

<http://researchcommons.waikato.ac.nz/>

Research Commons at the University of Waikato

Copyright Statement:

The digital copy of this thesis is protected by the Copyright Act 1994 (New Zealand).

The thesis may be consulted by you, provided you comply with the provisions of the Act and the following conditions of use:

- Any use you make of these documents or images must be for research or private study purposes only, and you may not make them available to any other person.
- Authors control the copyright of their thesis. You will recognise the author's right to be identified as the author of the thesis, and due acknowledgement will be made to the author where appropriate.
- You will obtain the author's permission before publishing any material from the thesis.

**The Association between
Mindfulness and Driving Behaviour
in Employees**

A thesis
submitted in fulfilment
of the requirements for the degree
of

Master of Social Sciences in Psychology

by

Diana Bird



THE UNIVERSITY OF
WAIKATO
Te Whare Wānanga o Waikato

2018

Abstract

This study examined the effect of mindfulness on driving behaviour, and the possible mediating effects of a number of well-being measures. Specifically, the research aimed to determine (1) if higher levels of mindfulness would lead to safer driving practices and (2) if there was a relationship between mindfulness and safe driving, whether this was mediated by well-being measures including self-control, emotion regulation, happiness, life satisfaction, job satisfaction and work engagement. Participants included 216 employees from 16 organizations. They all completed 'the mindfulness, wellbeing and driving' questionnaire, which involved measures of mindfulness, intentions to violate traffic rules, self-reported number of traffic incidences in the previous 12 months (fines, near misses and crashes), as well as the well-being measures mentioned above. First, a strong correlation between increased levels of mindfulness and safer driving practices was found, including a decreased likelihood of texting. Further initial correlations also demonstrated relationships between mindfulness and all the well-being measures. As mindfulness increased, levels of all the well-being measures increased, with the exception of happiness. However, when mediation analysis was performed only self-control and happiness were found to mediate the relationship between mindfulness and safer driving, while the effect of emotion regulation, life and job satisfaction and work engagement were not found to be significant mediators. The role of self-control as a mediator in the mindfulness safer driving relationship supported previous research. Increased levels of attention, awareness and emotion regulation are all

qualities associated with increased levels of mindfulness, which have also been demonstrated to relate to safer driving practices.

While happiness was found to positively mediate the relationship between mindfulness and safer driving practices, interestingly, the relationship between mindfulness and happiness was opposite to what was expected. As levels of mindfulness increased, levels of happiness decreased. This may have been due to the happiness measure, which contained eudaimonic and hedonic factors. Hedonic factors have been considered less indicative of life satisfaction and overall well-being, and run opposite to the principles underlying mindfulness. Despite this, increased levels of happiness were still found to increase safer driving practices. These findings will hopefully ignite more research efforts to be directed towards examining the effects of mindfulness interventions on driving practices, and overall social and occupational well-being.

Acknowledgements

I would firstly like to thank my supervisors Assoc. Prof. Robert Isler and Dr. Maree Roche for the support, guidance and encouragement you have given me over the past two years. I have really appreciated your input, feedback, and our meetings which encouraged me to keep working towards the next step. Your ability to guide me through this has made a big piece of work appear achievable and has kept me motivated and positive.

I would like to thank all those organisations who were willing to let their employees take part, and to all those employees who took time out of their busy day to complete my questionnaire. Without your participation this would not have been possible.

I would like to thank my husband Mark, who has encouraged me throughout my studies, and has been continually understanding regarding the time commitment this has involved. I have also appreciated the regular input from Brian, who was happy to be a reliable study support cat, whenever required.

Table of Contents

Abstract.....	i
Acknowledgements.....	iii
List of Figures	viii
List of Tables.....	ix
Chapter One: Introduction.....	1
Mindfulness and Self-control	5
Self-control and Driving	7
Mindfulness and Emotional Regulation	9
Emotion Regulation and Driving.....	12
Mindfulness and Happiness	14
Mindfulness and Life Satisfaction	16
Mindfulness and Work-related Well-being Outcomes.....	17
Mindfulness and Work Engagement.....	18
Mindfulness and Job Satisfaction	19
Work and Life Well-being Outcomes and Driving	21
Summary	22
Study Aims	22
Hypotheses	23
Chapter Two: Method	24
Participants.....	24
Procedure.....	25

Mindfulness, Well-being and Driving Questionnaire	25
Introduction to the Questionnaire.....	26
Screening Question.	26
Demographics.....	27
Predictor Measure	27
Mindfulness.....	27
Outcome Measures	27
Intention to Commit Driving Violations.	27
Texting.	29
Unwanted driving incidents.	29
Potential Mediators.....	29
Self-control.....	29
Emotion Regulation.	30
Happiness.....	32
Life Satisfaction.	32
Job Satisfaction.	33
Work Engagement.	33
Data Analysis	34
Descriptive Statistics.....	34
Correlational Analysis	34
Mediation Analysis.....	34
Chapter Three: Results.....	37

Principle Component Analysis	37
Descriptive Statistics.....	37
Correlation Analysis	41
Evidence that Mindfulness Leads to Safer Driving	41
What Variables Mediate the Relationship Between Mindfulness and Safer Driving?.....	43
Mediation Analysis	43
Chapter Four: Discussion	47
Evidence that High Levels of Mindfulness Lead to Safer Driving	47
What are the Mediating Variables in the Relationship between Mindfulness and Safer Driving?.....	48
Self-control as a Mediator in the Relationship between Mindfulness and Safer Driving.	49
Emotion regulation as a Mediator in the Relationship between Mindfulness and Safer Driving.	51
Happiness as a Mediator in the Relationship between Mindfulness and Safer Driving.	52
Life and Job Satisfaction as Mediators in the Relationship between Mindfulness and Safer Driving.	54
Work Engagement as a Mediator in the Relationship between Mindfulness and Safer Driving.	55
Conclusion.....	56
Limitations	57

Implications and Future Research.....	57
References.....	59
Appendix A Mindfulness, Well-being and Driving Questionnaire	76
Appendix B Email to company Health and Safety advisors	124
Appendix C Final email to Health and Safety Advisors or HR Managers	125
Appendix D	126
Appendix E	132
Predictor Measure	132
Mindfulness.....	132
Outcome Measure	132
Intention to Commit Driving Violations	132
Mediators.....	132
Self-control.....	132
Emotion Regulation.	135
Happiness.....	137
Life Satisfaction.	138
Job Satisfaction.	139
Work Engagement.	140

List of Figures

Figure 1. Diagram of a mediation model.....	35
Figure 2. Frequency distributions for the measures used in this study....	40
Figure 3. Mediation model of mindfulness as a predictor of intention to commit driving violations.....	46
Figure 4. Scree plot for impulsiveness.....	133
Figure 5. Scree plot for emotion regulation.....	135
Figure 6. Scree plot for life satisfaction.....	139
Figure 7. Scree plot for job satisfaction.....	140

List of Tables

Table 1. Demographics.....	24
Table 2. Descriptive statistics of variables.....	38
Table 3. Correlations among the Predictor, Mediator and Outcome Variables.....	42
Table 4. Mediators of the relationship between Mindfulness and Intention to Commit Driving Violations.....	45
Table 5. Consistency and reliability for measures.....	126
Table 6. Impulsiveness pattern matrix.....	134
Table 7. Emotion regulation pattern matrix.....	136
Table 8. Happiness pattern matrix.....	138
Table 9. Work engagement pattern matrix.....	141

Chapter One: Introduction

There have been numerous research papers examining human factors involved in causing crashes, and indications are that more than one factor is involved (Dahlen & White, 2006). Studies in this area have examined the role of personality factors, attentional factors and emotional states on driving behaviours, with limited research looking at which human factors protect against traffic crashes and violations. This study examines a number of human factors which may promote positive pro-social and safe driving behaviour, and proposes that an important factor underlying these is mindfulness.

The practice of mindfulness has been developed from the eastern practice of meditation which is commonly associated with Buddhist psychology (Brown, Ryan & Creswell, 2007). It is recognized as an increased quality and intensity of consciousness, defined by enhanced levels of attention and awareness to what is occurring in the present moment. The practice of mindfulness consists of staying aware, so that if attention moves from the present, a prompt return is possible. While an individual's awareness constantly scans their inner and outer environments, it is their attention which decides on what to focus. The focus of attention can include just one tight area, or it can move to the wider environment (Brown, Ryan & Dovidio, 2003). Attention can be focused on either the body, the emotions, the mental states and processes, or phenomena in general. According to Buddhist teachings, attention should also be focused in the 'right' way, meaning it is free from

judgement, and discourages uninformed, thoughtless and impulsive behaviour (Nyaniponika, 1973; Wallace & Shapiro, 2006).

Attention as described in mindfulness, differs from the traditional understanding of attention. The traditional idea of attention involves the tight intertwining of cognition and attention, which are then directly engaged in one task or activity. In this type of attention, past experiences remain linked to previously formed cognitive schema, which are then associated with what is occurring in the present. A process of comparing, categorizing and evaluating present circumstances with past recollections occurs. This encourages an automatic biased interpretation, which then influences the perspective of an individual. This process often limits individuals to behaving in predetermined and habitual ways, and can lead to introspection and rumination (Beck & Haigh, 2014).

This is in contrast to mindfulness where confining the focus of attention to the present, encourages a type of metacognition where one's thoughts, including previous beliefs, biases and judgements, and emotions become decoupled from past experiences, and are observed in their transient states from a non-judgemental standpoint. In this way mindfulness enables a greater level of self-reflection and openness to occur, and encourages adaptive behaviour, more aligned to an individual's values, needs, and long-term goals (Brown et al., 2007; Nyaniponika, 1973).

Individuals differ in their willingness and aptitude to be mindful. Mindfulness is described as both a trait-like quality where an individual

varies in their tendency to be mindful on a day to day basis, and as a state-like quality, which evidence suggests, is a quality which can be intentionally cultivated over time (Brown et al., 2003; Brown et al., 2007; Kiken, Garland, Bluth, Palsson, & Gaylord, 2015). Both trait and state mindfulness have been found to be associated with higher levels of independence, more intense and frequent positive emotional states, and less intense and less frequent negative emotional states. (Brown et al., 2003). However, the fact that mindfulness is complex and multi-faceted has raised questions regarding which aspects of mindfulness relate to which outcomes (Leary & Tate, 2007).

A variety of different measures have been developed to measure mindfulness. They differ in their ability to measure either trait mindfulness, state mindfulness, or both, and which aspects of mindfulness they measure (Christopher, Christopher, & Charoensuk, 2009; Lau et al., 2006; Leary & Tait, 2007). While some measures encompass the holistic, eastern approach to mindfulness with its roots in Buddhism, others take a more secular and focused western approach (Chaskalson, & Hadley, 2015). The Mindful Attention Awareness Scale (MAAS) (Brown et al., 2003), is a measure which was developed early on in the transition from mindfulness as an exclusively eastern phenomena, to mindfulness as a concept which was embraced and researched in the west (Christopher et al., 2009). The MAAS has been recognized as measuring attention and awareness from the eastern perspective, and has been found to demonstrate a high level of equivalence with the practice of mindfulness

as experienced in Buddhist traditions (Choi, & Leroy, 2015; Christopher et al., 2009).

Brown and Ryan (2003) conducted a series of studies to explore the relationship of mindfulness to overall well-being using the MAAS. They found that mindfulness was inversely related to states associated with poorer levels of well-being including depression, self-consciousness, angry hostility, impulsiveness, and a number of other psychological measures of emotional disturbance, along with a number of negative physical symptoms. Correspondingly, mindfulness was positively associated with measures related to emotional, eudaimonic and physical well-being. Mindfulness was found to be associated with increased levels of self-knowledge regarding emotional states, which has been identified as a key factor in emotion and self-regulation, and an attribute which facilitates psychological well-being. The MAAS was found to be separate to precise content related to well-being including life satisfaction, self-esteem, vitality and self-actualization, proving its ability to evaluate the other avenues by which mindfulness influences positive states of being (Brown et al., 2003).

Due to the wide ranging positive effects on human behaviour associated with increased mindfulness, it has become the foundation for a number of different psychotherapies and interventions for use in clinical and non-clinical populations. These therapeutic interventions have demonstrated significant improvements in psychological disturbance (Brown et al., 2003; Christopher, et al., 2009; Wallace, et al., 2006). The positive impact of mindfulness on human behaviour generally, has also

prompted research into its effects in the workplace. The benefits of mindfulness in the workplace stem from increased levels of attention, awareness, and emotion regulation coupled with a non-judgmental outlook and a greater flexibility of responding. Increased levels of attention and awareness, and decreased automatic judgement of others leads to improved levels of emotion regulation, empathy and compassion for others which enhances workplace relationships, and increases available social support. These skills also foster an ability to deal with conflict in a prosocial and positive manner (Good et al., 2016). Enhanced emotion regulation skills decrease the possibility of experiencing negative moods, which have been correlated with negative workplace outcomes. By learning to balance physical and emotional stresses through emotion regulation, feelings of calm and connection are fostered, leading to greater well-being (Glomb, Duffy, Bono, & Yang, 2011). Increased flexibility when responding to challenges results in adaptive behaviour which enables the employee to interpret challenges in place of stressors. A positive attitude with regards to accomplishing workplace goals, increases productivity, and leads to feelings of self-efficacy and ultimately greater rewards. This fosters a perception that the workplace environment is one related to thriving and growing, rather than one associated with becoming stressed and burnt out (Good et al., 2016).

Mindfulness and Self-control

The mindfulness practice of maintaining attentional control from a non-judgemental perspective, results in self-control. Conversely, the

inability to control attention or thought processes results in impulsive behaviour.

Bishop et al. (2004) proposed a model of mindfulness, and the ability to self-regulate attention forms the first component. This component includes the separate abilities of sustaining attention, switching attention and inhibiting negative processing. Sustaining attention means being able to focus on the present, while switching attention means being flexible enough to be able to switch attention as circumstances require (Bishop et al., 2004). The ability to inhibit negative processing includes being able to focus attention on prevailing thoughts, feelings and emotions in order to obtain deeper understanding, while avoiding the negative emotional outcomes associated with ruminating on previous irrelevant cognitions and beliefs (Wadlinger, & Isaacowitz, 2011; Whitmer, Gotlib, & Hinshaw, 2013). The second component of the model proposed by Bishop et al. (2004) includes the aspect of mindfulness related to being non-judgmental, open and accepting of one's experiences.

The ability to successfully self-regulate attention increases levels of attentional control, while both attentional control and the ability to be non-judgmental increase levels of emotional self-control, and awareness of automatic responses. These heightened levels of awareness allow time for contemplating the best path of action, which increases self-regulation of behaviour (Brown et al., 2007; Monterosso & Ainsle, 1999; Wittmann et al., 2014). Behaviour which is self-regulated is in direct contrast to impulsive behaviour, governed by automatic, habitual responses. Impulsive behaviour usually works against the best interests of the

individual, and is likely to include addictive pursuits such as drug and alcohol abuse (De Wit, 2009; Wittmann et al., 2014).

Barratt's Impulsiveness Scale (BIS), developed by Patton, Stanford and Barratt (1995), identifies three second order factors related to impulsiveness, and acknowledges the importance of thought process to all three factors. The factors identified include attention, impulse-control and behavioural control. The attentional factor was found to consist of a positive contribution of disorganized and racing thinking patterns, plus a negative contribution relating to the ability to focus on the task at hand. The contribution of a lack of impulse-control to impulsiveness is indicated in the second order factor of non-planning impulsiveness which relates to planning and thinking carefully, and enjoying challenging mental tasks, while the third second order factor of motor impulsiveness recognizes the contribution of a lack of behavioural control to this scale, which relates to acting on the spur of the moment, the opposite characteristic of having a consistent lifestyle.

Self-control and Driving

Lack of awareness, inability to control of attention, especially in relation to negative affect, and impulsiveness, have all been indicated as factors relating to negative driving outcomes.

Underwood, Ngai and Underwood, (2013) found increased levels of situational awareness, defined as having heightened levels of awareness regarding surrounding events, was a protective skill with regards to decreasing unwanted driving incidents, and one which improved with

driving experience. Kass, VanWormer, Mikulas, Legan, and Bumgarner (2011) demonstrated that mindfulness training increased levels of situational awareness, and significantly decreased the number of subsequent traffic violations in a simulated driving exercise. A lack of ability to control attention and focus when driving has been highlighted as a risk factor for traffic crashes and near misses in countries including America, Australia and the United Kingdom. It has been estimated that nearly two thirds of crashes are caused by lack of driver attention to the task at hand (Klauer, Dingus, Neale, Sudweeks, & Ramsey, 2006; Neyens, & Boyle, 2007; Stevens, & Minton, 2001). Inattention behind the wheel can be caused simply by an individual's mind wandering off task (Lemerrier et al., 2014). However, negative emotions, have been found to negatively affect the ability of an individual to focus attention in the present moment, including the ability to focus on driving. Experiencing negative emotions while driving has been linked to aggressive and dangerous driving (Dula, & Geller, 2003). When music was played designed to elicit different emotions, participants have demonstrated a decrease in their ability to attend to cues, including a decrease in their ability to attend to driving (Pêcher, Lemerrier, & Cellier, 2009; Pêcher, Quaireau, Lemerrier & Cellier, 2011). A review of studies published between 1970 to 2014 looked at impulsiveness in relation to driving outcomes. In the 38 studies examined, 34 found a relationship between traffic offences and at least one dimension of impulsiveness (Bıçaksız, & Özkan, 2016). This review implies the protective effect of self-control on driving behaviour.

More frequent use of cell phones, and especially texting, while driving, have been implicated as one of the factors behind inattentive, and dangerous driving (Wilson, & Stimpson, 2010). An escalation in the number of drivers who have been suspected of texting at the time of an accident, has prompted an increase in the amount of research into this practice (Caird, Johnston, Willness, Asbridge, & Steel, 2014). Individuals with increased levels of impulsiveness have been found to be more likely to text while driving, indicating a further mechanism by which impulsiveness contributes to unsafe driving (Hayashi, Russo, & Wirth, 2015).

Mindfulness and Emotional Regulation

The process of emotion regulation is a complex one, which ranges from being unconscious and effortless on some occasions, to conscious and effortful on others. A large part of successful emotion regulation relies on the ability of an individual to become aware of their emotions, in conjunction with an awareness of which regulation strategies are available to them (Gross, 2014).

Gross's 1998 process model of emotion regulation originally considered emotion regulation from a traditional perspective, and was also used to consider emotion regulation from the perspective of a mindful individual (Farb, Anderson, Irving & Segal, 2014; Gross, 2015;). The model describes five sets of emotion regulatory processes which occur sequentially. They are grouped into two main classifications and include strategies which occur prior to the generation of the emotion, and

strategies which occur after the generation of the emotion (Gross, 1998; Gross, 2015).

Traditionally, it has been generally considered that those emotional regulation strategies utilized earlier in the process model result in a more adaptive outcome. Two traditional strategies have been highlighted as an example of this. The first of these is cognitive change which occurs prior to the generation of the emotions and involves reappraising a situation in order to experience a more positive emotional outcome. The second of these is response modulation, which occurs after the generation of the emotion and can either involve engaging in activities to alter the experienced emotion, such as using substances, or engaging in emotional suppression where any external indicators of the emotion are suppressed (Gross, 1998; Gross 2015). Techniques such as reappraisal have been found to be more adaptive in terms of social functioning and general well-being, while emotional suppression has been found to be less adaptive, with an associated cost in terms of social and personal well-being (Nezlek, & Kuppens, 2008).

In contrast, mindfulness is considered to exert a holistic influence on emotion regulation from all points in the process model, including intention, attention and attitude. At the intention level mindfulness openly explores the nature of the emotion despite its valency. At the attentional level, increased mindfulness leads to a non-judgemental focus allowing insight and acceptance of the sensory experience, which leads to a reappraisal of the sensation. At the level of attitude, mindfulness promotes a curious and open approach allowing for further insight into habitual and

limiting patterns of responding. Responses can therefore be more flexible, and more adaptively tailored to meet the demands of the situation (Farb, Anderson, Irving & Segal, 2014). Through all these stages meta-awareness allows attention to be deployed away from limiting, self-centred and emotive responses, so a more objective and appropriate response can be chosen (Glomb et al., 2011). A mindful response differs to traditional responses, as originally described in Gross's 1998 process model. In traditional responses a solution to any problematic emotions is sought at the intentional level, while at the attentional level, a choice is made on whether to focus on the emotional experience, or whether, in the case of an unpleasant emotion, to use the skill of distraction to move the focus to another area.

Studies have demonstrated the moment by moment focus of a mindful approach assists with developing the brain's neural pathways in areas associated with attention and response inhibition, while correspondingly decreasing the level of activation in areas associated with distraction and worrying about the past and the future (Esimon & Engström, 2015). Therefore, negative judgements and ruminations on previously upsetting memories or future apprehensions are avoided, so negative emotions can subside. As this process becomes more practiced, it encourages positive self-change, as old negative patterns are continually interrupted, and awareness is drawn to the here and now (Farb et al., 2014).

Previous studies have confirmed that individuals with low levels of mindfulness are more likely to use maladaptive strategies, such as

rumination and expression of aggression, in order to regulate their emotions, and are therefore more likely to have difficulty practicing successful emotion regulation (Borders, Earleywine & Jajodia, 2010). Even short mindfulness activities have demonstrated a measure of success in the area of emotional management (Arch & Craske, 2006). Borders, Earleywine and Jajodia (2010) measured mindfulness in two different studies using undergraduate students, and another group who had different levels of exposure to mindfulness principles. In both groups there was a negative correlation between mindfulness and levels of anger and hostility. Heppner et al. (2008) demonstrated that both trait and state mindfulness were inversely related to aggressive and hostile behaviour. Over two experiments they found participants higher in trait mindfulness were less likely to interpret others ambiguous behaviours as aggressive. When participants were given a small mindfulness intervention, their aggressive behaviour significantly decreased following a task where they were socially rejected.

Emotion Regulation and Driving

The presence of heightened emotions has been indicated as being a negative influence on driving. Jeon and Walker (2011) found nine affective states which influenced various driving situations. These included fearful, happy, angry, depressed, curious, embarrassed, urgent, bored and relieved. The presence of negative emotions have been found to affect driver behavior detrimentally through their ability to promote rumination, which in turn negatively affects attention (Pecher et al., 2011). Anger is one negative emotion often felt while driving, and which has been

correlated with negative, aggressive and risky driving behaviour (Deffenbacher, Lynch, Filetti, Dahlen, & Oetting, 2003; Sullman, 2015). These findings have prompted a large quantity of research into the concept known as 'road rage' (Deffenbacher, Lynch, Oetting, & Swaim, 2002; Sullman, 2015). Yet, there has been limited research into the ability of drivers to constructively manage difficult emotions. One study by Harris & Nass (2011) reported a positive effect on participant's driving when a voice interface, designed to decrease frustration, was introduced.

A lack of mindfulness, coupled with a lack of ability to regulate negative emotions, has correlated positively with texting while driving. Individuals who had an increased likelihood of texting while driving were found to have decreased levels of mindfulness as measured by the Cognitive and Affective Mindfulness Scale (CAMS-R). This relationship was influenced by the ability to successfully regulate emotions. Individuals sending a large number of texts while driving, were found to be doing this in order to relieve negative emotional states (Feldman, Greeson, Renna & Robbins-Monteith, 2011). Participation in mindfulness interventions has been related to an increased ability to emotionally regulate while driving. When individuals engaged in mindfulness based cognitive therapy, as opposed to regular cognitive behavioural therapy, they demonstrated a significant reduction in driving anger and aggression (Kazemeini, Ghanbari-e-Hashem-Abadi, & Safarzadeh, 2013).

In summary, increased levels of mindfulness, attention, self-control and emotion regulation are all associated with having a positive effect on human behaviour. Attention, self-control and emotion regulation are all

strengthened by increased levels of mindfulness, and increased levels of attention, self-control and emotion regulation have been associated with safer driving. Increased levels of mindfulness have also been related to increases in wellbeing.

Mindfulness and Happiness

Peterson, Park, and Seligman, (2005) developed the Orientation to Happiness scale. They considered three different factors of happiness, comprising of pleasure, meaning, and engagement. The pursuit of pleasure has traditionally been associated with happiness and describes the seeking of happiness through pleasure experienced in the moment without regard for future consequences. The importance of living in accord with one's higher values and ideals, so one's life has deeper meaning, has also long been identified as important for ultimate life satisfaction. The third, less well recognized aspect of happiness identifies the happiness experienced when attention is fully engaged in an activity, such that time passes quickly, and the concerns of the self are submerged. Peterson et al. (2005) constructed their scale around these three factors, of engagement, meaning and pleasure, and found that each one, predicted life satisfaction. Their research indicated that happier people rated higher on these dimensions and were also happier with their lives. However, they found the engagement and meaning factors predicted life satisfaction to a greater degree than the pleasure factor, a pattern which was replicated in other cultures (Vella-Brodrick, Park & Peterson, 2009). While in Taiwan pleasure failed to correlate with life satisfaction or subjective happiness at all (Chen, Tsai & Chen, 2010). These findings highlight a difference

between the eudemonic approach to happiness, as defined by the engagement and meaning factors, and the hedonic approach to happiness. The eudemonic approach, is related to principles such as self-realization and well-being, where life activities are concordant with one's deeply held values. This approach recognizes that the pursuit of pleasurable outcomes may not always yield an outcome which is good for the individual. In contrast, the hedonic approach to happiness is associated with subjective happiness and the pursuit of pleasure, as defined by the pleasure factor. The contribution of these two approaches to overall well-being has been debated over the ages (Ryan & Deci, 2001). In Buddhist mindfulness teachings the ability to train the mind to attend and engage in the present moment, in a calm and meaningful manner is related to overall well-being. This approach facilitates eudemonic happiness, and conflicts with behaviour where momentary pleasure is chased for pleasure's sake in the form of hedonic activities, which have been associated with futility and meaninglessness (Wallace et al., 2006; Bien, 2009).

Hollis-Walker and Colosimo (2011) used the Five-Factor Mindfulness Questionnaire to measure mindfulness, and found that people with increased levels of mindfulness had higher scores on the psychological well-being questionnaire, a questionnaire designed to measure eudemonic happiness. These results were attributed to the ability of mindful people to remain attentive and aware of their moment to moment reality, interpret it with compassion and acceptance, and utilize a range of flexible options when dealing with day to day issues. Further

research has replicated the relationship between increased levels of mindfulness and happiness, using a number of different general measures of happiness (Ashu, Singh, & Devender, 2015; Campos et al., 2016). Measures have included rating the happiness of others through observing and evaluating their facial expression and behaviour (Choi, Karremans, & Barendregt, 2012).

Mindfulness and Life Satisfaction

The process of evaluating one's satisfaction with life has been defined as a subjective cognitive-judgement, related to general well-being (Diener, Emmons, Larsen, & Griffin, 1985).

Mindfulness has been positively correlated to life satisfaction, through encouraging greater levels of self-acceptance, emotionally and mentally, by emphasizing the importance of remaining in the present moment (Brown et al., 2003; Kong, Wang, & Zhao, 2014; Shapiro, Carlson, Astin & Freedman, 2006). Mindfulness skills attributed with positively effecting life satisfaction have included increased levels of self-control, which were found to assist people in making decisions concerning goals, and then behaving in a manner which matched these decisions (Hofmann, Luhmann, Fisher, Vohs & Baumeister, 2014), and successful emotional regulation, represented in the trait of non-neuroticism (Pavot & Diener, 2008).

Mindfulness and Work-related Well-being Outcomes

The model proposed by Glomb et al. (2011), explains the positive impact of mindfulness in the workplace. It acknowledges the role of mindfulness in fostering the abilities of decoupling the self from events, experiences, thoughts and emotions through meta-awareness, engaging in considered rather than automatic behaviour, and in remaining aware and able to regulate psychological systems. The authors report on research where mindfulness has led to improvements in employee functioning in two significant areas. The first of these is in enhanced emotional health, where improvements have been evidenced by decreased levels of rumination, and increased levels of empathy and emotion regulation. The second of these is in enhanced capabilities, where improvements have included increased levels of flexibility, determination, and persistence (Glomb et al., 2011).

Atkins and Styles (2015) maintain that the positive influence of mindfulness in the workplace is at the level of workplace identity. They describe three different intercepting aspects of identity. The first of these is defined as 'self as story'. This aspect relates to how we define ourselves in terms of historical experiences. While this sense of identity produces stability over time, it can also be very limiting as it restricts us to our experiences in the past, including our self-labels, our memories and our description of our self. The second sense of self is referred to 'self as process' and relates to seeing ourselves in terms of our experience in the present moment and how it is continually unfolding. The third sense of

self, is referred to 'self as perspective' and relates to our ability to use meta-awareness to reflect on our thoughts and emotions. Increased levels of 'self as experience' strengthen our ability to be fully aware of what is occurring in the present moment, while increased levels of 'self as perspective' strengthen our ability to relate to our identity as flexible and changing which distances us from the idea of self as fixed and rigid. Mindfulness training was found to strengthen 'self as experience' and 'self as perspective'. Together, these two levels of identity, provide pathways for change, through increasing the ability to attend to the present moment, and the ability to draw upon flexible options when responding to events. These two pathways encourage responses and behaviour which adapt easily to changing circumstances, often evident in the workplace, and lead to enhanced capabilities and associated workplace wellbeing (Atkins & Styles, 2015).

Mindfulness and Work Engagement

While there are many definitions of work engagement, most researchers have agreed that work engagement is characterized by high levels of energy, and a strong identification with one's job (Bakker, Schaufeli, Leiter & Taris, 2008). The most common scale used to measure work engagement is the Utrecht Work Engagement Scale. This contains three factors including vigor, dedication and absorption. Vigor is defined as possessing high levels of energy and mental resilience when working. Dedication is defined as the enthusiasm, pride and sense of challenge felt while working, which has also been equated with having high levels of psychological identification with one's employment. Absorption is defined

as the extent to which an individual becomes fully concentrated and engrossed in their work (Kanungo & Campbell, 1982; Schaufeli, Salanova, González-romá & Bakker, 2002). The subscale of absorption, and the subscale of engagement, as defined in the Orientation to Happiness measure, have both been related as to Csikzentmihalyi's (1991) writings on flow. Therefore, on a conceptual level happiness and work engagement are related.

Mindfulness and Job Satisfaction

Job satisfaction has been defined as the attitude of an individual towards his work, and has been identified as an indicator of well-being in the workplace (Brayfield, Rothe & Paterson, 1951; Zivnuska, Kaemar, Ferguson & Carlson, 2016).

Increased levels of mindfulness have been found to be related to increased levels of job satisfaction (Charoensukmongkol, 2013; Hülshager, Alberts, Feinholdt, Lang & Kozlowski, 2013; Zivnuska et al., 2016). Increased levels of mindfulness were also found to be related to decreases in emotional exhaustion, a core factor of burnout, as measured by the Maslach Burnout Inventory (MBI), and decreases in burnout generally (Charoensukmongkol, 2013; Hülshager et al., 2013). The MBI has demonstrated a negative relationship to work engagement (Maslach, Jackson & Leiter, 1996; Schaufeli et al., 2002). This would indicate that increased levels of mindfulness promote increased levels of job satisfaction and work engagement, and decreased levels of burnout.

Emotion regulation has also been proposed as an ability which positively influences the relationship between mindfulness and job satisfaction. In their study of employees from various organizations Hülshager et al. (2013) measured mindfulness by using the MAAS, and found that improved skills in emotion regulation, influenced this relationship. Charoensukmongkol (2013) measured mindfulness, by the time spent in mindfulness meditation, and implicated the role of emotion regulation indirectly. The relationship between mindfulness and job satisfaction was demonstrated to be influenced by the ability of employees to engage in problem focused coping, where action is directed towards the source of the problem. This type of coping is in contrast to emotion focused coping, where the focus remains on reducing or eliminating any emotional distress associated with the problem, indicating a lack of ability to easily regulate emotions. Increased levels of emotion regulation have demonstrated a positive impact on job satisfaction in their own right, where the use of negative strategies such as suppressing negative emotions has been correlated with decreased levels of job satisfaction, and a higher likelihood of wanting to leave employment (Côté, & Morgan, 2002).

Mindfulness has been linked to the ability to foster improved interpersonal workplace relationships, a skill which has been found to have a positive impact on job satisfaction (Pseekos, Bullock-Yowell, & Dahlen, 2011).

Overall, research into the effect of mindfulness on job satisfaction has demonstrated the positive effect of mindfulness on a number of different workplace factors, which were all associated with overall

workplace wellbeing, signifying that mindfulness has an overall positive effect in the workplace.

Work and Life Well-being Outcomes and Driving

There are few direct studies examining the influence of happiness, life satisfaction, work engagement and job satisfaction on driving. However, the inter-relationships between these factors, and attention, self-control and emotion regulation suggest that strengths in these areas would also relate to a decreased number of traffic incidents.

Taubman – Ben-Ari (2014) found a correlation between teenagers who were more likely to engage in safe driving, and those who experienced more meaning in their lives, a factor related to happiness, along with positive communication skills, and better family relationships. Good communication and positive relationships are both factors associated with increased levels of life satisfaction, work engagement and job satisfaction, and which are also positively correlated with mindfulness (Brown et al., 2003; Glomb et al, 2011; Good et al., 2016).

Recent research has indicated that high levels of work engagement have been linked to increased levels of stress and anger, emotions which have been found to have a negative impact on driving (Li, Wang, Li & Zhou, 2017). However, an earlier meta-analysis found that increased levels of work engagement motivated employees to work safely, which would imply safer driving behaviour (Nahrgang, Morgeson, Hofmann, & Kozlowski, Steve, 2011).

Summary

The benefits of increased levels of mindfulness appear to be the result of increased levels of attentiveness, awareness, self-control, and the ability to regulate emotions. Research demonstrates the positive effect of these attributes to overall well-being, including increased levels of happiness, life satisfaction, job satisfaction and work engagement.

The benefits of mindfulness appear to extend to the area of safety, where increased levels have correlated with increased levels of adhering to safety procedures (Dierynck, Leroy, Savage, & Choi, 2017). Prosocial driving behaviour has been linked to increased levels of attentiveness, awareness, self-control, and the ability to regulate emotions, while the interrelationships between well-being outcomes and these factors, indicate a probable positive relationship with pro-social driving behaviour. However, there has been a lack of research into the direct effect of mindfulness on the ability to drive safely.

Study Aims

Overall this study aims to find answers to the research questions:

Do higher levels of mindfulness predict safer driving practices?

If there is a relationship between mindfulness and safe driving, is this mediated by self-control, emotion regulation, happiness, life satisfaction, job satisfaction and work engagement?

Hypotheses

Hypothesis 1. It is hypothesized that levels of mindfulness will negatively relate to the intent of an individual to commit driving violations.

Hypothesis 2. It is hypothesized that a. self-control, b. emotion regulation, c. happiness, d. life satisfaction, e. job satisfaction and f. work engagement will mediate the relationship between mindfulness and a lower intent to commit driving violations.

Chapter Two: Method

Participants

Participants were recruited from 15 New Zealand based companies. The 'Mindfulness, Well-being and Driving' questionnaire, as shown in Appendix A, was available to all jobs in the organizations. Participants were required to have a full New Zealand driver's licence for a car. Over a period of three months, there were 297 participants who started to fill in the questionnaire. Eighty one of these participants completed less than 50% of the questionnaire, therefore these responses were deleted from the data set, leaving a total of 216 responses that were suitable for analysis.

Table 1.

Demographics

Gender	n	Percent		
Male	120	55.6		
Female	96	44.4		
Other	n	Range	Mean	SD
Age	216	21-70	47.39	11.83
Organizational tenure	216	0-20	3.51	1.59
Number of years with full NZ driver's licence	216	1-20+	3.42	0.92
Number of kilometres driven in a usual week	216	0-120+	4.46	0.88

The demographic variables of the 216 participants who completed the questionnaire are shown in Table 1.

Procedure

Ethical approval for this research was granted by the School of Psychology Research and Ethics Committee of the Faculty of Arts and Social Sciences, University of Waikato. Participants for the study were recruited through the Health and Safety Advisors or Human Resource Managers of their companies. Local and national organizations based in Hamilton, New Zealand were listed, and the contact details for the relevant Health and Safety or Human Resource Managers were identified. Contact was made either via email as shown in Appendix B, or by telephone, and permission was sought to distribute the survey to their employees. Those companies who were willing to distribute the questionnaire were then sent a final email, as shown in Appendix C, which contained an online link to the survey. Managers were advised that they would receive a report of the findings at the conclusion of the study, as an encouragement for organizations to distribute the survey to their staff.

Mindfulness, Well-being and Driving Questionnaire

Data were collected through the Mindfulness, Wellbeing and Driving Questionnaire. The full questionnaire is attached in Appendix A. The layout of the questionnaire was altered in the conversion from an online questionnaire to a word document. While the full questionnaire consisted of a large range of variables, this project analysed only seven, comprising of 153 items. These variables were developed using measures from previously validated research, and included measures of happiness, emotion regulation, impulsiveness, mindfulness, life satisfaction, job

satisfaction, and work engagement. The final section measured the likelihood of committing any driving violations in the future. These measures were randomly mixed up in the final questionnaire. The consistency and reliability of the original measures is listed in Appendix D, Table 2.

Introduction to the Questionnaire. In the introduction, participants were invited to participate. They were given information concerning the survey such as the overall objectives, and the approximate time required to complete the survey. Participants were assured that the information collected would remain anonymous, and would not be attached to any personal identifiers. They were advised that the survey had obtained ethical approval from the University of Waikato, and that their company would receive a copy of the final findings. They were instructed that in order to take part in this project they needed to have a full New Zealand driver's licence for a car. The contact details of the researchers were provided.

Screening Question. A screening question was included to check that participants did have a full New Zealand driver licence for a car. If participants did have a licence of this type, they were able to continue on with the survey. Those participants who did not have a full New Zealand driver licence for a car were directed to a page where they were thanked for their interest and informed that they were not eligible to continue with the questionnaire.

Demographics. Basic demographics relating to the participants were sought. These included questions concerning their age, gender, length of time in employment in the organization, current role in the organization, the number of years a full New Zealand driver licence had been held, and the number of kilometres driven in a usual week.

Predictor Measure

Mindfulness. Mindfulness was measured using the MAAS as developed and tested by Brown and Ryan (2003). The MAAS is a 15 item measure of mindfulness, which was developed to assess differences between individuals in maintaining attention and awareness to the present moment. The items included 'I find it difficult to stay focused on what's happening in the present', and 'I do jobs or tasks automatically, without being aware of what I'm doing'. Participants were required to choose their responses to items from a four point likert scale ranging from 1 = almost always to 4 = almost never. High scores represented a high level of mindfulness, while low scores represented a low level of mindfulness. The reliability and validity of the MASS has been established in the original and subsequent research (Brown et al., 2003; Brown, West, Loverich & Biegel, 2011; MacKillop & Anderson, 2007; Osman, Lamis, Bagge, Freedenthal, & Barnes, 2016). See Appendix D, Table 2.

Outcome Measures

Intention to Commit Driving Violations. The Probability of Future Driving Violations questionnaire section of the survey was a shortened version of the Driver Behaviour Questionnaire as developed by Reason,

Manstead, Stradling, Baxter and Campbell (1990). The Driver Behaviour Questionnaire has been constructed to measure the intentions of drivers to commit errors and violations, as an alternative to measuring driving violations through obtaining the incidence of unwanted driving violations. One question in the Driver Behaviour Questionnaire relates to the intention of a driver to become angry, three questions relate to the intention of a driver to speed, while a further 16 questions relate to the intention of a driver to violate the road rules. Respondents were asked items related to how often in the future they would expect to engage in certain behaviours. These behaviours included 'be angry about a bad driver' to measure the likelihood of becoming angry while driving, 'speed over the limit' to measure intention to speed, and 'drive a vehicle with uncertified modifications' or 'use your hands to talk on a cell phone or text' to measure intention to violate road rules. Participants were required to choose their responses to items from a five point likert scale ranging from 0 = never to 4 = certain. A total low score represented a decreased probability of future driving incidents, while a total high score represented an increased probability of future driving incidents. The Driver Behaviour Questionnaire has been demonstrated, over many studies, to be a more reliable measure of unwanted driving incidents (de Winter & Dodou, 2010; Martinussen, Hakamies-Blomqvist, Møller, Özkan, & Lajunen, 2012; Harrison, 2009). For this reason, the intention to commit driving violations measure, which was developed from the driver behaviour questionnaire, was used as the preferred method of evaluating the intention to violate traffic rules. See Appendix D, Table 2 for reliability and validity figures.

Texting. There has been increasing levels of research and concern over texting on a mobile phone while driving. While the Intention to Commit of Future Driving Violations questionnaire queried the use of a mobile phone while driving, the question was not specific to texting on a mobile phone. In order to account for this, a further question, was added to this study, in order to gauge the intention of a participant to text and drive. This question was taken from a study by Feldman et al. (2011), who researched the effect of the different mindfulness levels of individuals, on the frequency of engaging in texting while driving.

Unwanted driving incidents. Information was sought regarding the total number of crashes, fines and near misses experienced over the previous 12 months. These figures were added together to calculate the total number of unwanted driving incidents.

Potential Mediators

Self-control. Self-control was measured using a shortened version of the Barratt Impulsiveness Scale (BIS-11) as developed by Patton et al. (1995). The original BIS-11 measures identified six primary factors which were reduced to three second-order factors. The second order factor of 'attentional impulsiveness' measures the ability to attend to what is going on and consists of two primary factors labelled 'attention' and 'cognitive instability'. The second order factor of 'non-planning', measures the ability to plan, and consists of two primary factors labelled 'impulse-control' and 'cognitive complexity', and the second order factor of 'motor impulsiveness' which measures the level to which an individual acts

without thinking, and consists of two primary factors labelled 'motor impulsiveness' and 'perseverance'. Cognitive items were found to load on all the factors, suggesting that cognition is a process which underlies all aspects of impulsiveness (Patton et al., 1995). The BIS-11 was 30 items long. Due to the requirement to shorten the overall survey, the questionnaire was abbreviated to 20 items for this study. Respondents were asked items including 'I concentrate easily' to measure attention, 'I act on the spur of the moment' to measure motor, 'I am more interested in the present than the future' to measure non-planning'. Participants were required to choose their responses to items from a four point likert scale ranging from 1 = rarely/never to 4 = almost always/always. Once results had been obtained, the scores for questions 35, 38, 39, 40, 43, 47, and 49 were reversed in order to ensure low scores represented a low level of impulsiveness, or a high level of self-control, while high scores represented a high level of impulsiveness, or a low level of self-control. The BIS-11 has been found to be an internally consistent and reliable measure of impulsiveness when it was originally produced and in a more recent meta-analysis (Patton et al., 1995; Vasconcelos, Malloy-Diniz, & Correa, 2012). See Appendix D, Table 2.

Emotion Regulation. Emotion regulation was assessed with a shortened version of the Difficulties in Emotion Regulation Scale (DERS) developed by Gratz and Roemer (2004). The original DERS questionnaire identified six subscales which measure the level of nonacceptance of emotional responses (nonacceptance), the difficulties engaging in goal directed (goals), difficulties in impulse control related to emotional

responses (impulse), the lack of emotional awareness (awareness), the level of access to emotion regulation strategies (strategies), and the level of emotional clarity (clarity). The original questionnaire was 41 items long. Due to the requirement to shorten the overall survey the questionnaire was abbreviated to 23 questions for this study. The acceptance section was reworked into one question. The strategies, and clarity sections were modified and decreased. Respondents were asked items including 'When I'm upset I tell myself I shouldn't be feeling this way' to measure nonacceptance, 'When I'm upset I have difficulty focusing on other things' to measure goals, 'When I am upset I lose control over my behaviours' to measure impulse, 'I pay attention to how I feel' to measure awareness, 'When I'm upset I believe there is nothing I can do to make myself feel better' to measure strategies, and 'I have difficulty making sense out of my feelings' to measure clarity. Participants were required to choose their responses to items from a five point likert scale ranging from 1 = strongly disagree to 5 = strongly agree. Once results had been obtained, the scores for questions 31, 34, 55_2, 55_3, 55_5, 56_2, 56_3, 56_4, 56_5, 57_1, 57_2, 57_3, 57_4, and 57_5 were reversed in order to ensure low scores represented a low level of ability to emotionally regulate, while high scores represented a high level of aptitude in this area. Recent findings have demonstrated the high internal consistency, good test-retest reliability and adequate construct and predictive validity of this questionnaire, over a number of different populations (Gratz & Roemer, 2004; Fowler et al., 2014; Neumann, van Lier, Gratz, & Koot, 2010). See Appendix D, Table 2.

Happiness. The happiness of participants was assessed using the 18 item Orientation to Happiness questionnaire developed by Peterson et al. (2005). The questionnaire has three sub-scales, which measure the levels of meaning, pleasure and engagement in life. Respondents were asked items including 'My life serves a higher purpose' to indicate the meaningfulness of their life, 'Life is too short to postpone the pleasures it can provide' to indicate the extent to which they would seek out pleasure, and 'Regardless of what I am doing, time passes very quickly' to indicate the extent to which they were engaged in life's activities. Participants were required to choose their responses to items from a five point likert scale ranging from 1 = strongly disagree to 5 = strongly agree, so that high values represented a high level of happiness, and low values represented a low level of happiness. The three subscales were added up to give a total level of happiness. This questionnaire has demonstrated good internal consistency, reliability and validity in US, Swiss and Australian populations (Peterson et al., 2005; Peterson, Ruch, Beermann, Park, & Seligman, 2007; Vella-Brodrick et al., 2009). See Appendix D, Table 2.

Life Satisfaction. This scale was developed by Diener et al. (1985) to provide a multi-item measure of life satisfaction. The fifth item in this scale relates to a participant's satisfaction with their life in the past. This research was focused on participant's current satisfaction with their life, therefore this item was omitted from the questionnaire (Pavot & Diener, 2008). The items included 'In most ways my life is close to my ideal', and 'I am satisfied with my life'. Participants were required to choose their responses to items from a seven point likert scale ranging from 1 =

strongly disagree to 7 = strongly agree. High scores represented a high level of life satisfaction, while low scores represented a low level of life satisfaction. Internal consistency and reliability have been established (Diener et al., 1985). See Appendix D, Table 2.

Job Satisfaction. The job satisfaction section of the questionnaire was taken from a shortened version the Index of Job Satisfaction questionnaire as developed by Brayfield and Rothe (1951). Items included 'Most days I am enthusiastic about my work', and I find enjoyment in my work'. Participants were required to choose their responses to items from a five point likert scale ranging from 1 = strongly disagree to 5 = strongly agree. Once results were obtained, the scores for questions 79 and 81 were reversed in order to ensure high scores represented a high level of job satisfaction, and low scores represented a low level of job satisfaction. This scale has been tested for reliability, internal consistency reliability and construct validity (Judge, Bono, & Locke, 2000; Judge, Locke, Durham, & Kluger, 1998; Yücel, 2012) See Appendix D, Table 2.

Work Engagement. The work engagement section of the questionnaire was taken from a shortened version of the Utrecht Work Engagement Scale (UWES) as developed by Schaufeli et al. (2002), and shortened by Schaufeli, Bakker and Salanova (2006). This measure consists of three closely related factors labelled 'vigor', 'dedication' and 'absorption'. Respondents were asked questions including 'When I get up in the morning, I feel like going to work' to measure 'vigor', 'My job inspires me' to measure 'dedication', and 'I am immersed in my work' to measure 'absorption'. Participants were required to choose their responses to items

from a six point likert scale ranging from 0 = never to 6 = every day. High scores represented a high level of engagement, whereas low scores represented a low level of engagement. This measure has been checked for internal consistency, validity, reliability, and has been found to correlate with the original scales in the initial, and subsequent research (Seppälä et al., 2009; Schaufeli et. al, 2006). See Appendix D, Table 2.

Data Analysis

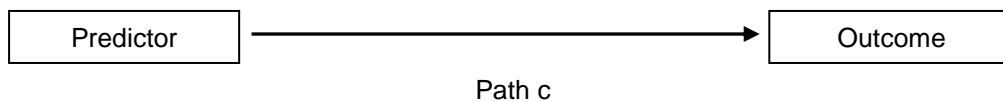
Descriptive Statistics. Means and standard deviations were calculated for all variables. Frequency distributions for the eight measures including mindfulness, impulsiveness, emotion regulation, happiness, life satisfaction, job satisfaction, work engagement, and intention to commit driving violations were produced, and examined for normality.

Correlational Analysis. The Pearson product-moment correlation coefficient was calculated to determine the relationships between the dependent and independent variables, and provide evidence for Hypotheses 1 which relates to how mindfulness affects driving practices. This analysis also provided evidence for hypotheses 2a, b, c, d, e and f, regarding whether initial relationships between the predictor variable of mindfulness, the mediators including impulsiveness, emotion regulation, happiness, life satisfaction, job satisfaction and work engagement, and the outcome variable of intention to commit driving violations existed.

Mediation Analysis. Mediation analysis was used to test for hypothesis 2a, b, c, d, e, and f. This hypothesis considered the possible role of impulsiveness, emotion regulation, happiness, life satisfaction, job

satisfaction and work engagement, as mediators in the relationship between mindfulness and safer driving. Figure 1 shows a diagram of a basic mediation model. The basic relationship between the predictor and the outcome is depicted in the top of the figure labelled simple relationship. The bottom of the figure, labelled mediated relationship, demonstrates how the predictor and outcome variables can also relate through a third variable, the mediator.

Simple Relationship



Mediated Relationship

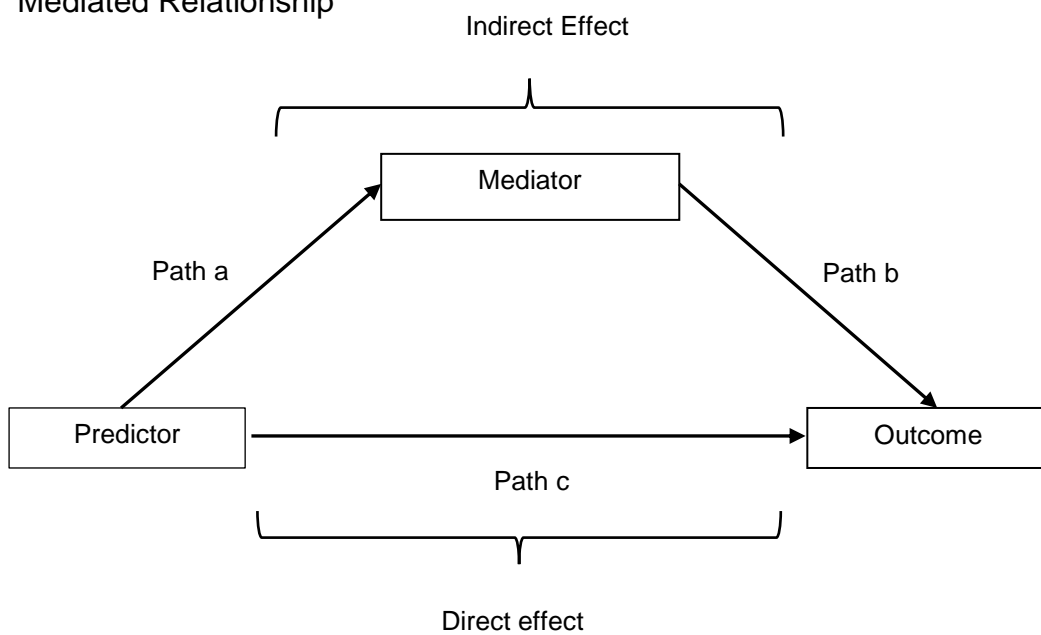


Figure 1. Diagram of a mediation model (Field, 2013)

For mediation to be significant, there must be an initial relationship between the predictor and the outcome (path c), plus relationships

between the predictor and the mediator (path a), and the mediator and the outcome (path b), must be established. The relationship between the predictor and the outcome must be smaller when the mediator is not present, than when it is present.

Mediation analysis was conducted using the PROCESS module developed by Preacher and Hayes (2004), as recommended by Field (2013). The significance of the effect of mediation was determined by looking at the significance and strengths of the relationships on paths a, b, and c, and looking at the indirect effect of bootstrapped confidence intervals (Field, 2013). The use of bootstrapped confidence intervals allows for the skewed shape of the sampling distribution to be taken into account, which avoids type 1 errors when testing for the significance of indirect effects in mediation (Shrout, Bolger, & West; 2002). Therefore, the use of raw scores was preferred.

Chapter Three: Results

This chapter includes principle component analysis, descriptive statistics, correlations and mediation analyses.

Principle Component Analysis. In order to confirm the scales present in the measures used, principle component analysis (PCA), with orthogonal rotation (varimax with Kaiser normalization), was conducted on all measures to interpret the common variance in a construct, in terms of the smallest number of subconstructs (Field, 2013). The adequacy of the sample was measured using two tests. The first of these was the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy, where values greater than .7 were regarded as acceptable. The second test was Bartlett's test of sphericity. Factor loadings greater than .4 were considered significant (Field, 2013). Other data used to inform the decision regarding factors included the pattern matrices, the scree plots, and factor loadings. The internal reliability of all scales was assessed using Cronbach's coefficient alpha. See Appendix E for the results.

Descriptive Statistics. Descriptive statistics were calculated for all the variables in this study, and included the means, standard deviations, skew and kurtosis. The internal reliability for all scales was calculated. Response values for the measures varied. Refer to Table 2 below.

On average respondents reported relatively high levels mindfulness (4.19), and low levels of intentions to commit driving violations (1.64), intention to text (1.88) and unwanted driving incidents (3.26).

Table 2

Descriptive Statistics

Predictor, Mediator and Outcome Variables	N	Mean	SD	Skew	Kurtosis	Cron Alpha	Res Values
Mindfulness	216	4.19	.71	-.26	.17	.87	1-6
Intention to Commit Driving Violations	216	1.64	.46	1.20	1.80	.90	1-5
Intention to Text	216	1.88	.92	.7	-.51	na	1-4
Unwanted Driving Incidents	213	3.26	5.7	4.39	26.9	na	na
Impulsiveness	216	2.05	.34	.17	.21	.71	1-4
Emotion Regulation	216	3.65	.44	-.37	.08	.83	1-5
Happiness	216	3.28	.38	-.22	.71	.68	1-5
Life Satisfaction	216	5.15	1.23	-1.00	.59	.90	1-7
Job Satisfaction	216	3.95	.80	-1.04	.86	.88	1-7
Work Engagement	211	5.48	1.14	-1.07	.32	.87	1-6

Descriptive Statistics of Variables

Cron Alpha = Cronbach's Alpha, Res Values = Response Values

They reported average levels of self-control (2.05), relatively high levels of emotion regulation (3.65) and happiness (3.28), high levels of life

satisfaction (5.15), moderate levels of job satisfaction (3.95), and high levels of work engagement (5.48). The internal reliability of the scales used was measured using Cronbach's alpha. All of the scales had relatively high reliabilities ranging from .68 to .90.

The data were observed by visually examining the distribution graphs in Figure 2, below. Mindfulness, self-control, emotion regulation, happiness, life satisfaction, job satisfaction and work engagement appear to be negatively skewed, while intention to commit driving violations appears to be positively skewed. Intention to text also demonstrates a positive skew. However, the skew and kurtosis scores (Table 2), for all these variables appear to be within the acceptable range of less than absolute values of 3 for skew, and less than absolute values of 8 for kurtosis, according to Kline (2016).

The positive skew for the frequency distribution of intention to commit driving violations and intention to text is expected for these measures. While only 2% of participants had an intention to commit three or more driving violations, 18% of participants had an intention to commit two or more driving violations, and 88% of participants had an intention to commit one or more driving violations.

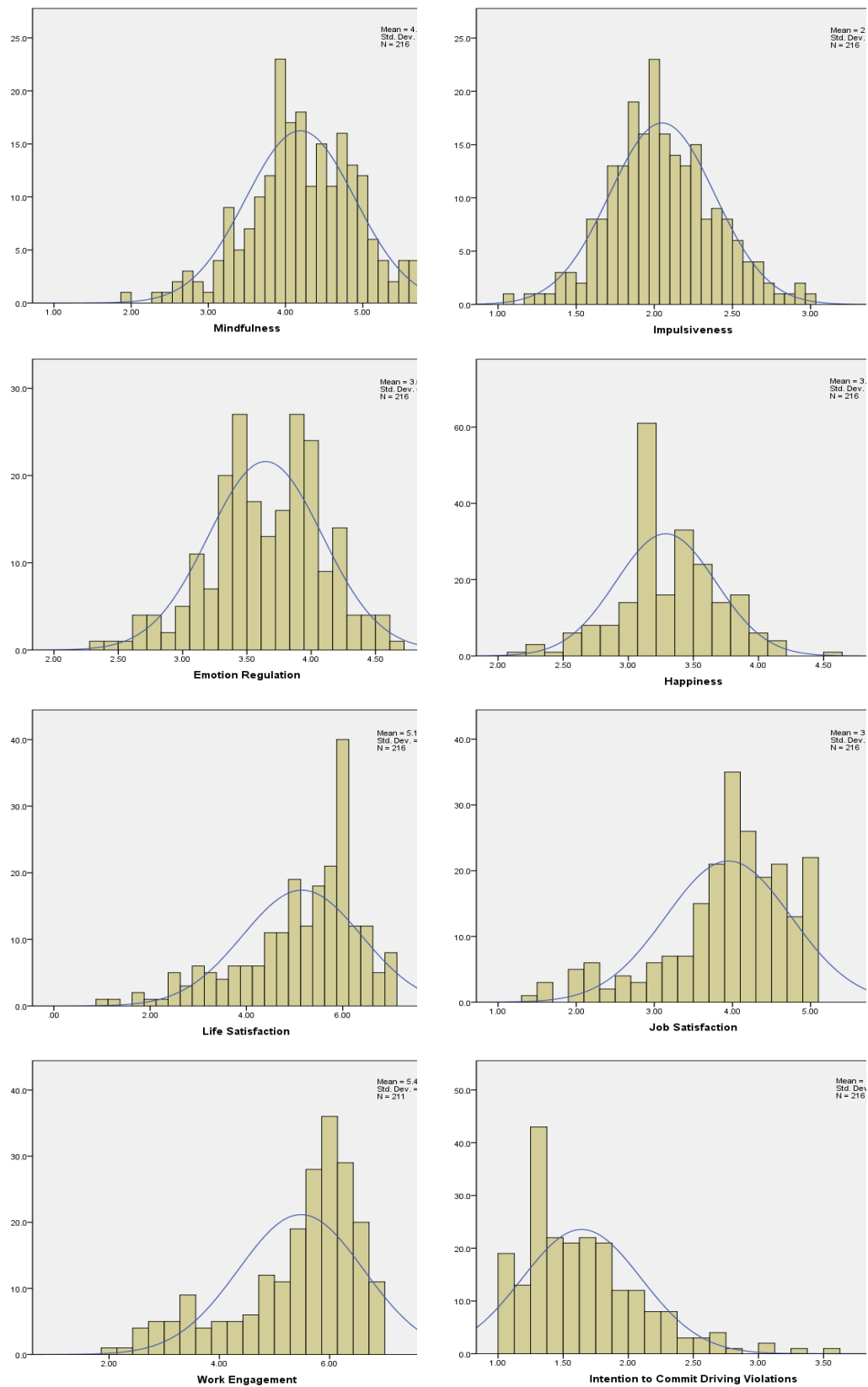


Figure 2. Frequency distributions for the measures used in this study

The measure for unwanted driving incidents demonstrates a high standard deviation, indicating a greater spread of scores around the mean (Field, 2013), and scores for skew and kurtosis which are outside the acceptable range (Kline, 2016). This verifies the unreliability of this measure which has been noted by de Winter et al. (2010), and is the reason for the use of the intention to commit driving violations as a more reliable measure of unwanted driving incidents (de Winter & Dodou, 2010).

Correlation Analysis

The mean totals for the predictor and outcome variables were calculated from the totals of their sub-factors. Bivariate Pearson product-moment correlation coefficients were calculated for each mean variable, in order to test for significant correlations between them. These correlations were used to determine whether hypothesis 1 was supported. These correlations also provided evidence for initial relationships between the predictor, mediator and outcome variables prior to mediation analysis and determining support for Hypotheses 2a, b, c, d, e and f. The correlation matrix for these variables is listed in Table 3.

Evidence that Mindfulness Leads to Safer Driving

Hypothesis 1 proposed that mindfulness, the predictor variable, would negatively relate to the outcome variables, intention to commit driving violations and intention to text while driving. Mindfulness demonstrated strong negative relationships to both these measures as follows; intention to commit driving violations ($r = -.340, p < .01$), and intention to text ($r = -.408, p < .01$). See Table 3.

Table 3

Correlations among Predictor, Mediator and Outcome variables

Variables	Mind	Int2CV	Int2Txt	SC	ER	Happ	LS	JS	WEng
Mind	1								
Int2CV	-.340**	1							
Int2Txt	-.408**	.540**	1						
IMP	-.573**	.366**	.263**	1					
ER	.526**	-.243**	-.170*	-.474**	1				
Happ	-.151*	-.161*	-.133	.070	.028	1			
LS	.247**	-.098	-.084	-.179**	.316**	.030	1		
JS	.337**	-.216**	-.190**	-.265**	.376**	.093	.481**	1	
WEng	.300**	-.228**	-.234**	-.225**	.287**	.222**	.357**	.732**	1

Mind = Mindfulness, Int2CV = Intention to Commit Driving Violations, Int2Txt = Intention to Text while driving, IMP=Impulsiveness, ER = Emotion Regulation, Happ = Happiness, LS = Life Satisfaction, JS = Job Satisfaction, WEng = Work Engagement
Sample size=216, *p<.05, **p<.01

However, correlational analysis does not establish cause and effect, therefore mediation analysis was used to establish further support for the relationship between mindfulness and safer driving. Mediation analysis confirmed this relationship and indicated that mindfulness explained 12% of the variance in intention to commit driving violations (Table 4). Therefore, hypothesis 1 was supported. These results indicated that as mindfulness increases, the intention to commit driving violations and the intention to text while driving decreases.

What Variables Mediate the Relationship Between Mindfulness and Safer Driving?

Hypothesis 2 proposed that a. self-control b. emotion regulation c. happiness, d. life satisfaction, e. job satisfaction and f. work engagement would positively mediate the relationship between mindfulness and a decreased intent to commit driving violations. The correlations between these variables were calculated to determine if initial relationships between the predictor, mediator and outcome variables in the mediation analysis were supported. See Table 3.

These results supported proposed relationships between the predictor, mediator and outcome variables, with the exception of life satisfaction which failed to relate to the intention to commit driving violations. While mindfulness related to happiness, this relationship was in unexpected direction, indicating that when levels of mindfulness increased, levels of happiness decreased.

Mediation Analysis. Mediation analysis was used to test for the mediation effects of the mediating variables (happiness, emotion regulation, self-control, job satisfaction, life satisfaction, and work engagement) in the relationship between the predictor variable (mindfulness) and the outcome variable (intention to commit driving violations). As referred to in the method section, the mediation analysis was conducted using the PROCESS module developed by Preacher and Hayes (2004), as recommended by Field (2013). This module determines the difference between the direct effect of the relationship between the

predictor and the outcome variable when controlling for the mediator, and the indirect effect, on the relationship between these variables, through the mediator. The bootstrapped confidence intervals for the indirect effect were bias corrected and accelerated (BCa), based on 1000 samples at a 95% interval. The square of the regression coefficients (R^2) provided the proportion of variance explained by the direct and indirect effects (Field, 2013). The mediation effects were assessed by estimating the direct and indirect effects between the predictor, mediator and outcome variables, and the differences in the proportion of variance. If the indirect effect was significant, and the proportion of variance was greater when the mediator was introduced, then mediation was said to have occurred. These results are presented in Table 4, which references Figure 3.

Hypothesis 2a, b, c, d, e, and f proposed that self-control, emotion regulation, happiness, life satisfaction, job satisfaction and work engagement would individually act as mediators in the mindfulness safer driving relationship.

Mediation results found that only self-control and happiness were significant mediators in this relationship. In the simple relationship between mindfulness and safer driving, mindfulness was found to explained 12% of the variance in intention to commit driving violations. When self-control and happiness were individually added to the relationship between mindfulness and safer driving as mediators, both variables significantly increased the amount of variance explained in the model to 16%.

Table 4

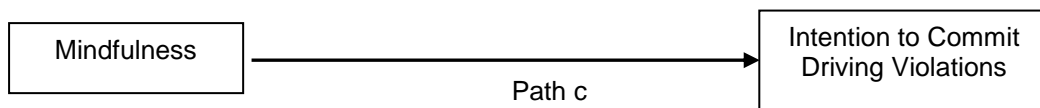
Mediators of the relationship between Mindfulness and Intention to Commit Driving Violations

	Path a			Path b		Path c				
						Direct effect			Indirect effect	
	b	t	R ² %	b	t	b	t	R ² %	b	95% CI
SR						-.22**	-5.28	12		
MR										
IMP	-.27**	-10.2	32	.35**	3.33	-.13*	-2.52	16	-.09*	-.16, -.04
ER	.33**	9.05	28	-.09	-1.18	-.19**	-3.88	12	-.03	-.09, .02
Happ	-.08*	-2.23	2	-.26**	-3.42	-.24**	-5.87	16	.02*	.00, .05
LS	.43**	3.72	6	-.01	-.23	-.22**	-5.05	12	-.00	-.03, .03
JS	.38**	5.24	11	-.06	-1.68	-.19**	-4.43	12	-.02	-.07, .01
Weng	.48**	4.54	9	-.05*	-2.00	-.2	-4.61	14	-.03	-.07, .00

SR = Simple Relationship, MR = Mediated Relationship, IMP = Impulsiveness, ER = Emotion Regulation, Happ = Happiness, LS = Life Satisfaction, JS = Job Satisfaction, Weng = Work Engagement

* $p < .05$, ** $p < .01$

Simple Relationship



Mediated Relationship

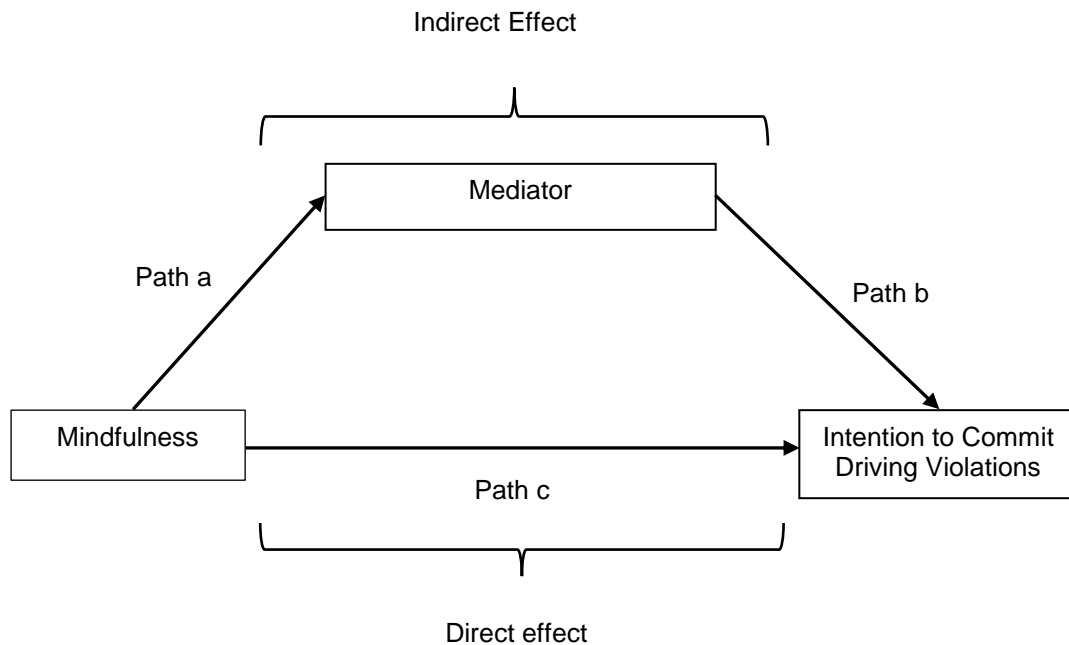


Figure 3. Model of Mindfulness as a Predictor of Intention to Commit Driving Violations, Mediated by Self-control, Emotion Regulation, Happiness, Life Satisfaction, Job Satisfaction and Work Engagement

Chapter Four: Discussion

This study had two aims. Firstly, to investigate the role of mindfulness on safe driving. Secondly, to investigate the possible mediating roles of human psychological constructs related to well-being, in the mindfulness safe driving relationship. Two research questions were posed at the end of the literature review. Do high levels of mindfulness predict safer driving? If there is a relationship between mindfulness and safer driving, is this mediated by self-control, emotion regulation, happiness, life satisfaction, job satisfaction, and work engagement?

Evidence that High Levels of Mindfulness are Associated with

Safer Driving

It was first hypothesized that, drivers who had higher levels of mindfulness would exhibit safer driving when compared with individuals who were low in mindfulness. This study demonstrated direct support for the links between mindfulness and safer driving. The relationships between mindfulness, and the intention to commit driving violations and the intention to text while driving question were found to be strongly related in both cases. The relationship between mindfulness and intention to commit driving violations was confirmed in mediation analysis where mindfulness was found to explain a significant proportion of the variance in the mindfulness safer driving relationship. These results support hypothesis one, and indicate that individuals with higher levels of mindfulness are more likely to engage in safer driving, and are less likely to text while driving.

This research supports previous findings which have indicated safer driving behaviours relate to having increased levels of situational awareness, attention, focus, impulse-control and emotion regulation (Bicaksiz & Özkan, 2016; Deffenbacher et al., 2003; Dula & Geller, 2003; Klauer et al., 2006; Neyens & Boyle, 2007; Pecher et al., 2009; Stevens & Minton, 2001). These factors relate to the essential qualities of mindfulness, which include heightened awareness of inner and outer experiences, and increased abilities to direct and sustain attention, and to be non-judgemental, leading to increased levels of impulse-control, emotion regulation and adaptive behaviour (Brown et al., 2003; Brown et al., 2007; Farb et al., 2014; Monterosso et al., 1999; Wadlinger & Isaacowitz, 2011; Wittman et al., 2014 ; Whitmer et al., 2013).

Furthermore, these results support research which links decreased rates of texting with safer driving, where decreased rates of texting have been linked to high levels of emotion regulation, a factor which is related to higher levels of mindfulness (Feldman et al., 2011; Kazemeini et al., 2013; Wilson & Stimpson, 2010).

What are the Mediating Variables in the Relationship between Mindfulness and Safer Driving?

The second hypothesis tested the ability of a. self-control, b. emotion regulation, c. happiness, d. life satisfaction, e. job satisfaction and f. work engagement to act as mediators in the mindfulness driving relationship. Where increased levels of mindfulness were predicted to increase safe

driving, the addition of each of these variables were hypothesized to enhance this relationship.

Current research has consistently demonstrated the positive impact of mindfulness on self-control and emotion regulation (Arch & Craske, 2006; Brown et al., 2007; Bishop et al., 2004; Farb et al., 2014). Increased levels of self-control and emotion regulation have been found to have a positive influence on driving behaviour (Bicaksiz & Özkan, 2016; Pêcher et al., 2009). Furthermore, increased levels of mindfulness, self-control and emotion regulation have been found to positively influence measures of well-being, including happiness, life satisfaction, job satisfaction, and work engagement. The inter-relationships between these factors are consistent with the profile of a well-resourced individual, which implies an individual who would be more likely to engage in prosocial driving behaviour (Fredrickson, 2001; Taubman-Ben-Ari, 2014). Despite the above indication that work engagement would have a positive effect on driving, research into the relationship between work engagement and safety has demonstrated that while individuals high in work engagement are more motivated to work safely (Nahrang et al., 2016), they have also demonstrated increased levels of stress and anger, emotions which have been found to have a negative impact on driving (Li et al., 2017).

Self-control as a Mediator in the Relationship between Mindfulness and Safer Driving. This study demonstrated direct support for the link between mindfulness and self-control, and self-control and safer driving. The relationship between mindfulness and self-control was found to be strongly related, indicating that individuals who were high in

mindfulness also demonstrated high levels of self-control. The relationship between self-control and intention to commit driving violations was found to be strongly related, indicating that individuals who were high in self-control also demonstrated high levels of safer driving. When self-control was added to the mindfulness safer driving model as a mediator, it was found to predict safer driving. These results supported hypothesis 2a.

These results reflect previous research which has demonstrated the positive influence of mindfulness on the self-control of attention, awareness and emotion regulation (Bishop et al., 2004; Brown et al., 2007; Monterosso & Ainslie, 1999; Wittmann et al., 2014). The association between mindfulness and self-control can be explained through the shared importance of the ability to control thought processes, which have been identified as having a central role in mindfulness as well as demonstrating relevance to all aspects of self-control (Brown et al., 2003; Patton et al., 1995). Both these factors assist with the ability to direct attention to where it is required, and the ability to maintain focus (Brown et al., 2003; Wadlinger & Isaacowitz, 2011; Whitmer et al., 2013), while the ability to control attention in a non-judgemental manner is integral to mindfulness (Bishop et al., 2004).

These results also support previous research which have found links between self-control and driving. Deficits in attentional control, situational awareness, and self-control have all been widely recorded as factors involved in negative driving outcomes (Biçaksiz & Özkan, 2016; Kass et al., 2011; Klauer et al., 2006; Neyens & Boyle, 2007; Underwood et al., 2013).

Emotion regulation as a Mediator in the Relationship between Mindfulness and Safer Driving.

This study demonstrated initial support for the link between mindfulness and emotion regulation, and emotion regulation and safer driving. The relationship between mindfulness and emotion regulation was found to be strongly related, indicating that individuals who were high in mindfulness also demonstrated high levels of emotion regulation. The relationship between emotion regulation and intention to commit driving violations was found to be strongly related, indicating that individuals who were high in emotion regulation would also demonstrate high levels of safer driving. However, emotion regulation was not found to be a mediator in the mindfulness safer driving relationship, so hypothesis 2b was not supported.

The initial results support previous research which has demonstrated a positive relationship between mindfulness and adaptive emotional responses (Arch & Craske, 2006; Borders et al., 2010; Heppner et al., 2008). Theories explain this link to the associated increased levels of attention and awareness, and the non-judgemental focus inherent in mindfulness. A non-judgemental focus is thought to encourage an open, moment by moment, exploration of emotional states, and prompt an increase in levels of insight and acceptance, and lead to increased levels of adaptive appraisal and response (Farb et al., 2014; Glomb et al., 2011).

Initial results also support previous research which has indicated a relationship between negative emotions and negative behaviour while driving, which has been especially evident in relation to anger (Deffenbacher et al., 2003; Deffenbacher et al., 2002; Pecher et al.,

2011;). This lack of ability to regulate negative emotions has also been related to an increased likelihood of engaging in texting while driving, a factor in unsafe driving behaviour (Feldman et al., 2011).

Our results failed to confirm the significance of these relationships in mediation analysis. These results may have been influenced by different factors in the emotion regulation measure, and their individual influence on mindful behaviour, particularly attention and awareness. Of the four factors in emotion regulation, two factors, the 'awareness' and 'strategies' factors, represent strategies where focus is turned inwards, towards the emotion being currently experienced. Therefore, engaging in these strategies would direct attention and awareness away from driving, diminishing driving safety, yet still assisting emotion regulation. In contrast, a fully mindful individual would weigh up all internal and external aspects of a situation, and focus attention where it was most required for a beneficial outcome (Nyaniponika, 1973; Wallace & Shapiro, 2006).

Happiness as a Mediator in the Relationship between Mindfulness and Safer Driving. This study demonstrated initial support for the relationships between mindfulness and happiness, and happiness and safer driving. However, the relationship between mindfulness and happiness was in the opposite direction to that which would be expected, given the positive contribution of happiness to overall well-being. This result indicated that individuals with increased levels of mindfulness would have decreased levels of happiness. In contrast, the relationship between happiness and intention to commit driving violations was in the expected direction. This relationship indicated that individuals with increased levels

of happiness also demonstrated higher levels of safer driving. When happiness was added as a mediator to the mindfulness safer driving model it was found to predict safer driving. Therefore, hypothesis 2c was supported.

The unexpected aspect of this result was the direction of the relationship between mindfulness and happiness. This may be explained by the inclusion of a hedonic form of happiness in the measure of happiness (Peterson et al., 1995) in the form of 'pleasure', alongside the eudemonic forms of happiness including 'engagement' and 'meaning'. The 'pleasure' factor of happiness represents finding instant gratification in the moment which represents the antithesis of mindfulness with its focus on the right type of outcome (Nyamiponika, 1973; Wallace et al., 2006), which is in contrast to the 'engagement' and 'meaning' factors, which relate to achieving one's overall goals and acting in line with one's values. Previous research supports a positive relationship between mindfulness and eudemonic happiness (Hollis-Walker & Colosimo, 2011). In contrast the 'pleasure' factor has been found to be less likely to predict life satisfaction, and in some cases, has not predicted life satisfaction at all (Chen et al., 2010; Vella-Brodrick et al., 2009). Therefore, the inclusion of a hedonic form of happiness may have negatively influenced the overall relationship between mindfulness and happiness in these results. However, increased levels of happiness were still found to demonstrate safer driving. The overall impact of the three happiness factors on wellbeing maybe still be positive, as found previously by Peterson et al., (2005) and Vella-Brodrick et al., (2009). It is possible that the overall impact of increased well-being

had a positive impact on driving, which would add support to previous research linking aspects of overall well-being with safer driving (Taubman-Ben-Ari, 2014).

Life and Job Satisfaction as Mediators in the Relationship between Mindfulness and Safer Driving. This study demonstrated initial support for the relationships between mindfulness and life and job satisfaction, and the relationship between job satisfaction and safer driving, however life satisfaction failed to relate to safer driving. When life and job satisfaction were added as mediators to the mindfulness safer driving model, they were not found to predict safer driving. Therefore, hypotheses 2d and e were not supported.

Initial relationships supported previous research which has indicated positive relationships between mindfulness and life and job satisfaction. Life skills which contribute to both life and job satisfaction include self-control, emotion regulation and the ability to direct attention to what is relevant. These skills are synonymous with mindfulness and impact positively on the ability to foster stronger social relationships, engage in problem focused coping, and increase levels of work engagement (Brown et al., 2003; Charoensukmongkol, 2013; Côte & Morgan, 2002; Diener et al., 2004; Hofmann et al., 2014; Hülshager et al., 2013; Pavot & Diener, 2008; Zivnuska et al., 2016).

The failure of life and job satisfaction to mediate the relationship between mindfulness and safer driving may be explained in the difference between the assessment mechanisms used in job and life satisfaction

when compared to mindfulness. Both life and job satisfaction, are subjective, cognitive measures which rely on a level of judgement concerning one's situation (Diener et al., 1985; Brayfield et al., 1951), while the mechanisms proposed as underlying mindfulness are a non-judgemental moment by moment, interweaving of intention, attention and attitude (Glomb et al., 2011; Hülshager et al., 2013; Shapiro et al., 2006). The inherent differences in what influences an individual's evaluation of life and job satisfaction, when compared to what underlies mindfulness, may be what affects their inability to serve as a mediator in the relationship between mindfulness and safer driving.

Work Engagement as a Mediator in the Relationship between Mindfulness and Safer Driving. This study demonstrated strong initial relationships between mindfulness and work engagement, and work engagement and safer driving, indicating that individuals who were high in mindfulness also demonstrated high levels of work engagement, and safer driving. However, when work engagement was added as a mediator to the mindfulness safer driving model, it was not found to be significant, therefore hypothesis 3f was not supported

The significance of the initial relationships offered support for previous research where increased levels of mindfulness have been found to promote work engagement and decrease burnout, which is negatively related to work engagement (Charoensukmongkol, 2013; Hülshager et al., 2013; Maslach et al., 1996; Schaufeli et al., 2002). Previous research into the impact of high levels of work engagement on safety is not clear (Nahrgang et al., 2016; Li et al., 2017). These initial relationships offered

support to previous research linking work engagement to increased levels of safe work practices which implicate safer driving behaviour (Nahrgang et al., 2011).

However, work engagement was not found to be a significant mediator in the relationship between mindfulness and safer driving. This may be explained by the different qualities of the work engagement factors. Only one of these factors, the 'engagement' factor is related to a state of highly focused attention, and this is the quality which has been demonstrated in a number of studies to be a highly important factor in road safety (Klauer et al., 2006; Neyens & Boyle, 2007; Stevens & Minton, 2001). In contrast, the factors of 'vigor' and 'dedication' could also represent a possible preoccupation with employment, where attention is deflected away from activities not related to work, therefore negatively impacting on driving.

Conclusion

Overall, these results demonstrate a clear positive and predictive relationship between mindfulness and safer driving and offer support for the positive role of mindfulness in developing attentional self-control and awareness. They also offer support for the positive impact of mindfulness on a number of other factors relating to well-being including emotion regulation, life and job satisfaction and work engagement. Only self-control and happiness were found to mediate the relationship between mindfulness and safer driving. The influence of other well-being factors including emotion regulation, life satisfaction, job satisfaction and work

engagement on this relationship was less clear. Further research may be required to clarify the impact of overall well-being, on the relationship between mindfulness and safer driving, particularly the role of eudemonic and hedonic forms of happiness.

Limitations

This was a cross-sectional survey of a population of full-time employees. Being in employment would have positively influenced the socioeconomic status of participants, so may have also exerted a positive influence on levels of mindfulness, and other aspects of well-being. Further research would be required to investigate the link between mindfulness and safe driving in populations from other socioeconomic groups.

Implications and Future Research

This research has demonstrated a strong relationship between mindfulness and safer driving. Further studies could confirm this relationship and look at the impact of mindfulness training on drivers' abilities. Mindfulness interventions have been used extensively in the workplace, and even when relatively brief have demonstrated success in this area (Aikens et al., 2014; Fortney, Luchterhand, Zakletskaia, Zgierska & Rakel, 2013; Galantino, Baime, Maguire, Szapary & Farrer, 2005; Krasner et al., 2009). If brief mindfulness interventions were able to increase the ability of an individual to drive safely on our roads, this may lead to a substantial positive impact on New Zealand's road safety.

The positive relationship of mindfulness to the variables related to overall well-being, also supports the use of mindfulness interventions to increase

general social and occupational well-being. This research did not look at the impact of mindfulness on the different subscales inherent in the self-control, emotion regulation, happiness, and work engagement measures. Further research regarding the relationship between mindfulness and these different subscales, may provide a more detailed picture of which specific aspects of these variables mediate the relationship between mindfulness and safer driving.

References

- Arch, J. J., & Craske, M. G. (2006). Mechanisms of mindfulness: Emotion regulation following a focused breathing induction. *Behaviour research and therapy*, 44(12), 1849-1858.
- Aikens, K. A., Astin, J., Pelletier, K. R., Levanovich, K., Baase, C. M., Park, Y. Y., & Bodnar, C. M. (2014). Mindfulness goes to work: Impact of an online workplace intervention. *Journal of Occupational and Environmental Medicine*, 56(7), 721-731.
- Ashu, Singh, & Devender. (2015). Hope and mindfulness as correlates of happiness. *Indian Journal of Positive Psychology*, 6(4), 422-425.
- Atkins, Paul, W. B., Styles, Robert, (2015). Mindfulness, identity and work; mindfulness training creates a more flexible sense of self. In Reb, J. & Atkins, P. W. B. (Ed.), *Mindfulness in organizations*, (1st ed. pp.67-99) Cambridge, United Kingdom: Cambridge University Press.
- Bakker, A., Schaufeli, W., Leiter, M., & Taris, T. (2008). Work engagement: An emerging concept in occupational health psychology. *Work & Stress*, 22(3), 187-200.
- Beck, A. T., & Haigh, E. A. (2014). Advances in cognitive theory and therapy: the generic cognitive model. *Annual review of clinical psychology*, 10, 1-24.

- Bien, T. (2009). Paradise lost: Mindfulness and addictive behaviour
In *Clinical handbook of mindfulness* (pp. 289-298). Springer New York.
- Bıçaksız, & Özkan. (2016). Impulsiveness and driver behaviors, offences and accident involvement: A systematic review. *Transportation Research Part F: Psychology and Behaviour*, 38, 194-223.
- Bishop, S. R., Lau, M., Shapiro, S., Carlson, L., Anderson, N. D., Carmody, J., Segal, Z. V., Abbey, S., Speca, M., Velting, D., Devins, G. (2004). Mindfulness: A proposed operational definition. *Clinical Psychology: Science and Practice*, 11(3), 230-241.
- Borders, A., Earleywine, M., & Jajodia, A. (2010). Could mindfulness decrease anger, hostility, and aggression by decreasing rumination? *Aggressive behavior*, 36(1), 28-44.
- Brayfield, A., Rothe, H., & Paterson, Donald G. (1951). An index of job satisfaction. *Journal of Applied Psychology*, 35(5), 307-311.
- Brown, K., Ryan, R., & Creswell, J. (2007). Mindfulness: Theoretical foundations and evidence for its salutary effects. *Psychological Inquiry*, 18(4), 211-237.
- Brown, K., Ryan, R., & Dovidio, J. F. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, 84(4), 822-848.

- Brown, K. W., West, A. M., Loverich, T. M., & Biegel, G. M. (2011). Assessing adolescent mindfulness: validation of an adapted mindful attention awareness scale in adolescent normative and psychiatric populations. *Psychological assessment*, 23(4), 1023.
- Caird, Johnston, Willness, Asbridge, & Steel. (2014). A meta-analysis of the effects of texting on driving. *Accident Analysis and Prevention*, Accident Analysis and Prevention.
- Campos, D., Cebolla, A., Quero, S., Bretón-López, J., Botella, Soler, J., Garia-Campayo, J., Demarzo, M. Baños. (2016). Meditation and happiness: Mindfulness and self-compassion may mediate the meditation–happiness relationship. *Personality and Individual Differences*, 93, 80-85.
- Chaskalson, M., & Hadley, S. G. (2015). Mindfulness: historical and contemplative context and recent developments. In Reb, J. & Atkins, P. W. B. (Ed.), *Mindfulness in organizations*, (1st ed. pp.42-66) Cambridge, United Kingdom: Cambridge University Press.
- Charoensukmongkol, P. (2013). The contributions of mindfulness meditation on burnout, coping strategy, and job satisfaction: Evidence from Thailand. *Journal of Management & Organization*, 19(5), 544-558.
- Chen, L., Tsai, Y., & Chen, M. (2010). Psychometric Analysis of the orientations to happiness questionnaire in Taiwanese

- undergraduate students. *Social Indicators Research*, 98(2), 239-249.
- Choi, Y., Karremans, J., & Barendregt, H. (2012). The happy face of mindfulness: Mindfulness meditation is associated with perceptions of happiness as rated by outside observers. *The Journal of Positive Psychology*, 7(1), 30-35.
- Choi, E., & Leroy, H. (2015). Methods of mindfulness: How mindfulness is studied in the workplace. In Reb, J. & Atkins, P. W. B. (Ed.), *Mindfulness in organizations*, (1st ed. pp.67-99) Cambridge, United Kingdom: Cambridge University Press.
- Christopher, M. S., Christopher, V., & Charoensuk, S. (2009). Assessing “Western” mindfulness among Thai Theravāda Buddhist monks. *Mental Health, Religion and Culture*, 12(3), 303-314.
- Côté, S., & Morgan, L. (2002). A longitudinal analysis of the association between emotion regulation, job satisfaction, and intentions to quit. *Journal of Organizational Behavior*, 23(8), 947-962.
- Csikszentmihalyi, M. (1991). *Flow : The psychology of optimal experience*. New York: Harper Perennial.
- Dahlen, E. R., & White, R. P. (2006). The big five factors, sensation seeking, and driving anger in the prediction of unsafe driving. *Personality and Individual Differences*, 41(5), 903-915.
- de Winter, J. C. F., & Dodou, D. (2010). The driver behaviour questionnaire as a predictor of accidents: A meta-analysis.

Journal of Safety Research, 41(6), 463-470.

doi:10.1016/j.jsr.2010.10.007

de Wit, H. (2009). Impulsiveness as a determinant and consequence of drug use: A review of underlying processes. *Addiction Biology*, 14(1), 22-31.

Deffenbacher, J. L., Lynch, R. S., Oetting, E. R., & Swaim, R. C. (2002). The driving anger expression inventory: A measure of how people express their anger on the road. *Behaviour research and therapy*, 40(6), 717-737.

Deffenbacher, Lynch, Filetti, Dahlen, & Oetting. (2003). Anger, aggression, risky behavior, and crash-related outcomes in three groups of drivers. *Behaviour Research and Therapy*, 41(3), 333-349.

Diener, E., Emmons, R., Larsen, R., & Griffin, S. (1985). The Satisfaction with life scale. *Journal of Personality Assessment*, 49(1), 71-75.

Dierynck, B., Leroy, H., Savage, G., & Choi, E. (2017). The role of individual and collective mindfulness in promoting occupational safety in health care. *Medical Care Research and Review*, 74(1), 79-96.

Dula, & Geller. (2003). Risky, aggressive, or emotional driving: Addressing the need for consistent communication in research. *Journal of Safety Research*, 34(5), 559-566.

- Esimon, R., & Engström, M. (2015). The default mode network as a biomarker for monitoring the therapeutic effects of meditation. *Frontiers in psychology, 6*, Frontiers in Psychology, 01 June 2015, Vol.6.
- Farb, N. A., Anderson, A. K., Irving, J. A., & Segal, Z. V. (2014). Mindfulness interventions and emotion regulation. In J. J. Gross Ph.D. (Ed.), *Handbook of Emotion Regulation* (2nd ed., pp 548-567) New York: The Guilford Press.
- Feldman, Greeson, Renna, & Robbins-Monteith. (2011). Mindfulness predicts less texting while driving among young adults: Examining attention- and emotion-regulation motives as potential mediators. *Personality and Individual Differences, 51*(7), 856-861.
- Field, A. (2013). *Discovering statistics using IBM SPSS statistics* (4th ed.). Los Angeles: Sage.
- Fortney, L. Luchterhand, C., Zakletskaia, L., Zgierska, A., Rakel, D., (2013). Abbreviated mindfulness intervention for job satisfaction, quality of life, and compassion in primary care clinicians: A pilot study. *Annals of Family Medicine., 11*(5), 412-420.
- Fowler, J. C., Charak, R., Elhai, J. D., Allen, J. G., Frueh, B. C., & Oldham, J. M. (2014). Construct validity and factor structure of the difficulties in emotion regulation scale among adults with severe mental illness. *Journal of psychiatric research, 58*, 175-180.

- Fredrickson, Barbara L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist*, 56(3), 218-26.
- Galantino, M., Baime, M., Maguire, M., Szapary, P., & Farrar, J. (2005). Association of psychological and physiological measures of stress in health-care professionals during an 8-week mindfulness meditation program: Mindfulness in practice. *Stress and Health*, 21(4), 255-261.
- Glomb, T. M., Duffy, M. K., Bono, J. E., & Yang, T. (2011). Mindfulness at work. In *Research in personnel and human resources management* (pp. 115-157). Emerald Group Publishing Limited.
- Good, D., Lyddy, C., Glomb, T., Bono, J., Brown, K., Duffy, M., Baer, R., Brewer, J., Lazar, S. (2016). Contemplating mindfulness at work: An integrative review. *Journal of Management*, 42(1), 114.
- Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the difficulties in emotion regulation scale. *Journal of Psychopathology and Behavioral Assessment*, 26(1), 41-54.
- doi:10.1023/B:JOBA.0000007455.08539
- Gross, J. J. (2014) Emotion regulation: Conceptual and empirical foundations. In J. J. Gross Ph.D. (Ed.), *Handbook of Emotion Regulation* (2nd ed., pp 3-20) New York: The Guilford Press.

- Gross, J. (2015). Emotion regulation: Current status and future prospects. *Psychological Inquiry*, 26(1), 1-26.
- Gross, J. J. (1998). The emerging field of emotion regulation: An integrative review. *Review of general psychology*, 2(3), 271.
- Harris, H., & Nass, C. (2011, May). Emotion regulation for frustrating driving contexts. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 749-752). ACM.
- Harrison, W. A. (2009). Reliability of the driver behaviour questionnaire in a sample of novice drivers.
- Hayashi, Russo, & Wirth. (2015). Texting while driving as impulsive choice: A behavioral economic analysis. *Accident Analysis and Prevention*, 83, 182-189.
- Heppner, W., Kernis, M., Lakey, C., Campbell, W., Goldman, B., Davis, P., & Cascio, E. (2008). Mindfulness as a means of reducing aggressive behavior: Dispositional and situational evidence. *Aggressive Behavior*, 34(5), 486-496.
- Hollis-Walker, & Colosimo. (2011). Mindfulness, self-compassion, and happiness in non-meditators: A theoretical and empirical examination. *Personality and Individual Differences*, 50(2), 222-227.
- Hofmann, W., Luhmann, M., Fisher, R., Vohs, K., & Baumeister, R. (2014). Yes, but are they happy? Effects of trait self-control on

affective well-being and life satisfaction. *Journal of Personality*, 82(4), 265-277.

Hülshager, U., Alberts, H., Feinholdt, A., Lang, J., & Kozlowski, Steve W. J. (2013). Benefits of mindfulness at work: The role of mindfulness in emotion regulation, emotional exhaustion, and job satisfaction. *Journal of Applied Psychology*, 98(2), 310-325.

Hutcheson, G., & Sofroniou, N. (1999). *The Multivariate Social Scientist Introductory Statistics Using Generalized Linear Models*. London: SAGE Publications.

Jeon, M., & Walker, B. N. (2011, September). What to detect? Analyzing factor structures of affect in driving contexts for an emotion detection and regulation system. In *Proceedings of the Human Factors and Ergonomics Society Annual Meeting* (Vol. 55, No. 1, pp. 1889-1893). Sage Publications.

Judge, T. A., Bono, J. E., & Locke, E. A. (2000). Personality and job satisfaction: the mediating role of job characteristics. *Journal of applied psychology*, 85(2), 237.

Judge, T. A., Locke, E. A., Durham, C. C., & Kluger, A. N. (1998). Dispositional effects on job and life satisfaction: the role of core evaluations. *Journal of applied psychology*, 83(1), 17.

Kanungo, R., & Campbell, John A. (1982). Measurement of job and work involvement. *Journal of Applied Psychology*, 67(3), 341-349.

- Kass, S., VanWormer, J., Mikulas, L., Legan, A., & Bumgarner, W. (2011). Effects of mindfulness training on simulated driving: Preliminary results. *Mindfulness*, 2(4), 236-241.
- Kazemeini, T., Ghanbari-e-Hashem-Abadi, B., & Safarzadeh, A. (2013). Mindfulness based cognitive group therapy vs cognitive behavioral group therapy as a treatment for driving anger and aggression in Iranian taxi drivers. *Psychology*, 4(08), 638.
- Kiken, L. G., Garland, E. L., Bluth, K., Palsson, O. S., & Gaylord, S. A. (2015). From a state to a trait: trajectories of state mindfulness in meditation during intervention predict changes in trait mindfulness. *Personality and Individual differences*, 81, 41-46.
- Klauer, S. G., Dingus, T. A., Neale, V. L., Sudweeks, J. D., & Ramsey, D. J. (2006). The impact of driver inattention on near-crash/crash risk: An analysis using the 100-car naturalistic driving study data.
- Kline, R. (2016). *Principles and practice of structural equation modelling* (Fourth ed., Methodology in the social sciences).
- Kong, F., Wang, X., & Zhao, J. (2014). Dispositional mindfulness and life satisfaction: The role of core self-evaluations. *Personality and Individual Differences*, 56, 165-169.
- Krasner, M. S., Epstein, R. M., Beckman, H., Suchman, A. L., Chapman, B., Mooney, C. J., & Quill, T. E. (2009). Association of an educational program in mindful communication with burnout,

empathy, and attitudes among primary care physicians. *Jama*, 302(12), 1284-1293.

Lau, M., Bishop, S., Segal, Z., Buis, T., Anderson, N., Carlson, L., Shapiro, S. Carmody, J., Abbey, S., Devins, G. (2006). The toronto mindfulness scale: Development and validation. *Journal of Clinical Psychology*, 62(12), 1445-1467.

Leary, M. R., & Tate, E. B. (2007). The multi-faceted nature of mindfulness. *Psychological Inquiry*, 18(4), 251-255.

Lemercier, C., Pêcher, C., Berthié, G., Valéry, B., Vidal, V., Paubel, P. V., Cour, M., Fort, A., Galéra, C., Gabaude, C., Lagarde, E., & Maury, B. (2014). Inattention behind the wheel: How factual internal thoughts impact attentional control while driving. *Safety science*, 62, 279-285.

Li, F., Wang, G., Li, Y., & Zhou, R.. (2017). Job demands and driving anger: The roles of emotional exhaustion and work engagement. *Accident Analysis and Prevention*, 98, 198-205.

MacKillop, J., & Anderson, E. J. (2007). Further psychometric validation of the mindful attention awareness scale (MAAS). *Journal of Psychopathology and Behavioral Assessment*, 29(4), 289-293.

Martinussen, Hakamies-Blomqvist, Møller, Özkan, & Lajunen. (2012). Age, gender, mileage and the DBQ: The validity of the driver behaviour questionnaire in different driver groups. *Accident Analysis and Prevention*, Accident Analysis and Prevention.

- Maslach, C., Jackson, S., & Leiter, M. (1996). *Maslach burnout inventory manual* (3rd ed.). Palo Alto, Calif.: Consulting Psychologists Press.
- Monterosso, J., & Ainslie, G. (1999). Beyond discounting: Possible experimental models of impulse control. *Psychopharmacology*, 146(4), 339-347.
- Nahrgang, J., Morgeson, F., Hofmann, D., & Kozlowski, Steve W. J. (2011). Safety at work: A meta-analytic investigation of the link between job demands, job resources, burnout, engagement, and safety outcomes. *Journal of Applied Psychology*, 96(1), 71-94.
- Neumann, A., van Lier, P. A., Gratz, K. L., & Koot, H. M. (2010). Multidimensional assessment of emotion regulation difficulties in adolescents using the difficulties in emotion regulation scale. *Assessment*, 17(1), 138-149.
- Neyens, & Boyle. (2007). The effect of distractions on the crash types of teenage drivers. *Accident Analysis and Prevention*, 39(1), 206-212.
- Nezlek, J. B., & Kuppens, P. (2008). Regulating positive and negative emotions in daily life. *Journal of personality*, 76(3), 561-580.
- Nyaniponika (1973) The heart of Buddhist meditation. New York: Weiser Books. doi:
http://www.khamkoo.com/uploads/9/0/0/4/9004485/the_heart_of_buddhist_meditation.pdf

- Osman, A., Lamis, D. A., Bagge, C. L., Freedenthal, S., & Barnes, S. M. (2016). The mindful attention awareness scale: Further examination of dimensionality, reliability, and concurrent validity estimates. *Journal of Personality Assessment*, 98(2), 189. doi:10.1080/00223891.2015.1095761
- Patton, J. H., Stanford, M. S., & Barratt, E. S. (1995). Factor structure of the Barratt impulsiveness scale. *Journal of Clinical Psychology*, 51(6), 768-774. doi:10.1002/1097-4679(199511)51:6<768::AID-JCLP2270510607>3.0.CO;2-1
- Pavot, W., & Diener, E. (2008). The satisfaction with life scale and the emerging construct of life satisfaction. *The Journal of Positive Psychology*, 3(2), 137-152.
- Pêcher, Lemercier, & Cellier. (2009). Emotions drive attention: Effects on driver's behaviour. *Safety Science*, 47(9), 1254-1259.
- Pêcher, Quaireau, Lemercier, & Cellier. (2011). The effects of inattention on selective attention: How sadness and ruminations alter attention functions evaluated with the Attention Network Test. *Revue Europeenne De Psychologie Appliquee*, 61(1), 43-50.
- Peterson, C., Park, N., & Seligman, M. (2005). Orientations to happiness and life satisfaction: The full life versus the empty life. *Journal of Happiness Studies*, 6(1), 25-41.
- Peterson, C., Ruch, W., Beermann, U., Park, N., & Seligman, M. (2007). Strengths of character, orientations to happiness, and life satisfaction. *The Journal of Positive Psychology*, 2(3), 149-156.

- Preacher, K., & Hayes, J. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers*, 36(4), 717-731.
- Pseekos, A. Chantelle, Bullock-Yowell, Emily, & Dahlen, Eric R. (2011). Examining Holland's person-environment fit, workplace aggression, interpersonal conflict, and job satisfaction. *Journal of Employment Counseling*, 48(2), 63-71.
- Reason, J., Manstead, A., Stradling, S., Baxter, J., & Campbell, K. (1990). Errors and violations on the roads: A real distinction? *Ergonomics*, 33(10-11), 1315-1332.
- Ryan, R., & Deci, E. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology*, 52(1), 141-166.
- Schaufeli, W. B., Bakker, A. B., & Salanova, M. (2006). The measurement of work engagement with a short questionnaire a cross-national study. *Educational and psychological measurement*, 66(4), 701-716.
- Schaufeli, W., Salanova, B., González-romá, M., & Bakker, V. (2002). The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *Journal of Happiness Studies*, 3(1), 71-92.
- Seppälä, P., Mauno, S., Feldt, T., Hakanen, J., Kinnunen, U., Tolvanen, A., & Schaufeli, W. (2009). The construct validity of the Utrecht

- work engagement scale: Multi-sample and longitudinal evidence. *Journal of Happiness Studies*, 10(4), 459-481.
- Shapiro, S., Carlson, L., Astin, J., & Freedman, B. (2006). Mechanisms of mindfulness. *Journal of Clinical Psychology*, 62(3), 373-386.
- Shrout, P., Bolger, N., & West, Stephen G. (2002). Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychological Methods*, 7(4), 422-445.
- Stevens, & Minton. (2001). In-vehicle distraction and fatal accidents in England and Wales. *Accident Analysis and Prevention*, 33(4), 539-545.
- Sullman, M. J. (2015). The expression of anger on the road. *Safety science*, 72, 153-159.
- Taubman – Ben-Ari, O. (2014). How are meaning in life and family aspects associated with teen driving behaviors? *Transportation Research Part F: Psychology and Behaviour*, 24, 92-102.
- Underwood, G., Ngai, A., & Underwood, J. (2013). Driving experience and situation awareness in hazard detection. *Safety science*, 56, 29-35.
- Vasconcelos, A. G., Malloy-Diniz, L., & Correa, H. (2012). Systematic review of psychometric properties of Barratt impulsiveness scale version 11 (BIS-11). *Clinical Neuropsychiatry*, 9(2).
- Vella-Brodrick, Dianne A., Park, Nansook, & Peterson, Christopher. (2009). Three ways to be happy: Pleasure, engagement, and

- meaning--Findings from Australian and US samples. *Social Indicators Research*, 90(2), 165-179.
- Wadlinger, H. A., & Isaacowitz, D. M. (2011). Fixing our focus: Training attention to regulate emotion. *Personality and Social Psychology Review*, 15(1), 75-102.
- Wallace, B. Alan, & Shapiro, Shauna L. (2006). Mental balance and well-being: Building bridges between Buddhism and Western psychology. *American Psychologist*, 61(7), 690-701.
- Whitmer, A., Gotlib, I., & Hinshaw, Stephen P. (2013). An attentional scope model of rumination. *Psychological Bulletin*, 139(5), 1036-1061.
- Wilson, F., & Stimpson, J. (2010). Trends in fatalities from distracted driving in the United States, 1999 to 2008. *American Journal of Public Health*, 100(11), 2213-9.
- Wittmann, Peter, Gutina, Otten, Kohls, & Meissner. (2014). Individual differences in self-attributed mindfulness levels are related to the experience of time and cognitive impulse-control. *Personality and Individual Differences*, 64, 41-45.
- Yücel, I. (2012). Examining the relationships among job satisfaction, organizational commitment, and turnover intention: An empirical study. *International Journal of Business and Management*, 7(20), 44.

Zivnuska, S., Kaemar, K. M., Ferguson, M., Carlson, D. S. (2016).

Mindfulness at work: Resource accumulation, well-being, and attitudes. *Career Development International*, 21(2), 106-124.

Appendix A Mindfulness, Well-being and Driving Questionnaire

Driving, Work-satisfaction and Life-satisfaction

We are pleased to invite you to participate in an exciting research project regarding your driving, work-satisfaction and life-satisfaction, which will assist us to examine any relationships, between the important factors of work, safety and wellbeing. Participation is sought via this questionnaire which will take about 15 minutes to complete. All information collected will remain completely anonymous and strictly confidential, so there is no way that you can be identified through your data. Only the researchers at the University of Waikato will have access to the data which will have no names attached. The final findings of the project will be made available to your company, and participating employees. To continue the survey, please click the below arrow. By clicking the below arrow you are giving you consent to undertake this survey. You may exit the survey at any time and your data will be saved for up to one week. When you re-enter the survey you can continue from where you left off. Please note that in order to take part in this questionnaire you must have a full New Zealand driver licence for a car. Your company cares about the safety and wellbeing of its employees and is encouraging you to participate. Thank you for your contribution. It is much appreciated! This research is being conducted by Diana Bird, BSocSci(Hon), as part of her Masters thesis at the School of Psychology University of Waikato, Hamilton, New Zealand. Diana Bird receives supervision by Associate Professor Robert Isler and Dr. Maree Roche. The study has received ethics approval from the School of Psychology's Research and Ethics Committee (Convener: Dr. Rebecca Sargisson (contact email: rebeccas@waikato.ac.nz)).

Q1 Do you have a full New Zealand driver licence for a car?

- ☐ Yes (1)
- ☐ No (2)

Q2 What is your current age?

Q3 What is your gender?

- ☐ Male (1)
- ☐ Female (2)

Q4 How long have you been employed by this employer?

- ☐ Less than 1 year (1)
- ☐ 1-5 year (2)
- ☐ 5-10 years (3)
- ☐ 10-15 years (4)
- ☐ 15-20 years (5)
- ☐ 20 years and over (6)

Q5 What is your current role in this organization?

- ☐ Director or Senior Manager (1)
- ☐ General Manager (2)
- ☐ Supervisor or Team Leader (3)
- ☐ Administration (4)
- ☐ Technical (5)
- ☐ Other (please specify) (6) _____

Q6 How many years have you had your full New Zealand driver's licence?

- ☐ 1-5 (1)
- ☐ 6-10 (2)
- ☐ 11-15 (3)
- ☐ 20 and above (4)

Q7 How many kilometers do you drive in a usual week?

- ☐ 0 (1)
- ☐ 1-30 (2)
- ☐ 31-60 (3)
- ☐ 61-120 (4)
- ☐ 120 and above (5)

Q8 In the last 12 months, how many crashes have you been involved in?

A crash is any collision that occurred on the public roads (but not private property) while you were the driver of the vehicle, irrespective of who was at fault.

Q9 In the last twelve months, how many near misses have you experienced? A near miss is an unplanned event that did not result in injury, illness or damage - but had the potential to do so under slightly different circumstances.

Q10 How many traffic fines did you receive in the last 12 months?

Q11 How would you rate your driving skills?

- ☐ Below average (1)
- ☐ Average (2)
- ☐ Above average (3)

Q12 I seek out situations that challenge my skills and abilities.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Agree (4)
- ☐ Strongly agree (5)

Q13 Life is too short to postpone the pleasure it can provide.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Agree (4)
- ☐ Strongly agree (5)

Q14 I love to do things that excite my senses.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Agree (4)
- ☐ Strongly agree (5)

Q15 Regardless of what I am doing, time passes quickly.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Agree (4)
- ☐ Strongly agree (5)

Q16 My life serves a higher purpose.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Agree (4)
- ☐ Strongly agree (5)

Q17 Whether at work or play, I am usually "in a zone" and not conscious of myself.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Agree (4)
- ☐ Strongly agree (5)

Q18 I have a responsibility to make the world a better place.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Agree (4)
- ☐ Strongly agree (5)

Q19 I go out of my way to feel euphoric.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Agree (4)
- ☐ Strongly agree (5)

Q20 For me, the good life is the pleasurable life.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Agree (4)
- ☐ Strongly agree (5)

Q21 I am always very absorbed in what I do.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Agree (4)
- ☐ Strongly agree (5)

Q22 I have spent a lot of time thinking about what life means and how I fit into its big picture.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Agree (4)
- ☐ Strongly agree (5)

Q23 In choosing what I do, I always take into account whether it will be pleasurable.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Agree (4)
- ☐ Strongly agree (5)

Q24 I am rarely distracted by what is going on around me.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Agree (4)
- ☐ Strongly agree (5)

Q25 My life has lasting meaning.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Agree (4)
- ☐ Strongly agree (5)

Q26 I agree with this statement "Life is too short, eat dessert first".

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Agree (4)
- ☐ Strongly agree (5)

Q27 What I do matters to society.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Agree (4)
- ☐ Strongly agree (5)

Q28 In choosing what to do, I always take into account whether I can lose myself in it.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Agree (4)
- ☐ Strongly agree (5)

Q29 In choosing what to do, I always take into account whether it will benefit other people.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Agree (4)
- ☐ Strongly agree (5)

Q30 I pay attention to how I feel.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Agree (4)
- ☐ Strongly agree (5)

Q31 I have difficulty making sense out of my feelings.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Agree (4)
- ☐ Strongly agree (5)

Q32 I am clear about my feelings.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Agree (4)
- ☐ Strongly agree (5)

Q33 I care about what I am feeling.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Agree (4)
- ☐ Strongly agree (5)

Q34 I experience my emotions as overwhelming and out of control.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Agree (4)
- ☐ Strongly agree (5)

Q35 I plan tasks carefully and well ahead of time.

- ☐ Rarely/Never (1)
- ☐ Occasionally (2)
- ☐ Often (3)
- ☐ Almost always/always (4)

Q36 I do things without thinking.

- ☐ Rarely/Never (1)
- ☐ Occasionally (2)
- ☐ Often (3)
- ☐ Almost always/always (4)

Q37 My thoughts race.

- ☐ Rarely/Never (1)
- ☐ Occasionally (2)
- ☐ Often (3)
- ☐ Almost always/always (4)

Q38 I am self-controlled.

- ☐ Rarely/Never (1)
- ☐ Occasionally (2)
- ☐ Often (3)
- ☐ Almost always/always (4)

Q39 I concentrate easily.

- ☐ Rarely/Never (1)
- ☐ Occasionally (2)
- ☐ Often (3)
- ☐ Almost always/always (4)

Q40 I save regularly.

- ☐ Rarely/Never (1)
- ☐ Occasionally (2)
- ☐ Often (3)
- ☐ Almost always/always (4)

Q41 I find it hard to sit still for long periods of time..

- ☐ Rarely/Never (1)
- ☐ Occasionally (2)
- ☐ Often (3)
- ☐ Almost always/always (4)

Q42 I say things without thinking.

- ☐ Rarely/Never (1)
- ☐ Occasionally (2)
- ☐ Often (3)
- ☐ Almost always/always (4)

Q43 I like to think about complex problems.

- ☐ Rarely/Never (1)
- ☐ Occasionally (2)
- ☐ Often (3)
- ☐ Almost always/always (4)

Q44 I change jobs often.

- ☐ Rarely/Never (1)
- ☐ Occasionally (2)
- ☐ Often (3)
- ☐ Almost always/always (4)

Q45 I act on the spur of the moment.

- ☐ Rarely/Never (1)
- ☐ Occasionally (2)
- ☐ Often (3)
- ☐ Almost always/always (4)

Q46 I get easily bored when solving problems.

- ☐ Rarely/Never (1)
- ☐ Occasionally (2)
- ☐ Often (3)
- ☐ Almost always/always (4)

Q47 I have regular medical/dental check-ups.

- ☐ Rarely/Never (1)
- ☐ Occasionally (2)
- ☐ Often (3)
- ☐ Almost always/always (4)

Q48 I buy things on impulse.

- ☐ Rarely/Never (1)
- ☐ Occasionally (2)
- ☐ Often (3)
- ☐ Almost always/always (4)

Q49 I finish what I start.

- ☐ Rarely/Never (1)
- ☐ Occasionally (2)
- ☐ Often (3)
- ☐ Almost always/always (4)

Q50 I solve problems by trial and error.

- ☐ Rarely/Never (1)
- ☐ Occasionally (2)
- ☐ Often (3)
- ☐ Almost always/always (4)

Q51 I spend or charge more than I earn.

- ☐ Rarely/Never (1)
- ☐ Occasionally (2)
- ☐ Often (3)
- ☐ Almost always/always (4)

Q52 I talk fast.

- ☐ Rarely/Never (1)
- ☐ Occasionally (2)
- ☐ Often (3)
- ☐ Almost always/always (4)

Q53 I am more interested in the present than the future.

- ☐ Rarely/Never (1)
- ☐ Occasionally (2)
- ☐ Often (3)
- ☐ Almost always/always (4)

Q54 I am restless in class/groups.

- ☐ Rarely/Never (1)
- ☐ Occasionally (2)
- ☐ Often (3)
- ☐ Almost always/always (4)

Q55 When I'm upset...

I believe that my feelings are valid and important (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have difficulty focusing on other things (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can still get things done (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q56 When I'm upset...

I believe that there is nothing I can do to make myself feel better (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have difficulty thinking about anything else (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I take time to figure out what I'm really feeling (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q57 When I'm upset...

I become out of control (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel out of control (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel like I can remain in control of my behaviour s (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q58 I could be experiencing some emotion and not be conscious of it until some time later.

- ☐ Almost always (1)
- ☐ Very frequently (2)
- ☐ Somewhat frequently (3)
- ☐ Somewhat infrequently (4)
- ☐ Very infrequently (5)
- ☐ Almost never (6)

Q59 I break or spill things because of carelessness, not paying attention,
or thinking of something else.

- ☐ Almost always (1)
- ☐ Very frequently (2)
- ☐ Somewhat frequently (3)
- ☐ Somewhat infrequently (4)
- ☐ Very infrequently (5)
- ☐ Almost never (6)

Q60 I find it difficult to stay focused on what's happening in the present.

- ☐ Almost always (1)
- ☐ Very frequently (2)
- ☐ Somewhat frequently (3)
- ☐ Somewhat infrequently (4)
- ☐ Very infrequently (5)
- ☐ Almost never (6)

Q61 I tend to walk quickly to get where I'm supposed to be going without paying attention to what I experience along the way.

- ☐ Almost always (1)
- ☐ Very frequently (2)
- ☐ Somewhat frequently (3)
- ☐ Somewhat infrequently (4)
- ☐ Very infrequently (5)
- ☐ Almost never (6)

Q62 I tend not to notice feelings of physical tension or discomfort until they really grab my attention.

- ☐ Almost always (1)
- ☐ Very frequently (2)
- ☐ Somewhat frequently (3)
- ☐ Somewhat infrequently (4)
- ☐ Very infrequently (5)
- ☐ Almost never (6)

Q63 I forget a person's name almost as soon as I've been told it for the first time.

- ☐ Almost always (1)
- ☐ Very frequently (2)
- ☐ Somewhat frequently (3)
- ☐ Somewhat infrequently (4)
- ☐ Very infrequently (5)
- ☐ Almost never (6)

Q64 It seems I am "running on automatic" without much awareness of what I am doing.

- ☐ Almost always (1)
- ☐ Very frequently (2)
- ☐ Somewhat frequently (3)
- ☐ Somewhat infrequently (4)
- ☐ Very infrequently (5)
- ☐ Almost never (6)

Q65 I rush through activities without being really attentive to them.

- ☐ Almost always (1)
- ☐ Very frequently (2)
- ☐ Somewhat frequently (3)
- ☐ Somewhat infrequently (4)
- ☐ Very infrequently (5)
- ☐ Almost never (6)

Q66 I get so focused on the goal I want to achieve, that I lose touch with what I am doing right now to get there.

- ☐ Almost always (1)
- ☐ Very frequently (2)
- ☐ Somewhat frequently (3)
- ☐ Somewhat infrequently (4)
- ☐ Very infrequently (5)
- ☐ Almost never (6)

Q67 I do jobs or tasks automatically, without being aware of what I'm doing.

- ☐ Almost always (1)
- ☐ Very frequently (2)
- ☐ Somewhat frequently (3)
- ☐ Somewhat infrequently (4)
- ☐ Very infrequently (5)
- ☐ Almost never (6)

Q68 I find myself listening to someone with one ear, and doing something else at the same time.

- ☐ Almost always (1)
- ☐ Very frequently (2)
- ☐ Somewhat frequently (3)
- ☐ Somewhat infrequently (4)
- ☐ Very infrequently (5)
- ☐ Almost never (6)

Q69 I drive place on "automatic pilot" and then wonder why I went there.

- ☐ Almost always (1)
- ☐ Very frequently (2)
- ☐ Somewhat frequently (3)
- ☐ Somewhat infrequently (4)
- ☐ Very infrequently (5)
- ☐ Almost never (6)

Q70 I find myself preoccupied with the future or the past.

- ☐ Almost always (1)
- ☐ Very frequently (2)
- ☐ Somewhat frequently (3)
- ☐ Somewhat infrequently (4)
- ☐ Very infrequently (5)
- ☐ Almost never (6)

Q71 I find myself doing things without paying attention.

- ☐ Almost always (1)
- ☐ Very frequently (2)
- ☐ Somewhat frequently (3)
- ☐ Somewhat infrequently (4)
- ☐ Very infrequently (5)
- ☐ Almost never (6)

Q72 I snack without being aware that I'm eating.

- ☐ Almost always (1)
- ☐ Very frequently (2)
- ☐ Somewhat frequently (3)
- ☐ Somewhat infrequently (4)
- ☐ Very infrequently (5)
- ☐ Almost never (6)

Q73 In most ways, my life is close to my ideal.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Slightly disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Slightly agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q74 The conditions of my life are excellent.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Slightly disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Slightly agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q75 I am satisfied with my life.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Slightly disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Slightly agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q76 So far I have gotten the important things I want in life.

- ☐ Strongly disagree (1)
- ☐ Disagree (2)
- ☐ Slightly disagree (3)
- ☐ Neither agree nor disagree (4)
- ☐ Slightly agree (5)
- ☐ Agree (6)
- ☐ Strongly agree (7)

Q77 Most days I am enthusiastic about my work.

- ☐ Strongly disagree (1)
- ☐ Somewhat disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Somewhat agree (4)
- ☐ Strongly agree (5)

Q78 I feel fairly satisfied with my present job.

- ☐ Strongly disagree (1)
- ☐ Somewhat disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Somewhat agree (4)
- ☐ Strongly agree (5)

Q79 Each day at work seems like it will never end.

- ☐ Strongly disagree (1)
- ☐ Somewhat disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Somewhat agree (4)
- ☐ Strongly agree (5)

Q80 I find enjoyment in my work.

- ☐ Strongly disagree (1)
- ☐ Somewhat disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Somewhat agree (4)
- ☐ Strongly agree (5)

Q81 I consider my job rather unpleasant.

- ☐ Strongly disagree (1)
- ☐ Somewhat disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Somewhat agree (4)
- ☐ Strongly agree (5)

Q82 I feel emotionally drained from my work.

- ☐ Never (1)
- ☐ A few times a year or less (2)
- ☐ Once a month or less (3)
- ☐ A few times a month (4)
- ☐ Once a week (5)
- ☐ A few times a week (6)
- ☐ Every day (7)

Q83 I feel used up at the end of my workday.

- ☐ Never (1)
- ☐ A few times a year or less (2)
- ☐ Once a month or less (3)
- ☐ A few times a month (4)
- ☐ Once a week (5)
- ☐ A few times a week (6)
- ☐ Every day (7)

Q84 I feel tired when I get up in the morning and have to face another day on the job.

- ☐ Never (1)
- ☐ A few times a year or less (2)
- ☐ Once a month or less (3)
- ☐ A few times a month (4)
- ☐ Once a week (5)
- ☐ A few times a week (6)
- ☐ Every day (7)

Q85 Working all day is really a strain for me.

- ☐ Never (1)
- ☐ A few times a year or less (2)
- ☐ Once a month or less (3)
- ☐ A few times a month (4)
- ☐ Once a week (5)
- ☐ A few times a week (6)
- ☐ Every day (7)

Q86 I feel burned out from my work.

- ☐ Never (1)
- ☐ A few times a year or less (2)
- ☐ Once a month or less (3)
- ☐ A few times a month (4)
- ☐ Once a week (5)
- ☐ A few times a week (6)
- ☐ Every day (7)

Q87 I have become less interested in my work since I started this job.

- ☐ Never (1)
- ☐ A few times a year or less (2)
- ☐ Once a month or less (3)
- ☐ A few times a month (4)
- ☐ Once a week (5)
- ☐ A few times a week (6)
- ☐ Every day (7)

Q88 I have become less enthusiastic about my work.

- ☐ Never (1)
- ☐ A few times a year or less (2)
- ☐ Once a month or less (3)
- ☐ A few times a month (4)
- ☐ Once a week (5)
- ☐ A few times a week (6)
- ☐ Every day (7)

Q89 I have become more cynical about whether my work contributes to anything.

- ☐ Never (1)
- ☐ A few times a year or less (2)
- ☐ Once a month or less (3)
- ☐ A few times a month (4)
- ☐ Once a week (5)
- ☐ A few times a week (6)
- ☐ Every day (7)

Q90 I doubt the significance of my work.

- ☐ Never (1)
- ☐ A few times a year or less (2)
- ☐ Once a month or less (3)
- ☐ A few times a month (4)
- ☐ Once a week (5)
- ☐ A few times a week (6)
- ☐ Every day (7)

Q91 I just want to do my job and not be bothered.

- ☐ Never (1)
- ☐ A few times a year or less (2)
- ☐ Once a month or less (3)
- ☐ A few times a month (4)
- ☐ Once a week (5)
- ☐ A few times a week (6)
- ☐ Every day (7)

Q92 When I get up in the morning I feel like going to work.

- ☐ Never (1)
- ☐ A few times a year or less (2)
- ☐ Once a month or less (3)
- ☐ A few times a month (4)
- ☐ Once a week (5)
- ☐ A few times a week (6)
- ☐ Every day (7)

Q93 At my work, I feel bursting with energy.

- ☐ Never (1)
- ☐ A few times a year or less (2)
- ☐ Once a month or less (3)
- ☐ A few times a month (4)
- ☐ Once a week (5)
- ☐ A few times a week (6)
- ☐ Every day (7)

Q94 At my job, I feel strong and vigorous.

- ☐ Never (1)
- ☐ A few times a year or less (2)
- ☐ Once a month or less (3)
- ☐ A few times a month (4)
- ☐ Once a week (5)
- ☐ A few times a week (6)
- ☐ Every day (7)

Q95 My job inspires me.

- ☐ Never (1)
- ☐ A few times a year or less (2)
- ☐ Once a month or less (3)
- ☐ A few times a month (4)
- ☐ Once a week (5)
- ☐ A few times a week (6)
- ☐ Every day (7)

Q96 I am enthusiastic about my job.

- ☐ Never (1)
- ☐ A few times a year or less (2)
- ☐ Once a month or less (3)
- ☐ A few times a month (4)
- ☐ Once a week (5)
- ☐ A few times a week (6)
- ☐ Every day (7)

Q97 I am proud of the work that I do.

- ☐ Never (1)
- ☐ A few times a year or less (2)
- ☐ Once a month or less (3)
- ☐ A few times a month (4)
- ☐ Once a week (5)
- ☐ A few times a week (6)
- ☐ Every day (7)

Q98 I get carried away when I am working.

- ☐ Never (1)
- ☐ A few times a year or less (2)
- ☐ Once a month or less (3)
- ☐ A few times a month (4)
- ☐ Once a week (5)
- ☐ A few times a week (6)
- ☐ Every day (7)

Q99 I am immersed in my work.

- ☐ Never (1)
- ☐ A few times a year or less (2)
- ☐ Once a month or less (3)
- ☐ A few times a month (4)
- ☐ Once a week (5)
- ☐ A few times a week (6)
- ☐ Every day (7)

Q100 I feel happy when I am working intensely.

- ☐ Never (1)
- ☐ A few times a year or less (2)
- ☐ Once a month or less (3)
- ☐ A few times a month (4)
- ☐ Once a week (5)
- ☐ A few times a week (6)
- ☐ Every day (7)

Q101 Where 0 is the worst performance and 10 is the best performance,
how would you rate the usual performance of most workers in a job similar
to yours?

- ☐ 0 (1)
- ☐ 1 (2)
- ☐ 2 (3)
- ☐ 3 (4)
- ☐ 4 (5)
- ☐ 5 (6)
- ☐ 6 (7)
- ☐ 7 (8)
- ☐ 8 (9)
- ☐ 9 (10)
- ☐ 10 (11)

Q102 Where 0 is the worst performance and 10 is the best performance,
how would you rate your usual performance (over the last year or two)?

- ☐ 0 (1)
- ☐ 1 (2)
- ☐ 2 (3)
- ☐ 3 (4)
- ☐ 4 (5)
- ☐ 5 (6)
- ☐ 6 (7)
- ☐ 7 (8)
- ☐ 8 (9)
- ☐ 9 (10)
- ☐ 10 (11)

Q103 Where 0 is the worst performance and 10 is the best performance, how would you rate your overall job performance on the days you have worked during the past (7 days / 4 weeks)?

- ☐ 0 (1)
- ☐ 1 (2)
- ☐ 2 (3)
- ☐ 3 (4)
- ☐ 4 (5)
- ☐ 5 (6)
- ☐ 6 (7)
- ☐ 7 (8)
- ☐ 8 (9)
- ☐ 9 (10)
- ☐ 10 (11)

Q104 The organization I work for

would							
ignore							
any							
complain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
nt from							
me (3)							
really							
cares							
about							
my well-	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
being							
(4)							

Q105 The organization I work for

takes pride in my accomplish ments at work (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
--	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------

Q106 I feel that my manager provides me choices and options.

- ☐ Strongly agree (1)
- ☐ Agree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Disagree (4)
- ☐ Strongly disagree (5)

Q107 I feel understood by my manager.

- ☐ Strongly agree (1)
- ☐ Agree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Disagree (4)
- ☐ Strongly disagree (5)

Q108 My manager conveys confidence in my ability to do well at my job.

- ☐ Strongly agree (1)
- ☐ Agree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Disagree (4)
- ☐ Strongly disagree (5)

Q109 My manager encourages me to ask questions.

- ☐ Strongly agree (1)
- ☐ Agree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Disagree (4)
- ☐ Strongly disagree (5)

Q110 My manager listens to how I would like to do things.

- ☐ Strongly agree (1)
- ☐ Agree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Disagree (4)
- ☐ Strongly disagree (5)

Q111 My manager tries to understand how I see things before suggesting a new way to do things.

- ☐ Strongly agree (1)
- ☐ Agree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Disagree (4)
- ☐ Strongly disagree (5)

Q112 In the future, how often would you expect to do each of the following:

	Never (1)	Unlikely (2)	Likely (3)	Highly likely (4)	Certain (5)
Speed over the legal limit (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Compete in unofficial races with other drivers (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cut off other drivers (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drive under the influence of drugs or alcohol (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Overtake another vehicle with limited visibility (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Follow another vehicle too close (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use the wrong lane at a roundabout or use inappropriate signals (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fail to stop at a stop and/or give way sign (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Run a red light (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Park in a disabled or expecting mothers car park, of which you are not legally entitled (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
--	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------

Q113 In the future, how often would you expect to do each of the following:

	Never (1)	Unlikely (2)	Likely (3)	Highly likely (4)	Certain (5)
Fail to stop for the police, or fail to stop after an accident (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drive a vehicle you know has defects and may be unsafe to you or other road users (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drive a vehicle with uncertified modifications (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Drive without wearing a seatbelt (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be angry about a bad driver (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drive whilst disqualified or drive outside of your license restrictions (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drive without a Warrant of Fitness or without a registration (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use your hands to talk on a cell phone or text (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Drive using only one hand or your knees to steer the vehicle (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Deliberately violate a road rule (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q114 How often would you write and/or read text messages while driving?

- ☐ Never (1)
- ☐ Rarely (2)
- ☐ Sometimes (3)
- ☐ Often (4)

Appendix B Email to company Health and Safety advisors

To whom it may concern,

I am a Master's student in the School of Psychology at the University of Waikato. I am currently researching the effects of different aspects of life and work satisfaction on driving practices on our roads. I am hoping to discover how these relationships affect the important factors of workplace wellbeing and road safety.

I have developed a 15 minute questionnaire to measure these factors, which has obtained ethical clearance by the University of Waikato.

I am now seeking organizations who would be open to encouraging their employees to participate by completing this questionnaire, and would greatly appreciate it if your organization would be willing to take part.

At the conclusion of this research, I will be happy to provide you a report of my findings which may be useful when planning initiatives to ensure your employees stay as safe as possible when out on the road. If over 100? Employees from your organization take part in this research, I will also provide you with a report specific to the employees at your organization.

Should you require any further information, please do not hesitate to contact me or one of my supervisors. Our contact details are as follows:

Diana Bird: email:

Robert Isler email: r.isler@waikato.ac.nz

Maree Roche email: mroche@waikato.ac.nz

I look forward to hearing from you.

Yours sincerely

Diana Bird

Appendix C Final email to Health and Safety Advisors or HR Managers

I am a Master's student in the School of Psychology at the University of Waikato. I am currently researching the effects of different aspects of life and work satisfaction on driving practices on our roads. I am hoping to discover how these relationships affect the important factors of workplace wellbeing and road safety.

I have developed a 15 minute questionnaire to measure these factors, which has obtained ethical clearance by the University of Waikato.

I am now seeking organizations who would be open to encouraging their employees to participate by completing this questionnaire, and would greatly appreciate it if your organization would be willing to take part.

At the conclusion of this research, I will be happy to provide you a report of my findings which may be useful when planning initiatives to ensure your employees stay as safe as possible when out on the road.

Should you require any further information, please do not hesitate to contact me or one of my supervisors. Our contact details are as follows:

Diana Bird: email: dstb1@students.waikato.ac.nz

Robert Isler email: r.isler@waikato.ac.nz

Maree Roche email: mroche@waikato.ac.nz

If you are interested in this survey, and would like to forward this to your staff, the below link leads to the survey.

https://waikato.qualtrics.com/SE/?SID=SV_eA8t6wtKL4q7Ncx

I look forward to hearing from you.

Yours sincerely

Diana Bird

Appendix D

Table 5

Consistency and Reliability Results for Measures

Measure	Cronbach's alpha	Reference
Mindful Attention Awareness Scale (MAAS)		
MAAS – total		Brown et al. (2003)
Populations		
Student sample	0.82	
General adult sample	0.87	
MAAS – total		Brown et al. (2011)
Sample A	0.82	
Sample B	0.84	
Retest values	0.85 & 0.88	
MAAS - total	0.89	MacKillop et al. (2007)
Women	0.89	
Men	0.87	

MAAS – total Osman et al. (2016)

High nonattachment 0.90 (coefficient rho)

Low nonattachment 0.89 (coefficient rho)

Combined 0.92 (coefficient rho)

Barratt Impulsiveness Scale (BIS)

BIS – total 0.82 Patton et. al. (1995)

Populations

Undergraduates 0.82

Substance-abuse patients 0.79

General psychiatric patients 0.83

Prison inmates 0.80

BIS – total 0.69 – 0.83 Vasconcelos et al. (2012)

Difficulties in Emotion Regulation Scale (DERS)

DERS - total 0.93 Gratz et al. (2004)

Subscales

- Nonacceptance	0.85
- Goals	0.89
- Impulse	0.86
- Awareness	0.80
- Strategies	0.88
- Clarity	0.84

DERS - total 0.95

Fowler et al. (2014)

Subscales

- Nonacceptance	0.91
- Goals	0.87
- Impulse	0.89
- Awareness	0.85
- Strategies	0.91
- Clarity	0.84

DERS – total 0.90

Neumann et al.
(2014)

Subscales Boys / girls

- Nonacceptance	0.72 / 0.81
-----------------	-------------

- Goals	0.81 / 0.82
- Impulse	0.86 / 0.83
- Awareness	0.73 / 0.76
- Strategies	0.80 / 0.87
- Clarity	0.74 / 0.83

Orientation to
Happiness
Measure
Subscales

Peterson et al. (2005)

Pleasure	0.82
Engagement	0.72
Meaning	0.82

Subscales	Australia / US
Pleasure	0.80 / 0.77
Engagement	0.70 / 0.66
Meaning	0.83 / 0.76

Peterson et al. (2007)

Life Satisfaction - total

0.87 Diener et al. (1985)

0.79 – 0.89 Pavot et al. (2008)

Retest values	0.80 – 0.84	
Job Satisfaction - total		
	0.87 (Spearman-Brown)	Brayfield et al. (1951)
	0.89	Judge et al. (2000)
Physicians	0.87	Judge et al. (1998)
College graduates	0.92	
Israelis	0.84	
	0.86	Yücel (2012)
Work Engagement – total	0.85 – 0.92	Schaufeli et al. (2006)
Subscales	Across 10 different countries	
Vigor	0.60 – 0.88	
Dedication	0.75 – 0.90	
Absorption	0.66 – 0.86	
Total	0.82-0.86	Seppäälä et al. (2009)
Subscales		
Vigor	0.85	
Dedication	0.86	
Absorption	0.82	

Intention to Commit
Driving Violations - total

Survey 1	0.65-0.77	Harrison (2009)
Survey 2	0.66-0.79	
Test-retest	0.65-0.75	

Appendix E

Predictor Measure

Mindfulness. PCA was performed on the 15 item mindfulness measure. Initially the items loaded onto three factors, however following Brown and Ryan (2003), Brown et al. (2011), MacKillop and Anderson (2007), and Osman et al. (2016), it was forced to one factor. All items loaded above .3 which was considered to be acceptable (Field, 2013) The KMO measure was .89, which is 'meritorious', according to Hutcheson and Sofroniou (1999). Bartlett's test of sphericity was significant, which verified the sampling adequacy. Cronbach's alpha was .86.

Outcome Measure

Intention to Commit Driving Violations. PCA was performed on the 19 item intention to commit driving violations measure, plus the texting question. It was forced into one factor, and all items loaded above .3 which was considered to be acceptable (Field, 2013). The KMO measure was .88, which is 'meritorious', according to Hutcheson and Sofroniou (1999). Bartlett's test of sphericity was significant, indicating the factor analysis could be continued. Cronbach's alpha was .90.

Mediators

Self-control. PCA was performed on the 20 item impulsiveness measure. Items 42, 44 and 50 were removed because they failed to load. Item 53 was removed as it was the only item loading on a factor, and item 48 was removed as it cross loaded. This left 15 items which loaded onto six factors. The KMO measure was .71, which is 'middling', according to

Hutcheson and Sofroniou (1999). Bartlett's test of sphericity was significant, which verified the sampling adequacy. The scree plot below, Figure 4, was consistent with six factors. Cronbach's alpha for this scale was .71. For the completed factor matrix see below, Table 6. The findings agree with previous research by Vasconceleos et al. (2012) which has also demonstrated little consensus regarding the existence of the factors identified by Patton et al. (1995).

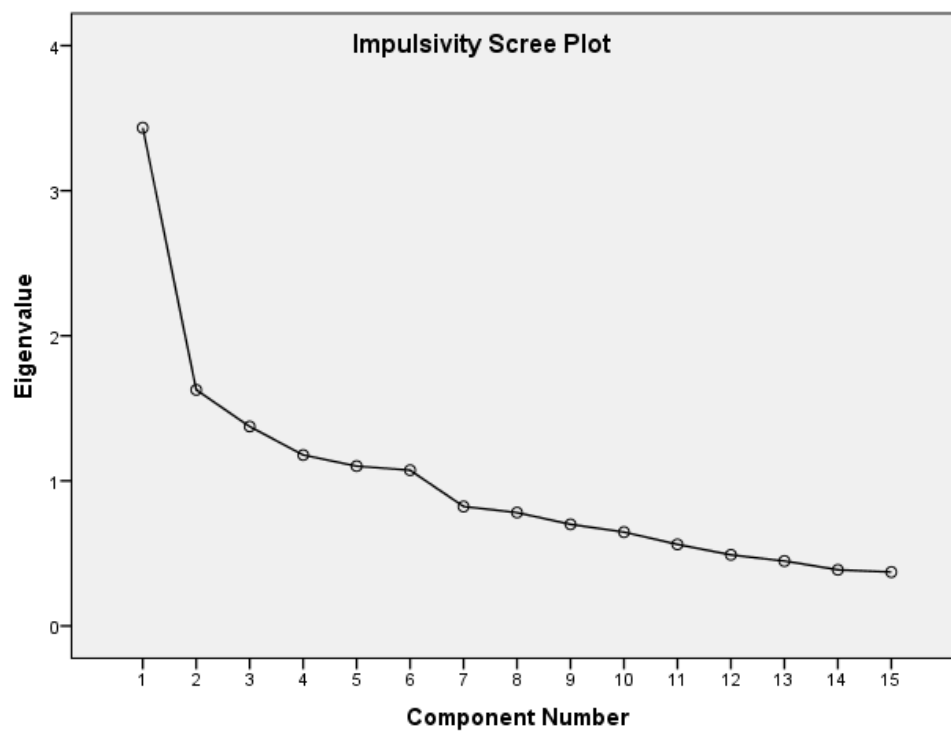


Figure 4. Scree plot for impulsiveness

Table 6

Impulsiveness Pattern Matrix

Items	Att	Cog Stab	Imp- Cntrl	Fin Imp- Cntrl	Cog Com	Motor Imp
I finish what I start	.744					
I am self-controlled	.736					
I concentrate easily	.686					
I plan tasks carefully and well ahead of time	.662					
I find it hard to sit still for long periods of time		.767				
I am restless in class/groups		.741				
I get easily bored when solving problems		.652				
I do things without thinking			.810			
I act on the spur of the moment			.754			
I spend or charge more than I earn				.821		
I save regularly				.766		
My thoughts race					.702	
I talk fast					.662	
I have regular medical/dental check-ups						.763
I like to think about complex problems						-.684

Att = Attention, Cog Stab = Cognitive Stability, Imp Cntrl = Impulse Control, Fin Imp Cntrl = Financial Impulse Control, Cog Com = Cognitive Complexity, Motor Imp = Motor Impulsiveness

Extraction Method: Principle Component Analysis

Rotation Method: Varimax with Kaiser Normalization

Emotion Regulation. PCA was performed on the 23 item emotion regulation measure. Items 32, 34, and 56_4, and 57_6 were removed because they cross loaded. Item 56_2 was removed as it was the only item loading on a factor. The KMO measure was .82, which is 'meritorious', according to Hutcheson and Sofroniou (1999). Bartlett's test of sphericity was significant, which verified the sampling adequacy. The scree plot below, Figure 5, supported the extraction of 4 factors. Cronbach's alpha for this scale was .83. For the completed factor matrix see Table 7, below.

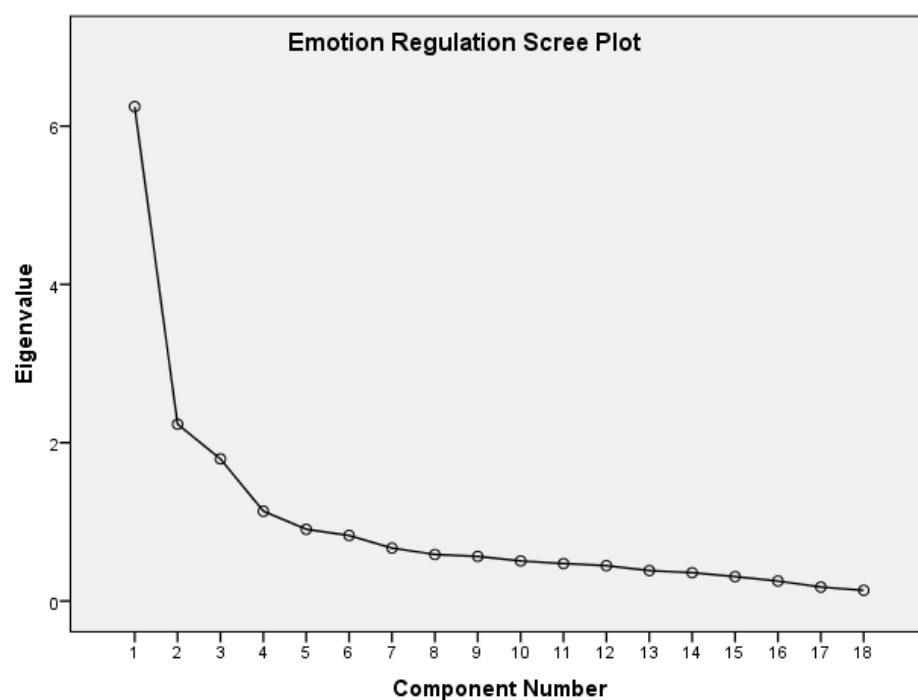


Figure 5. Scree plot for emotion regulation

Table 7

Emotion Regulation Pattern Matrix

Items	Control	Goals	Strategies	Awareness
When I'm upset I lose control over my behaviours	.862			
When I'm upset I have difficulty controlling my behaviours	.856			
When I'm upset I become out of control	.847			
When I'm upset I feel out of control	.814			
When I'm upset I feel like I can remain in control of my behaviours	.562			
When I'm upset my emotions feel overwhelming	.556			
I have difficulty making sense out of my feelings	.453			
When I'm upset I have difficulty getting work done		.848		
When I'm upset I can still get things done		.836		
When I'm upset I have difficulty concentrating		.788		
When I'm upset I have difficulty thinking about anything else		.703		

When I'm upset I can still get things done	.661	
When I'm upset I take time to figure out what I'm really feeling	.722	
When I'm upset I know that I can find a way to eventually feel better	.717	
When I'm upset I believe I will remain that way for a long time	.617	
I care about what I am feeling		.822
I pay attention to how I feel		.699
When I'm upset I believe that my feelings are valid and important		.649

Extraction Method: Principle Component Analysis
Rotation Method: Varimax with Kaiser Normalization

Happiness. PCA was performed on the 18 item Orientation to Happiness scale. Initially the items loaded onto five factors. Following Peterson et al. (2005), it was forced to three factors (Peterson et al., 2005; Peterson et al., 2007; Vella-Brodrick et al., 2009). Items 13, 17 and 25 were removed as they loaded onto two factors. Item 12 was taken out as it failed to load. The KMO measure was .71, which is 'middling', according to Hutcheson and Sofroniou (1999). Bartlett's test of sphericity was significant, which verified the sampling adequacy. Cronbach's alpha for this scale was .68. For the completed factor matrix see Table 8, below. The ambiguous nature of item 28, which has previously loaded on both the 'pleasure' and 'engagement' factors in the original research of Peterson et al., (2005), has been described by Chen et al. (2010).

Table 8

Happiness Pattern Matrix

Items	Meaning	Pleasure	Engagement
What I do matters to society	.786		
I have a responsibility to make the world a better place	.755		
I have spent a lot of time thinking about what life means and I how I fit into its big picture	.638		
In choosing what to do, I always take into account whether it will benefit other people	.609		
My life serves a higher purpose	.576		
For me, the good life is the pleasurable life		.761	
In choosing what I do, I always take into account whether it will be pleasurable		.745	
I go out of my way to feel euphoric		.630	
I love to do things that excite my senses		.542	
I agree with this statement "Life is short, eat dessert first"		.481	
In choosing what I do, I always take into account whether I can lose myself in it.		.450	
Regardless of what I am doing, time passes quickly			.726
I am rarely distracted by what is going on around me			.687
I am always very absorbed in what I do			.580

Extraction Method: Principle Component Analysis
Rotation Method: Varimax with Kaiser Normalization

Life Satisfaction. PCA was performed on the four item life satisfaction measure. The KMO measure was .81, which is 'meritorious', according to Hutcheson and Sofroniou (1999). Bartlett's test of sphericity was significant, indicating the factor analysis could be continued. The

scree plot Figure 6, below, was consistent with 1 factor. Cronbach's alpha was .90.

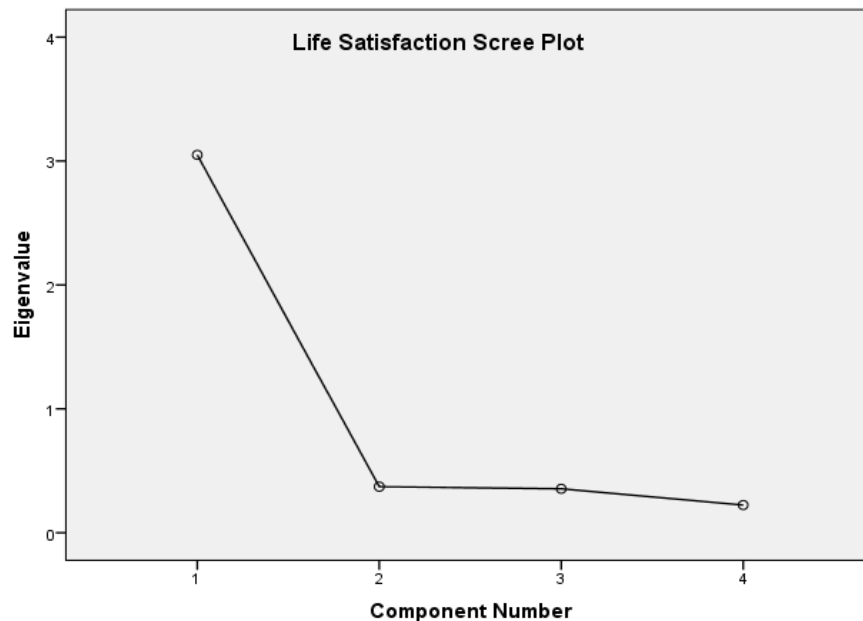


Figure 6. Scree plot for life satisfaction

Job Satisfaction. PCA was performed on the five item job satisfaction measure. The KMO measure was .81, which is 'meritorious', according to Hutcheson and Sofroniou (1999). Bartlett's test of sphericity was significant, indicating the factor analysis could be continued. The scree plot Figure 7, below, was consistent with 1 factor. Cronbach's alpha was .88.

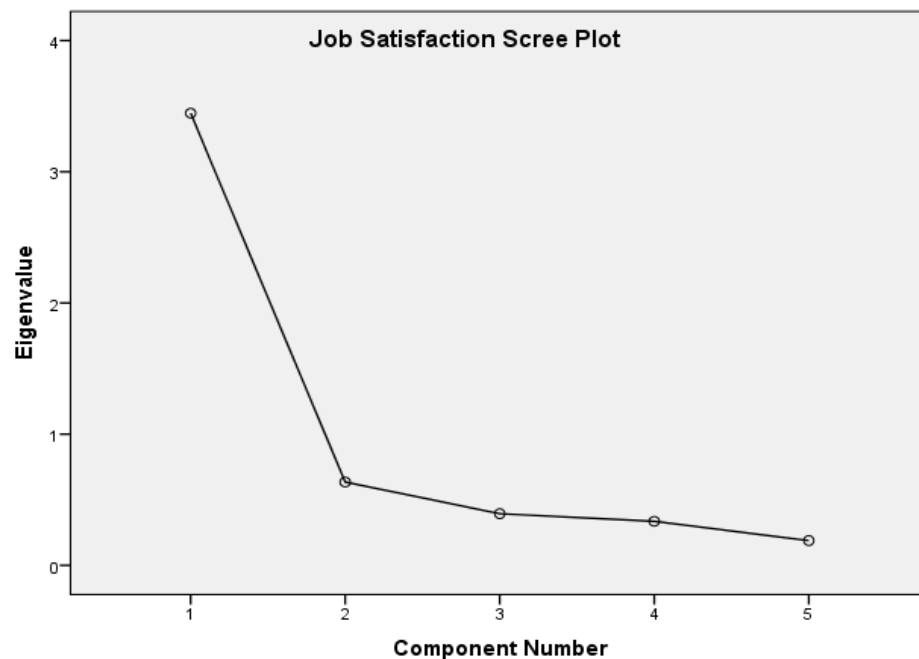


Figure 7. Scree plot for job satisfaction

Work Engagement. PCA was performed on the nine item work engagement measure. Initially the items loaded onto two factors, however following Seppälä et al. (2009) and Schaufeli et al. (2006), it was forced to three factors. Items 95 and 96 were removed as they cross loaded. The KMO measure was .83, which is 'meritorious', according to Hutcheson and Sofroniou (1999). Bartlett's test of sphericity was significant, indicating the factor analysis could be continued. For the completed factor matrix see Table 9, below. Item 100 related to having positive emotions while at work, so was accepted as related to 'dedication' and was left on this factor. Cronbach's alpha was .87.

Table 9

Work Engagement Pattern Matrix

Items	Vigor	Absorption	Dedication
At my work, I feel bursting with energy	.888		
At my job, I feel strong and vigorous	.883		
When I get up in the morning I feel like going to work	.727		
I get carried away when I am working		.908	
I am immersed in my work		.795	
I am proud of the work that I do			.770
I feel happy when I am working intensely			.760
Extraction Method: Principle Component Analysis Rotation Method: Varimax with Kaiser Normalization			