in adolescents and adults: changes in affect. *Emotion*, *10*(6), 831-841. https://doi.org/10.1037/a0020138

Tempesta, D., De Gennaro, L., Natale, V., & Ferrara, M. (2015). Emotional memory processing is influenced by sleep quality. *Sleep Medicine*, *16*(7), 862-870. https://doi.org/10.1016/j.sleep.2015.01.024

Tempesta, D., Socci, V., De Gennaro, L., & Ferrara, M. (2018). Sleep and emotional processing. *Sleep Medicine Reviews*, *40*, 183-195. https://doi.org/10.1016/j.smrv.2017.12.005

Tarokh, L., Short, M., Crowley, S. J., Fontanellaz-Castiglione, C. E., & Carskadon, M. A. (2019). Sleep and circadian rhythms in adolescence. *Current Sleep Medicine Reports*, *5*, 181-192. https://doi.org/10.1007/s40675-019-00155-w

Tavernier, R., Heissel, J. A., Sladek, M. R., Grant, K. E., & Adam, E. K. (2017). Adolescents' technology and face-to-face time use predict objective sleep outcomes. *Sleep Health*, *3*(4), 276-283. https://doi.org/10.1016/j.sleh.2017.04.005

Tavernier, R., & Willoughby, T. (2014). Sleep problems: predictor or outcome of media use among emerging adults at university?. *Journal of Sleep Research*, *23*(4), 389-396. https://doi.org/10.1111/jsr.12132

Terry, G., Hayfield, N., Clarke, V., & Braun V. (2017). Thematic analysis. In W. Willig & W. S. Rogers (Eds.), *The Sage handbook of: Qualitative research in psychology* (2nd ed., pp. 17-37). Sage Publications, Limited. https://ebookcentral.proquest.com/lib/massey/reader.action?docID=4882015&ppg=1

Te Tāhū Hauora Health Quality and Safety Commission (2021). *Child and Youth Mortality Review Committee: 15th data report: 2015–19 | Te Rōpū Arotake Auau Mate o te Hunga Tamariki…* https://www.hqsc.govt.nz/resources/resource-library/child-and-youth-mortality-review-committee-15th-data-report-201519-te-ropu-arotake-auau-mate-o-te-hunga-tamariki-taiohi-te-purongo-raraunga-15-201519/

Tillmann, S., Tobin, D., Avison, W., & Gilliland, J. (2018). Mental health benefits of interactions with nature in children and teenagers: A systematic review. *Journal of Epidemiology & Community Health*, *72*(10), 958-966. https://doi.org/10.1136/jech-2018-210436

Tu, K. M., & Cai, T. (2020). Reciprocal associations between adolescent peer relationships and sleep. *Sleep Health*, *6*(6), 743-748. https://doi.org/10.1016/j.sleh.2020.01.019

Uccella, S., Cordani, R., Salfi, F., Gorgoni, M., Scarpelli, S., Gemignani, A., Geoffroy, P. A., De Gennaro, L., Palagini, L., Ferrara, M., & Nobili, L. (2023). Sleep deprivation and insomnia in adolescence: Implications for mental health. *Brain Sciences. 13*, (4), 569. https://doi.org/10.3390/ brainsci13040569

Van Dongen, H. P., Maislin, G., Mullington, J. M., & Dinges, D. F. (2003). The cumulative cost of additional wakefulness: dose-response effects on neurobehavioral functions and sleep physiology from chronic sleep restriction and total sleep deprivation. *Sleep*, *26*(2), 117-126. https://doi.org/10.1093/sleep/26.2.117

Van Rijn, E., Koh, S. Y., Ng, A. S., Vinogradova, K., Chee, N. I., Lee, S. M., Lo, J. C., Gooley, J. J., & Chee, M. W. (2020). Evaluation of an interactive school-based sleep education program: A cluster-randomized controlled trial. *Sleep Health*, *6*(2), 137-144. https://doi.org/10.1016/j.sleh.2019.10.006

Van Zundert, R. M., Van Roekel, E., Engels, R. C., & Scholte, R. H. (2015). Reciprocal associations between adolescents' night-time sleep and daytime affect and the role of gender and depressive symptoms. *Journal of Youth and Adolescence*, *44*, 556-569. https://doi.org/10.1007/s10964-013-0009-3

Vidourek, R. A., & Burbage, M. (2019). Positive mental health and mental health stigma: A qualitative study assessing student attitudes. *Mental Health & Prevention*, *13*, 1-6. https://doi.org/10.1016/j.mhp.2018.11.006

Vogel, D. L., Heimerdinger-Edwards, S. R., Hammer, J. H., & Hubbard, A. (2011). "Boys don't cry": Examination of the links between endorsement of masculine norms, self-stigma, and help-seeking attitudes for men from diverse backgrounds. *Journal of Counseling Psychology*, *58*(3), 368-382. https://doi.org/10.1037/a0023688

Wahlstrom, K., Dretzke, B., Gordon, M., Peterson, K., Edwards, K., & Gdula, J. (2014). *Examining the impact of later high school start times on the health and academic performance of high school students: A multi-site study.* https://conservancy.umn.edu/items/81f84856-ad21-4a04-a99c-3e9de4213521

Wallis, A. K., Westerveld, M. F., Waters, A. M., & Snow, P. C. (2021). Investigating adolescent discourse in critical thinking: Monologic responses to stories containing a moral dilemma. *Language, Speech, and Hearing Services in Schools*, *52*(2), 630-643. https://doi.org/10.1044/2020_LSHSS-20-00134

Werner, G. G., Schabus, M., Blechert, J., Kolodyazhniy, V., & Wilhelm, F. H. (2015). Pre-to postsleep change in psychophysiological reactivity to emotional films: Late-night REM sleep is associated with attenuated emotional processing. *Psychophysiology*, *52*(6), 813-825. https://doi.org/10.1111/psyp.12404

Wiesner, C. D., Pulst, J., Krause, F., Elsner, M., Baving, L., Pedersen, A., Prehn-Kristensen, A., & Göder, R. (2015). The effect of selective REM-sleep deprivation on the consolidation and affective evaluation of emotional memories. *Neurobiology of Learning and Memory*, *122*, 131-141.https://doi.org/10.1016/j.nlm.2015.02.008

Williamson, D. E., Dahl, R. E., Birmaher, B., Goetz, R. R., Nelson, B., & Ryan, N. D. (1995). Stressful life events and EEG sleep in depressed and normal control adolescents. *Biological Psychiatry*, *37*(12), 859-865. https://doi.org/10.1016/0006-3223(94)00240-4

Wood, B., Rea, M. S., Plitnick, B., & Figueiro, M. G. (2013). Light level and duration of exposure determine the impact of self-luminous tablets on melatonin suppression. *Applied ergonomics*, *44*(2), 237-240. https://doi.org/10.1016/j.apergo.2012.07.008

World Health Organisation,WHO, (2024). *Obesity and overweight.* https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight

World Health Organisation, WHO. (2021). *Mental health of adolescents.* https://www.who.int/news-room/fact-sheets/detail/adolescent-mental-health

World Health Organisation, WHO. (2022). *Mental health.* https://www.who.int/news-room/fact-sheets/detail/mental-health-strengthening-our-response

Yong, Z., Wang, K., Bai, W., Li, Y., Wu, M., Han, J., Wan, Y.,Yuan, J., & Wang, L. (2024). Different correlation between depressive symptoms and sleep duration on weekdays/weekends among adolescents in Taiyuan, North China. *Journal of Affective Disorders*, *358*, 79-88. https://doi.org/10.1016/j.jad.2024.05.003

Zhang, B., & Wing, Y. K. (2006). Sex differences in insomnia: a meta-analysis. *Sleep*, *29*(1), 85-93. https://doi.org/10.1093/sleep/29.1.85

Appendix A

Interview Guide

Interview questions and prompts.

Teen Sleep, Emotional Wellbeing and Mental Health Study

Interview Guide

Introduction (to help with rapport building):
Thank you for taking part in our study.

Briefly introduce myself (I used to go to Taupo Nui-a-Tia College, what I'm studying).

Recap the aims of this research: To better understand teen's thoughts, experiences and feelings about sleep, whether they see a connection between sleep and their emotional wellbeing and mental health, and what strategies they use or would like to use to have better sleep, emotional wellbeing and mental health.

Remind the participant that there are no right or wrong answers when responding to the questions and that their opinions are valid and valuable.

Remind the participant that they can ask questions at any time, that interviews will be sound recorded, that they can stop the interview at any time, that participation is completely voluntary, and that if I'm uncertain about their safety, I will seek guidance from my supervisors and the school's guidance counsellor, that in this case I can not guarantee their confidentiality and that I recommend that they see [redacted] who is [redacted] guidance counsellor, or to visit the school's nurse.

Sleep questions:
Firstly, can you please tell me about your sleep?

How would you describe your sleep?
(prompts: Good sleeper? Poor sleeper? Usually get enough sleep or not?)

On a usual week during term time, what does your sleep look like across the week?
(prompts: Bedtimes and wake times on school nights? Bedtimes and wake times on weekends? Hard to say, because it changes? Sleep better on school nights or nights when there's no school the next day?)

What kinds of things do you do before you go to sleep?
(prompts: Similar things each night or different?, technology etc?)

In your experience, what helps you to sleep well?
(prompts: Sleep environment? Things happening during the day? lifestyle, family, extracurricular/work activities, physical and mental activity?)

What makes it more difficult for you to sleep well?
(prompts: Sleep environment? Things happening during the day?, lifestyle, family and school environment, technology use, extracurricular/work activities, physical and mental activity?)

Appendix A

Interview Guide

Interview questions and prompts continued.

How can you tell if you've slept well and how can you tell if you've slept poorly?
(prompts: How do you feel when you wake up? Physical signs? Anything else?)

Sleep and emotional wellbeing questions:
I'm now going to move onto some questions that focus more on your experiences of sleep and day-to-day wellbeing.

When you have a really good night's sleep, how do you feel the next day?
(prompts: Energy levels? Physical functioning? Able to get tasks done? Concentration? How do you feel emotionally?, mood?, Interactions with others? Stress levels? Coping with unexpected or difficult situations? Anything else?)

Now thinking about when you haven't had a good night's sleep, such as not getting enough sleep or having very disturbed sleep, how do you feel the next day?
(prompts: Energy levels? Physical functioning? Able to get tasks done? Concentration? How do you feel emotionally? Interactions with others? Stress levels? Coping with unexpected or difficult situations? Anything else?)

Sleep and mental health questions:
Now, thinking about the 'bigger picture' or longer term relationships between sleep and wellbeing…

How do you view sleep and mental health in relation to each other?
(prompts: Do you think there's a connection between the two? If so, which aspects of sleep and which aspects of mental health? Does this change over time? Own experiences? Observed in other teens?)

Questions on what can be done to support teens' sleep health:
Lastly, I'm interested in your thoughts and ideas on how teens can be better supported to sleep well…

What would you like to do to support your sleep, emotional wellbeing and mental health?
(prompts: Sleep, emotional wellbeing and mental health information? Sleep, emotional wellbeing and mental health education? school system e.g., school start times, able to sleep at school? health services e.g., sleep support services for teens? social networks? physical environments e.g., housing, public spaces that support waking activity? anything else?)

What do you think others around you (like family, friends, school, and service providers) can do to support you and other teens with sleep, emotional wellbeing and mental health?
(prompts: Sleep, emotional wellbeing and mental health information? Sleep, emotional wellbeing and mental health education? school system e.g., school start times, able to sleep at school? health services e.g., sleep support services for teens? social networks? physical environments e.g., housing, public spaces that support waking activity? anything else?)

Thank you so much for sharing this information, it's been great chatting with you. We've covered a lot, but before we end, is there anything else you would like to add, say or ask?

Give a koha to the participant at the end of the interview.

Appendix B

Draft Summary Results

Main findings of the study presented.

Appendix C

Participants Information Sheet

Information sheet about the study for the participants.

TE KUNENGA KI PŪREHUROA | MASSEY UNIVERSITY
UNIVERSITY OF NEW ZEALAND

Teen Sleep, Emotional Wellbeing and Mental Health Study

Information Sheet for Participants

Kia ora, my name is Kavita Kashyap, and I am completing a Master of Science in Psychology at Massey University. I used to go to Taupo Nui-a-Tia College and currently live in Taupō. This information sheet is to help you decide if you'd like to take part in interviews that I am completing as part of my master's research.

The aim of my research is to better understand teen's thoughts, experiences and feelings about sleep, whether they see a connection between sleep and their emotional wellbeing and mental health, and what strategies they use or would like to use to have better sleep.

I am being supervised by Professor Leigh Signal and Dr Dee Muller who are experienced sleep researchers based at the Sleep/Wake Research Centre, Massey University, Wellington.

What is this study about?

Sleep is really important for our health and wellbeing, especially for teens. Other research has shown that sleep makes a difference to the mental health and emotional wellbeing of teens, but very little research has asked teens what they think about their sleep and its connection with their emotional wellbeing and mental health.

This study aims to:

- Learn more about teens' thoughts, experiences and feelings about their sleep.
- Better understand what teens think about the possible connection between sleep and their emotional wellbeing and mental health.
- Determine what teens already do, or would like to do, to get the best possible sleep.
- Determine what teens think others (family members, friends, service providers and schools) can do to support their sleep.

Appendix C

Participants Information Sheet

Information sheet about the study for the participants continued.

You are invited to take part in one-on-one interviews. If you are interested, please read through the information below and complete the consent form.

Who can take part?

We are aiming to recruit up to 12 students from [redacted]. You need to be in year 12 or 13, be 17 or 18 years old and not well known to me.

What is involved if I decide to take part?

- Please read through the information in this form. You may want to talk about this research with other people, such as family, whānau, or friends. You can also contact me or another member of the team if you have any questions (details below).
- If you'd like to be involved, please email me (kavitakashyapk19@gmail.com) to let me know and sign the consent form. You can either bring the signed consent form along with you if we meet face-to-face or you can email it to me. If we are meeting online, then you can email me a photograph of the signed consent form.
- Please complete the short questionnaire (included in this study pack) about you. These questions are so that I can briefly summarise who I interviewed. No information that could identify you will be used. You can bring the completed questionnaire along if we meet face-to-face or email it to me. If we are meeting online, then you can email me a photograph of the completed questionnaire.
- I will arrange for a one-on-one meeting at a time and place that works for you. It can be before or after school, during lunchtime or free periods, but not during class time. It can take place at school or online. The interview will be sound recorded and take about 30-to-40-minutes.
- During the interview, I will ask you to share your thoughts, experiences and feelings about sleep and the possible connection with your emotional wellbeing and mental health. You can choose not to answer any of the questions, and you can add information where you wish to do so.
- After you take part, you will be given a $30 koha in the form of a Prezzy Card. This is in acknowledgement of your time.
- After the interview, if you wish to be provided with a written version of your interview, I will email it to you, along with a form. If you wish to add, change or give feedback on the written version of your interview, please sign the form. If you do not want to add, change or give feedback, then you don't need to do anything.

What will happen to your information?

Interviews will be sound recorded and turned into a written document. You can choose to edit the written version of your interview if you wish. All of your information will be kept confidential and all names and identifying information will be removed. Pseudonyms

Appendix C

Participants Information Sheet

Information sheet about the study for the participants continued.

(different names) will be used when findings are reported. You and the school will be provided with a summary of the study findings and have access to the final published thesis, if requested. The study's findings will also be published in a scientific journal article and presented at conferences.

All digital information will be stored in password protected folders accessible only by my supervisors and me. All paper information will be stored in a locked filing cabinet at Massey University. Consent forms will be stored separately from all other data to maintain confidentiality and protect identity. Data will be stored for a minimum of five years and then destroyed.

What are the possible risks and benefits of taking part in this research?

The benefits

- This is an opportunity to learn about research and more about sleep, emotional wellbeing and mental health.
- This study is an opportunity for you to voice your ideas about your sleep, emotional wellbeing and mental health.
- This study will help to inform future research and real-world changes that can support the sleep, emotional wellbeing and mental health of teens.
- This study will add to our understanding of sleep, emotional wellbeing and mental health amongst teens.

The risks

- Some people may feel uncomfortable talking about their sleep, emotional wellbeing and mental health. You are encouraged to only share information you feel comfortable sharing. The interviews will occur in a private space.
- Please note, that during the interview if you raise issues such as self-harm or suicidality, I cannot guarantee confidentiality. If topics such as this come up, I will talk to the school's guidance counsellor and with my supervisors, who will seek further guidance from a clinical psychologist. We also recommend you see [redacted] who is [redacted] guidance counsellor, or to visit the school's nurse.

Appendix C

Participants Information Sheet

Information sheet about the study for the participants continued.

Participant's rights

Participating in this study is completely voluntary and you are under no obligation to take part. However, if you do decide to participate, you have the right to:

- Ask questions at any time during the study.
- Withdraw from the study at any time (before, during or after the interview).
- Decline to answer any questions.
- Ask for the recorder to be turned off at any time during the interview.
- Be provided information on the understanding that your name will not be used in any research reports.
- Be provided with a summary of the study's findings when it is finished.

Ethics Committee Approval Statement

This project has been reviewed and approved by the Massey University Human Ethics Ohu Matatika 1, Application OM1 24/17. If you have any concerns about the conduct of this research, please contact the Chairperson, Massey University Human Ethics Ohu Matatika 1, email humanethics1@massey.ac.nz.

Project Contacts

If you have any further questions, queries or worries, please do not hesitate to get in touch.

Ms Kavita Kashyap	Master's student. Email: kavitakashyapk19@gmail.com
Prof Leigh Signal	Supervisor. Sleep/Wake Research Centre, School of Health, Massey University, Wellington, New Zealand. Email: t.l.signal@massey.ac.nz
Dr Dee Muller	Supervisor. Sleep/Wake Research Centre, School of Health, Massey University, Wellington, New Zealand. Email: d.p.muller@massey.ac.nz

What do I do now?

If you would like to take part in this study, please email me, kavitakashyapk19@gmail.com. Please also complete the consent form and demographic questionnaire form included in this pack and either email them to me or bring them along to the interview if we are meeting face-to-face.

Thank you for taking the time to consider being involved in this study. Please do not hesitate to contact us if you have any questions. I look forward to meeting you in the interviews.

Appendix C

Participants Information Sheet

Information sheet about the study for the participants continued.

Resources

If the interview has raised any concerns for you, we recommend you contact [redacted] who is [redacted] guidance counsellor ([redacted]), or you can connect with the school's nurse **(info@anamata.org.nz).** If you'd like to learn more about sleep, emotional wellbeing and mental health, the following resources may be helpful.

Sleep resources:	
Australian Sleep Health Foundation: Useful information for you and your parents on a broad range of sleep topics.	Website link: Children, Adolescents & Parents | Sleep Health Foundation
Mental wellbeing resources:	
Anamata Cafe: This is a local youth health service that can provide support for a broad range of health issues, including mental health.	Website link: anamata.org.nz 152 Spa Road, Taupō, 3330, Po Box 1356, Taupō, 3351, New Zealand. 0800 ANAMATA. Email: info@anamata.org.nz
Mental Health Foundation: Includes information on mental health and links to further support. Also contact information for Youth-line.	Website link: :mentalhealth.org.nz

If you would like more information, please contact any member of the research team.

Appendix D

Guardian Information Sheet

Information sheet about the study for the guardians.

Teen Sleep, Emotional Wellbeing and Mental Health Study

Information Sheet for Guardians

Kia ora, my name is Kavita Kashyap, and I am completing a Master of Science in Psychology at Massey University. I used to go to Taupo Nui-a-Tia College and currently live in Taupō. This information sheet is to help you and your child to decide if you'd like to take part in interviews that I am completing as part of my master's research.

The aim of my research is to better understand teen's thoughts, experiences and feelings about sleep, whether they see a connection between sleep and their emotional wellbeing and mental health, and what strategies they use or would like to use to have better sleep.

I am being supervised by Professor Leigh Signal and Dr Dee Muller who are experienced sleep researchers based at the Sleep/Wake Research Centre, Massey University, Wellington.

What is this study about?

Sleep is really important for our health and wellbeing, especially for teens. Other research has shown that sleep makes a difference to the mental health and emotional wellbeing of teens, but very little research has asked teens what they think about their sleep and its connection with their emotional wellbeing and mental health.

This study aims to:

- Learn more about teens' thoughts, experiences and feelings about their sleep.
- Better understand what teens think about the possible connection between sleep and their emotional wellbeing and mental health.
- Determine what teens already do, or would like to do, to get the best possible sleep.
- Determine what teens think others (family members, friends, service providers and schools) can do to support their sleep.

Appendix D

Guardian Information Sheet

Information sheet about the study for the guardians continued.

Your child is invited to take part in one-on-one interviews. If your child is interested, we ask that they read through the study information and complete the consent form.

Who can take part?

We are aiming to recruit up to 12 students from [redacted]. Your child needs to be in year 12 or 13, be 17 or 18 years old and not well known to me.

What is involved if your child decides to take part?

- Your child may want to talk about this research with you or other people, such as other family or whānau members or friends. Your child can also contact me or another member of the team if they have any questions (details below).
- If your child would like to be involved, we ask that they please email me (kavitakashyapk19@gmail.com) to let me know and sign the consent form. Your child can either bring the signed consent form along with them when we meet face-to-face, or your child can email it to me. If I'm meeting your child online, then your child can email me a photograph of the signed consent form.
- We ask your child to please complete the short questionnaire attached in this study pack. These questions are so that I can briefly summarise who I interviewed. No information that could identify your child will be used. Your child can bring the completed questionnaire along when we meet or email it to me. If I am meeting your child online, then your child can email me a photograph of the completed questionnaire.
- I will arrange for a one-on-one meeting at a time and place that works for your child. It can be before or after school, during lunchtime or free periods, but not during class time. It can take place at school or online. The interview will be sound recorded and take about 30-to-40-minutes.
- During the interview, I will ask your child to share their thoughts, experiences and feelings about their sleep and the possible connection with their emotional wellbeing and mental health. Your child can choose not to answer any of the questions, and your child can add information where they deem fit.
- After your child takes part, they will be given a $30 koha in the form of a Prezzy Card. This is in acknowledgement of your child's time.
- After the interview, if your child wishes to be provided with a written version of their interview, I will email it to your child, along with a form. If your child wishes to add, change or give feedback on the written version of their interview, your child can sign the form. If your child does not want to add, change or give feedback, then your child doesn't need to do anything.

Appendix D

Guardian Information Sheet

Information sheet about the study for the guardians continued.

What will happen to your child's information?

Interviews will be sound recorded and turned into a written document. Your child can choose to edit the written version of their interview if they wish. All of your child's information will be kept confidential and all names and identifying information will be removed. Pseudonyms (different names) will be used when findings are reported. Your child and the school will be provided with a summary of the study findings and have access to the final published thesis, if requested. The study's findings will also be published in a scientific journal article and presented at conferences.

All digital information will be stored in password protected folders accessible only by my supervisors and me. All paper information will be stored in a locked filing cabinet at Massey University. Consent forms will be stored separately from all other data to maintain confidentiality and protect identity. Data will be stored for a minimum of five years and then destroyed.

What are the possible risks and benefits of taking part in this research?

The benefits

- This is an opportunity for your child to learn about research and more about sleep, emotional wellbeing and mental health.
- This study is an opportunity for your child to voice their ideas about their sleep, emotional wellbeing and mental health.
- This study will help to inform future research and real-world changes that can support the sleep, emotional wellbeing and mental health of teens.
- This study will add to our understanding of sleep, emotional wellbeing and mental health amongst teens.

The risks

- Some people may feel uncomfortable talking about their sleep, emotional wellbeing and mental health. Your child is encouraged to only share information they feel comfortable sharing. The interviews will occur in a private space.
- Please note, that during the interview if your child raises issues such as self-harm or suicidality, I cannot guarantee confidentiality. If topics such as this come up, I will talk the school's guidance counsellor and with my supervisors, who will seek further guidance from a clinical psychologist. We also recommend your child goes to see [redacted] who is [redacted] guidance counsellor, or to visit the school's nurse.

Appendix D

Guardian Information Sheet

Information sheet about the study for the guardians continued.

Your child's rights as a study participant

Participating in this study is completely voluntary and your child is under no obligation to take part. However, if your child does decide to participate, they have the right to:

- Ask questions at any time during the study.
- Withdraw from the study at any time (before, during or after the interview).
- Decline to answer any questions.
- Ask for the recorder to be turned off at any time during the interview.
- Be provided information on the understanding that their name will not be used in any research reports.
- Be provided with a summary of the study's findings when it is finished.

Ethics Committee Approval Statement

This project has been reviewed and approved by the Massey University Human Ethics Ohu Matatika 1, Application OM1 24/17. If you have any concerns about the conduct of this research, please contact the Chairperson, Massey University Human Ethics Ohu Matatika 1, email humanethics1@massey.ac.nz.

Project Contacts

If you have any further questions, queries or worries, please do not hesitate to get in touch.

Ms Kavita Kashyap	Master's student. Email: kavitakashyapk19@gmail.com
Prof Leigh Signal	Supervisor. Sleep/Wake Research Centre, School of Health, Massey University, Wellington, New Zealand. Email: t.l.signal@massey.ac.nz
Dr Dee Muller	Supervisor. Sleep/Wake Research Centre, School of Health, Massey University, Wellington, New Zealand. Email: d.p.muller@massey.ac.nz

What do I do now?

If your child would like to take part in this study, we request that they please email me, kavitakashyapk19@gmail.com. We please ask your child to complete the consent form and demographic questionnaire form included in this pack and either email them to me or bring them along to the interview if we are meeting face-to-face.

Appendix D

Guardian Information Sheet

Information sheet about the study for the guardians continued.

Thank you for taking the time to read this information. Please do not hesitate to contact us if you or your child have any questions. I look forward to meeting your child in the interviews.

Resources

If the interview has raised any concerns for your child, we recommend your child contact [redacted] who is [redacted] guidance counsellor ([redacted]), or you can connect with the schools nurse (**info@anamata.org.nz**). If you'd like to learn more about sleep, emotional wellbeing and mental health, the following resources may be helpful.

Sleep resources:	
Australian Sleep Health Foundation: Useful information for you and your parents on a broad range of sleep topics.	Website link: Children, Adolescents & Parents | Sleep Health Foundation
Mental wellbeing resources:	
Anamata Cafe: This is a local youth health service that can provide support for a broad range of health issues, including mental health.	Website: anamata.org.nz 152 Spa Road, Taupō, 3330, Po Box 1356, Taupō, 3351, New Zealand. 0800 ANAMATA. info@anamata.org.nz
Mental Health Foundation: Includes information on mental health and links to further support. Also contact information for Youth-line.	Website: mentalhealth.org.nz

If you would like more information, please contact any member of the research team.

Appendix E

Welcome letter

Welcome letter to participants and their families.

Date:

Kia ora and hello,

Fristly, thank you so much for showing an interest in this study, which is about Teen Sleep, Emotional Wellbeing and Mental Health. Within this study pack, you will find: an information sheet for both you (the participant) and your family (the guardian) to read. The information sheets contain information on the aims of the study, who can take part, what is involved if you decide to take part, what will happen to your information, what the possible risks and benefits of taking part in this research are, your rights as a study participant, our research team's contact details, and resources on sleep, emotional wellbeing and mental health. If you decide to take part in this study, you will see that there is a consent form for you to sign and a demographic questionnaire for you to fill in. Thank you once again for your interest in this research. If you have any further questions, please do not hesitate to contact any member of the research team, our contact details are in the information sheets.

Kind Regards,

Kavita Kashyap, and the extended Teen Sleep, Emotional Wellbeing and Mental Health research team.

Appendix F

Consent Form

Consent form for adolescents to participate.

Consent form

Teen Sleep, Emotional Wellbeing and Mental Health Study

Please tick Yes or No (whichever applies) to the following statements:		Yes	No
1	I have read, or had read to me, the Information Sheet and understood what this study involves. My questions have been answered to my satisfaction, and I understand that I can ask further questions at any time.		
2	I have been given enough time to consider whether I want to take part in this study and understand that taking part is voluntary and that I can withdraw at any time.		
3	I know whom to contact if I have any questions or concerns about the study.		
4	I agree to participate in this study under the conditions set out in the Information Sheet.		
5	I agree to the interviews being sound recorded.		
6	I wish to have a copy of the written version of the interview to review.		
7	I understand that participation in this study is confidential. Direct quotes may be used, but no material which could identify me, my family, or any other person will be used in any reports.		
8	I wish to receive a summary of the results from the study.		
9	I understand that if during the interview I raise issues such as self-harm or suicidality, the researcher will speak to the school's guidance counsellor and to their supervisors. In this case, the researcher cannot guarantee your confidentiality. If the interview has raised any issues for you, you can contact [redacted] ([redacted]) who is [redacted] guidance counsellor, or the school's nurse info@anamata.org.nz.		

Your Full Name:	
Your Signature:	
Your Phone Number:	
Your Email:	
Date:	

Appendix G

Demographic Questionnaire

Demographic details filled in by participants.

Teen Sleep, Emotional Wellbeing and Mental Health Study

Participant Demographic Form

YOUR Details

Name:	
Today's date:	

Please complete the following questions. Your answers will be combined with those from other teens involved in the study to describe who participated in this research.

How do you describe yourself? *(please circle answer)*
I am a boy or man
I am a girl or woman
I identify in another way *(Please state)*:

_____

What is your age? (in years)

Which ethnic group do YOU belong to?
(Please circle the group or groups that apply)
New Zealand European
Māori
Samoan
Cook Island Māori
Tongan
Niuean
Chinese
Indian
Others, E.g. Dutch, Japanese, Tokelauan

(Please state): _____

Thank you so much for giving your time to complete this questionnaire.

Appendix H

Study Safety Protocols

Study safety actions and procedures.

Teen Sleep, Emotional Wellbeing and Mental Health Study

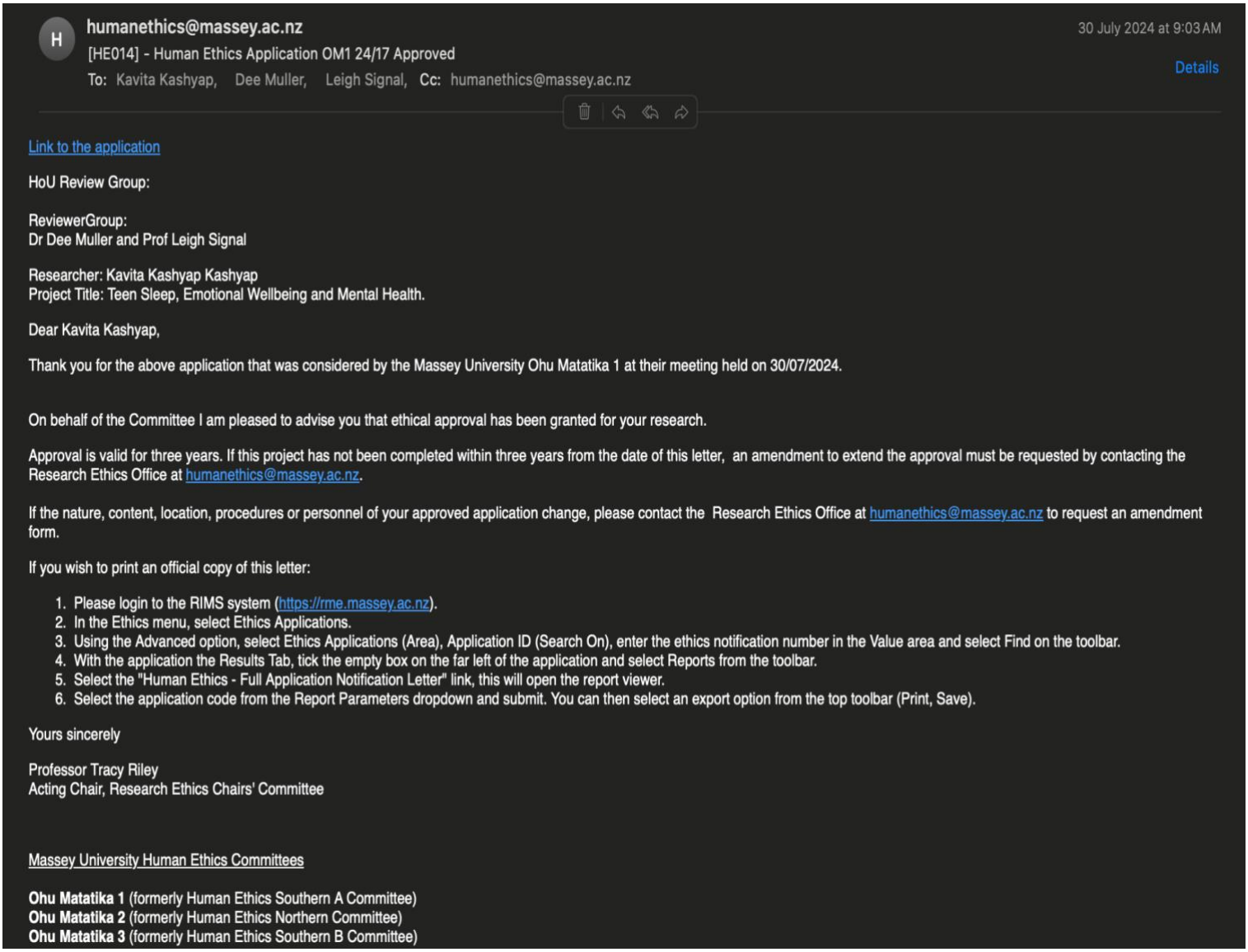
Safety Procedures

Arranging an interview.	When arranging an interview, a date, time and location that suits participants will be agreed on. Interviews can either be face-to-face at school or online. They must not be scheduled to occur during class time. Interview details will be recorded on a shared doc with supervisors which will be stored securely and unable to be accessed by anyone outside of the study team.
Communication during the interview process.	Before an interview starts, Kavita will text one of her supervisors. If interviews are being conducted face-to-face at school, a school staff member will be told where the interviewer and participants are meeting. After a face-to face interview is finished, the supervisor and school contact person will be notified. Following an online interview, the supervisor will be notified. If Kavita has any concerns about topics raised during the interview, she will phone one of her supervisors.
Following up.	If the supervisor does not hear from Kavita within 30 minutes following the scheduled end time of the interview, they will text or call her.
After interview concerns and process.	If Kavita does not respond following a face-to-face interview, then the school contact person will be called.

Appendix I

Ethics Approval Email

Final human ethics Massey approval granted 30th July 2024.



humanethics@massey.ac.nz 30 July 2024 at 9:03 AM

[HE014] - Human Ethics Application OM1 24/17 Approved

To: Kavita Kashyap, Dee Muller, Leigh Signal, Cc: humanethics@massey.ac.nz Details

Link to the application

HoU Review Group:

ReviewerGroup:
Dr Dee Muller and Prof Leigh Signal

Researcher: Kavita Kashyap Kashyap
Project Title: Teen Sleep, Emotional Wellbeing and Mental Health.

Dear Kavita Kashyap,

Thank you for the above application that was considered by the Massey University Ohu Matatika 1 at their meeting held on 30/07/2024.

On behalf of the Committee I am pleased to advise you that ethical approval has been granted for your research.

Approval is valid for three years. If this project has not been completed within three years from the date of this letter, an amendment to extend the approval must be requested by contacting the Research Ethics Office at humanethics@massey.ac.nz.

If the nature, content, location, procedures or personnel of your approved application change, please contact the Research Ethics Office at humanethics@massey.ac.nz to request an amendment form.

If you wish to print an official copy of this letter:

1. Please login to the RIMS system (https://rme.massey.ac.nz).
2. In the Ethics menu, select Ethics Applications.
3. Using the Advanced option, select Ethics Applications (Area), Application ID (Search On), enter the ethics notification number in the Value area and select Find on the toolbar.
4. With the application the Results Tab, tick the empty box on the far left of the application and select Reports from the toolbar.
5. Select the "Human Ethics - Full Application Notification Letter" link, this will open the report viewer.
6. Select the application code from the Report Parameters dropdown and submit. You can then select an export option from the top toolbar (Print, Save).

Yours sincerely

Professor Tracy Riley
Acting Chair, Research Ethics Chairs' Committee

Massey University Human Ethics Committees

Ohu Matatika 1 (formerly Human Ethics Southern A Committee)
Ohu Matatika 2 (formerly Human Ethics Northern Committee)
Ohu Matatika 3 (formerly Human Ethics Southern B Committee)

Appendix J

Study Flyer

Advertising research and researchers contacts.

Appendix K

Transcript Form

Transcript form allowing for student feedback.

Teen Sleep, Emotional Wellbeing and Mental Health Study

Transcript Feedback Form

Attached is a copy of a written version of your interview (transcript) that you requested. We would like to give you the opportunity to read and comment on this if you wish.

If, after reading the transcript, you do NOT have any feedback, then you DO NOT NEED TO DO ANYTHING ELSE.

If, after reading the transcript, you DO have feedback, please write your comments on the transcript, complete this form, and email the form to kavitakashyapk19@gmail.com by ----------

We will send you a copy of your transcript that you have written on for your records.

Thank you.

My full name:

_____

My signature:

_____

Date: _____