

**Investigating the impact of relocation and homesickness on
attention and safety outcomes of high-risk workers**

A dissertation submitted in partial fulfilment of the requirements for the degree of

Master of Science in Applied Psychology

at the University of Canterbury

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2019

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Acknowledgements

Firstly, thank you to Christopher Burt, Joana Kuntz and Katharina Näswall for their assistance, encouragement and guidance throughout my dissertation year, as well as my whole master's experience. Secondly, thank you to my parents for their endless supply of support, and for listening to my many complaints. Thirdly, thank you to my friends for being there when difficulties arose, and for providing me with many fun and much needed distractions throughout the year. Finally, a big thank you to Katy, who supported me not only throughout the master's journey but also in life outside university. I'm so lucky to have made such an amazing friend through APSY, and it was great to have a partner in crime as we made it through the degree. I can't imagine it any other way!

Abstract

Relocating for work is becoming increasingly common, and homesickness often arises as a consequence of relocation. When those relocating are working in high-risk environments, it becomes especially important to investigate the effects that relocation may have on attention and safety because of the risk of injury present in such working environments. The current study examines whether homesickness is associated with attentional lapses and safety outcomes (workplace incidents/accidents), in addition to exploring whether relocated and non-relocated workers differ in these outcomes. 162 high-risk workers employed in New Zealand participated in an online survey. Findings showed that homesickness was significantly associated with a greater number of attentional lapses, but not with safety outcomes. Non-relocated participants experienced significantly fewer attentional lapses compared to the relocated from within New Zealand participants and the relocated from overseas participants, but these two relocated groups did not significantly differ on attentional lapses. In addition, non-relocated participants reported significantly fewer negative safety outcomes than relocated within New Zealand participants, but not than relocated from overseas participants. These findings indicate that homesickness and relocation are associated with increased attentional lapses and negative safety outcomes. Organisations should endeavour to support relocated employees to mitigate these outcomes. Future research is needed to further explore the relationships examined in this study, and address the limitations discussed.

Introduction

There are increasing numbers of people leaving their home and country to work in foreign locations. This can be in response to many factors, including economic conditions and increased opportunities outside of the local environment (Du, Derks, Bakker & Lu, 2018; Greenhaus & Kossek, 2014). Relocating for work experiences is both beneficial for the individual's development in their field and necessary for the success of the organisation employing them (Stroh, Black, Mendenhall & Gregersen, 2005). Modern businesses and work environments are becoming increasingly reliant on migrant and contracted workers to meet demands (Maloney, Real, Cameron & Hare, 2013). This is particularly the case for blue collar jobs and higher-risk industries such as construction. New Zealand approved a combined total of 37,817 work visas for jobs in occupations that are higher-risk (labourers, machinery operators and drivers, technicians and trades workers) for the 2017/18 financial year (Immigration New Zealand, 2018). This may be largely due to expanding urban centres and recovery efforts/rebuilds from disasters, which require a high number of workers. Therefore, businesses involved in such efforts often need to recruit employees from abroad to meet demands.

A notable example of foreign workers being required for developing an urban centre and aiding with a rebuild is the 2011 Christchurch earthquake. In the few years following the earthquake and presently, Christchurch City and its surrounds experienced a dramatic influx of out of town and overseas workers to assist with the rebuild. Because of the nature of the rebuild, many of these relocated workers are employed within higher-risk industries, namely construction. In the year before the earthquakes struck Canterbury (2010), Christchurch only gained 32 migrants labelled as 'Technicians and Trades Workers'. After the earthquake (between 2012 and 2017) this had increased to 4,000 workers. Additionally, 2,700 migrants in 'professional' occupations have moved to Christchurch. Between 2013 and 2017 Christchurch

showed a net external migration gain of 21,800 migrants – meaning that far more people were moving from overseas to Christchurch than from Christchurch to overseas (Christchurch City Council, n.d.).

People who migrate to a country for similar purposes to the Christchurch rebuild often move away from their social support networks as well as having to adapt to life in a new location. This can be highly threatening to their need for quality relationships (Watt & Badger, 2009; Baumeister & Leary, 1995), and cause increased difficulty adjusting to the new environment (Fisher, 1989), which may lead to feelings of homesickness. Homesickness is distress experienced by those who have recently relocated and is associated with several negative outcomes, including decreased well-being and increased risk of psychological ill-health (Stroebe, Schut & Nauta, 2015). Homesickness has been described as involving feelings of loneliness, emotional distress, depression, and rumination about the home environment left behind (Fisher, 1989). These factors have been linked to difficulty concentrating on tasks and increased attentional lapses (Fisher, 1989; Burt, 1993). Attentional lapses may subsequently lead to increased errors in the workplace and thus increase the risk of accidents occurring (Shappell & Wiegmann, 2000).

While there is abundant evidence that deficits in attention can result in negative safety outcomes, there is minimal research exploring the effect of homesickness associated with relocation on attention and safety outcomes. The current research addresses this gap by analysing the feelings of homesickness among relocated workers, and how these feelings may influence attention and safety outcomes (e.g., work-related incidents). Further, this study tests whether non-relocated workers and relocated workers significantly differ with regards to attentional lapses, and to safety outcomes.

Homesickness

A commonly experienced consequence of a separation from home and relocation to an unfamiliar environment is the phenomenon of homesickness (Van Tilburg, Vingerhoets & van Heck, 1996). Homesickness is a distressed state of varying intensity and is associated with many negative emotional, cognitive, social, physiological, and behavioural outcomes (Stroebe et al., 2015). It provides an indication of the psychological well-being of individuals who have geographically relocated (Van Tilburg, 2007). Most research defines homesickness as the combined effect of (a) an attachment to home (people, places) and the difficulty with separating from it, and (b) difficulty adapting to the new environment (Fisher, 1989; Fisher, Elder & Peacock, 1990; Stroebe, Schut & Nauta, 2016). Conceptual features of homesickness include an affected individual missing home and their family there, wishing to be at home and in a familiar environment and routine, rumination and preoccupation with thoughts of home, as well as adjustment difficulties to the new environment (Stroebe et al., 2016).

Prior research on the prevalence of homesickness has found the prevalence rates to be extremely variable (Stroebe et al., 2015). In student samples, the prevalence rates of homesickness have ranged from 19% to 80% in a variety of countries and cultures (Stroebe, van Vliet, Hewstone & Willis, 2002; Carden & Feicht, 1991). Research on prevalence rates in adult populations is limited. Eurelings-Bontekoe et al.'s (2000) study of homesickness among foreign employees in the Netherlands found that 18.9% experienced severe homesickness (serious depressive complaints) and 30% experienced less severe homesickness. This suggests that homesickness should be assessed along an intensity continuum. Further, these rates of homesickness and their negative correlates indicate that homesickness is a problem worth investigating in occupational settings (Eurelings-Bontekoe et al., 2000).

An important aspect of the phenomenon of homesickness to consider is its duration. Some studies have reported it to be a transient effect, one that fades after a short time period following a relocation (Bell & Bromnick, 1998; Brewin, Furnham & Howers, 1989; Ying, 2005). These results were found in students, for whom after the first few weeks of having relocated homesickness decreased (Stroebe et al., 2015; Van Vliet, 2001). Study findings among adult samples suggest variable durations, with some studies finding that homesickness does not significantly decrease over time, or in more extreme/chronic cases of homesickness not to decrease at all (Watt & Badger, 2009; Van Tilburg, Vingerhoets, van Heck & Kirchbaum, 1999).

The distance of the new location from home has been linked to homesickness. In particular, individuals who are further from home tend to experience increased homesickness (Fisher, Murray & Frazer, 1985; Stroebe et al., 2002; Sun & Hagedom, 2016). However, Van Tilburg et al. (1996) propose that similarity of the new environment to the old environment appears to moderate the effect of geographical distance from home. The cultural difference between the old environment and the new environment can increase feelings of isolation and lead to homesickness (Hannigan, 2007). Because of the difference that distance and culture can have on homesickness, the current study includes two relocated groups (relocated from within New Zealand and relocated from overseas) and examines differences between these groups on levels of homesickness and other outcomes (i.e., attention and safety outcomes).

Homesickness Theories

This research draws upon several theoretical perspectives to understand homesickness and how it arises. Fisher (1989) created five theoretical dimensions to establish a multi-causal model explanation of homesickness. The dimensions include the following: the *loss model* – a grief-like response where the individual experiences a mini-bereavement due to leaving home;

the *interruption and discontinuity model* – in the new environment, previous routines are not productive, and trying to use old behaviours will cause difficulty functioning, resulting in a higher chance of homesickness; the *control model* – being unknowledgeable about procedures leaves a feeling of little control; the *role change and self-consciousness model* – raised anxiety and self-preoccupation due to the new role's demands; and the *conflict model* – an anxiety producing conflict of wanting the security and comfort of home against the challenge of the new environment's opportunities. Overall, the theory proposes that it is the combined effects of separation from home and entry into a new environment that produce homesickness.

Similar to the multi-causal model (Fisher, 1989), the Dual Process Model of Coping with Homesickness (DPM-HS; Stroebe et al., 2016) focuses on the combined effects of separation from home and adjustment to the new environment causing homesickness. The DPM-HS suggests that homesickness is akin to grief and a bereavement process, as it has similar processes, manifestations, and consequences as those that occur due to the death of a loved one. This model proposes two stressor types: loss-oriented (i.e., missing family, home etc) and restoration-oriented (i.e., issues adjusting to the new environment). In coping with homesickness both types are needed; one needs to come to terms with the loss of family and self-develop to adjust to the new environment. Those who lack social support (not overcoming the loss) and go through a significant relocation (difficult to adjust to) have an increased likelihood of experiencing homesickness.

Belongingness theory states that people possess an innate need for quality relationships to ensure personal well-being, and that separation from one's social networks and family threatens the sense of belongingness (Watt & Badger, 2009). This in turn results in homesickness, which according to this theory is caused by the dissolution of social bonds. Physically separating from friends and family induces distress and makes it more difficult to create new social networks in the new location to fulfil belongingness needs (Watt & Badger,

2009). A longitudinal study by Fried (1963) in Boston highlighted the importance of social networks. Prior to the compulsory relocation from their neighbourhood in order to make room for the area to be redeveloped, five hundred residents were interviewed. Those same residents were then interviewed at multiple points after they were relocated. Despite the improved housing benefits of the relocation, the residents reported grief for their lost home, and those who had close social networks in their original neighbourhood were worst affected. After one year, more than 50% of the interviewed residents still reported homesickness symptoms, and 25% were still affected after two years. Fried (1963) explained these results as due to the loss of social networks and relationships. Watt and Badger (2009) also found significant evidence for a causal relationship between the need to belong and homesickness, as well as finding that individuals experienced less homesickness when they felt accepted in their community. This theory links with the DPM-HS described above, and highlights the influence of lack of social support in the development of homesickness.

Effects of Homesickness

Homesickness can present with a myriad of symptoms, including physical, emotional, behavioural and cognitive symptoms, and has been associated with increased psychological and physical health problems, along with decreased overall well-being (Fisher, 1989; Stroebe et al., 2015; Van Tilburg et al., 1996). Individuals usually experience new stressors and increased stress upon relocating to a new environment. These stressors can result from the separation from social networks, time lost to the relocation, new work roles and pressure to perform in new roles, and adjusting to a different culture when the move is international (Watt & Badger, 2009; Kling, Ryff, Love & Essex, 2003; Shaffer, Harrison, Gilley & Luk, 2001; Coyle & Shortland, 1992). Support must be offered to reduce the influence that homesickness could have to prolong and exacerbate their stress.

Physical problems resulting from homesickness include gastrointestinal issues, loss of appetite, sleep disturbances, fatigue, headaches, and immune systems problems (Baier & Welch, 1992; Fisher, 1989; Thurber & Walton, 2012; Van Tilburg et al., 1996). Emotional symptoms of homesickness often appear similar to depression and are primarily characterised by a depressed mood (Beck, Taylor & Robbins, 2003; Stroebe et al., 2015; Van Tilburg et al., 1996; Verschuur, Eurelings-Bontekoe & Spinhoven, 2004;). Because of this resemblance to depression, homesickness is often thought of as a reactive depression – similar to depression resulting from grief (Van Tilburg, 1996; Fisher, 1989). Other emotional symptoms include anxiety, loneliness, loss of control, insecurity, and nervousness (Beck et al., 2003; Flett, Endler & Besser, 2009; Verschuur et al., 2004; Porritt & Taylor, 1981). These emotional symptoms that can result from homesickness may significantly decrease an individual's wellbeing and it is therefore important to further investigate homesickness.

An integral feature of homesickness is rumination (Stroebe et al., 2015; Bell & Bromnick, 1998). Ruminative thoughts include preoccupation with thoughts about home and negative thoughts regarding the new environment. The thoughts about home usually idealise the old environment in comparison to the new environment (Fisher, 1989). Research on homesickness in first-year university students has also found academic difficulties, concentration and attention difficulties, and absent-mindedness (Archer, Ireland, Amos, Broad & Currid, 1998; Burt, 1993; Fisher, 1989; Fisher et al., 1985; Fisher & Hood, 1987, 1988;). Fisher (1989) compared homesick and non-homesick students on a task that required them to type a single word 100 times without provision of feedback as to whether the word was error-free each time. Fisher (1989) found that homesick students made significantly more errors and had inaccurate perceptions of the number of errors they made compared to non-homesick students. In a study of the effects of homesickness of attentional ability and academic performance, Burt (1993) found that homesickness negatively affected the attention of

homesick university students performing an attention task. Adult populations have also reported concentration, perception, memory, and motor function difficulties when homesick (Van Tilburg et al., 1999).

The physical and psychological effects of homesickness are not only detrimental to the individual but also to the business employing them. Decreased motivation, lack of cooperation, lapses in attention, and decreased performance can result from homesickness (Deresky, 2010; Du et al., 2018; Hack-Polay, 2012; Omi & Winnant, 2003). In some cases, individuals experiencing homesickness may not be able to overcome the adverse effects and prematurely return home (Watt & Badger, 2009). Recruiting and relocating individuals can be expensive for organisations, and it is crucial for organisations to ensure that individuals remain through to the end of their contract and achieve the goals established (Sims & Schraeder, 2004). This suggests that organisations stand to gain from understanding homesickness and its impact on organisational processes and outcomes, and from identifying factors that might contribute to or mitigate homesickness. Yet, research on expatriate workers in the homesickness domain is extremely limited. This study explores the gap in research of homesickness and its effect on attention in expatriate working populations.

Homesickness and Attentional Lapses

A theory for how homesickness affects the attention of employees is the Work-Home Resources model (W-HR; ten Brummelhuis & Bakker, 2012). This model proposes that using personal resources (e.g. energy and concentration) in one area of life depletes the reservoir of these resources. This can mean that when a person calls upon the same resources in another environment or context, they might not be able to perform well because the resources necessary may be at an insufficient level due to their earlier use. Rumination and preoccupation are the hallmark cognitive effects of homesickness. This rumination and preoccupation could expend

a significant portion of an individual's attentional resources, resulting in attention difficulties and inability to dedicate cognitive resources to the task at hand (Fisher, 1989; Du et al., 2018). These depleted attentional resources may result in decreased performance at work (Beal, Weiss, Barros & MacDermid, 2005). Du et al. (2018) conducted two studies to test whether homesickness affected job resources and performance at work. They found that higher levels of homesickness did result in difficulty using resources, in addition to decreased performance and safety behaviour at work. The W-HR model, and previous findings that homesickness may negatively influence the attention of affected individuals, has led to the following hypotheses in the current research:

Hypothesis 1a - Feelings of homesickness will be positively and significantly associated with attentional lapses.

Hypothesis 1b – Relocated from overseas participants will experience significantly higher levels of homesickness than relocated within New Zealand participants.

Hypothesis 1c – Relocated participants will report a significantly greater number of attentional lapses than non-relocated participants.

Hypothesis 1d - Relocated from overseas participants will report a significantly greater number of attentional lapses than relocated within New Zealand participants, and both these relocated groups will report a significantly greater number of attentional lapses than non-relocated participants.

Homesickness and Safety Outcomes

In addition to attentional outcomes, the current study investigates whether homesickness is significantly associated with the safety outcomes of workers. The relationship between homesickness and safety outcomes is explored because of the established relationship

between attentional lapses and accidents. Studies have shown that lapses in attention have been linked to accident rates in the workplace in higher-risk industries (Wallace & Chen, 2005), with some managers in very high-risk industries such as offshore oil and gas reporting that it is the leading cause of accidents (O’Dea & Flin, 2001). In offshore drillers and electrical workers, attentional lapses and cognitive failures have been found to be positively correlated with both workplace accidents and car accidents (Wallace & Vodanovich, 2003a; Sneddon, Mearns & Flin, 2013). Not only have lapses in attention resulted in increased accidents, but research on production workers and offshore drilling crews found that cognitive failures were also positively associated with safety non-compliance behaviours (Wallace & Vodanovich, 2003b; Sneddon et al., 2013). Although there is research linking attentional lapses to accidents, very few explore the impact of homesickness on safety outcomes – perhaps because most of the homesickness research has been conducted on children or university students rather than high-risk working populations. If homesickness is associated with attentional lapses, and attentional lapses are associated with negative safety outcomes, then perhaps homesickness will be associated with negative safety outcomes.

Shappell and Wiegmann (2000) developed The Human Factors Analysis and Classification System (HFACS) – a model that can be used to identify latent and active failures that lead to and explain why an accident occurred in the workplace. The HFACS is well regarded in safety research because it is reliable and valid, has been successfully applied to a broad range of industries, uses generalisable terminology which allows it to be easily adapted to suit most cases (Reinach & Viale, 2006). Shappell and Wiegmann (2000) outline the following causal categories and levels that lead to accidents: errors and violations within the level *unsafe acts*; substandard conditions of operators (adverse mental and/or physiological state, physical/mental limitations) and substandard practices of operators (crew resource management and personal readiness) within the level *preconditions*; inadequate supervision,

planned inappropriate operations, failure to correct a known problem, and supervisory violations within the level *unsafe supervision*; organisational climate, resource management, and organisational process within the level *organisational influences*. The two levels relevant to the current research and homesickness are *unsafe acts* and *preconditions*.

Unsafe acts involves direct and active failures, which lead to accidents. Unsafe acts contains two categories – errors or violations (Reason, 1990). Errors are typically the result of best intentions to follow procedure but did not lead to the desirable or expected outcome (Shappell & Wiegmann, 2000). These can include honest mistakes, memory failures, attention failures, and perceptual errors. Therefore, this category is relevant to the current research because previous findings in the homesickness domain have found that homesickness can result in such errors (Archer et al., 1998; Burt, 1993; Fisher, 1989; Fisher et al., 1985; Fisher & Hood, 1987, 1988;).

Preconditions consists of the latent factors that can contribute to unsafe acts occurring and includes the category of substandard conditions of operators (adverse mental states, adverse physiological states, and physical/mental limitations) (Shappell & Wiegmann, 2000). This category is relevant to the current research because homesickness has shown to lead to adverse mental and physiological states (Stroebe et al., 2015). Based on the HFACS it can be suggested the negative effects of homesickness may increase the chance of exposing the employee and colleagues to safety risks (through the *unsafe acts* and *preconditions* levels), which in turn may increase the possibility of an incident/accident occurring.

In terms of behaviours that result from homesickness, Van Tilburg et al. (1996) report apathy, decreased initiative, listlessness, and disinterest in the new environment. These behaviours could lead to safety non-compliance because individuals may feel apathetic or disinterested in safety protocols. One study investigated the self-reported safety behaviours of

workers using the work-home resources model (ten Brummelhuis & Bakker, 2012) and found that homesickness did result in undermined safety behaviours (Du et al., 2018). However, to find this result participants were asked whether they engaged in safety behaviours which they were already expected to by the organisation. This may have resulted in socially desirable responses (Holtgraves, 2004). The current research asks individuals how many incidents they experienced without directly asking if these were due to the individual's behaviour – perhaps prompting the individual to answer more honestly and not in a socially desirable manner.

It is important to investigate whether homesick workers report more incidents because it could have implications for how relocated employees are introduced into the workplace. For example, if it was shown that homesickness may increase accident rates, then more emphasis could be placed on their acclimation and induction. The current research aims to explore the gap in literature as to whether homesickness has an effect on safety outcomes. Based on homesickness and its effect on attention and the possible subsequent effect on safety outcomes, the following hypotheses have been derived:

Hypothesis 2a – Feelings of homesickness will be positively and significantly associated with negative safety outcomes (i.e., a greater number of near misses/minor injuries/lost time injuries reported).

Hypothesis 2b – Relocated participants will report a significantly greater number of negative safety outcomes (near misses, minor injuries, and lost time injuries) than non-relocated participants.

Hypothesis 2c - Relocated from overseas participants will report a significantly greater number of negative safety outcomes (near misses, minor injuries, and lost time injuries) than relocated within New Zealand participants, and both these

relocated groups will report a significantly greater number of negative safety outcomes than non-relocated participants.

Method

Design

The design for the current study was cross-sectional and quasi-experimental and utilised a self-report survey. Data was collected at one point in time, and the participants were assigned to one of three groups based on their responses as to whether they had relocated for their present job. These groups were the following: non-relocated participants; participants who had relocated within New Zealand; and participants who had relocated to New Zealand from overseas. The groups were predicted to have statistically significant differences in levels of safety outcomes and attentional lapses. Additionally, the two relocated groups (relocated from within New Zealand and relocated from overseas) were predicted to significantly differ on levels of homesickness.

Participants

Participants in this study consisted of people employed in high-risk industries in New Zealand. 268 individuals clicked on the survey link and 165 participants completed the survey. Three participants were removed because they selected “other” as their industry but failed to specify the industry in the comment section provided. This left 162 participants to make up the final sample, which consisted of 129 males (80%), 31 females, and 2 gender diverse. The ages of participants ranged from 18 to 66 with a mean age of 38. The industries worked in by the 162 participants included construction (47%), forestry (23%), other high-risk industry (8%), agriculture (5.5%), manufacturing (5.5%), electrical (4%), transportation (2.5%), plumbing

(2.5%), and warehousing (2%). 100 participants had not relocated for their present job, 35 participants had relocated within New Zealand for their present job, and 27 participants had relocated from overseas for their present job.

Recruitment

Recruitment for this study utilised haphazard sampling. A brief advertisement (see Appendix C) and the link to the survey was posted to 30+ Facebook groups (that the researcher was accepted into after seeking permission to advertise the survey) with members in the Facebook groups ranging from 150 – 5,000. The Facebook groups included those focused on high-risk jobs and high-risk industries within New Zealand (e.g. New Zealand Builders, Forestry Workers NZ), those for overseas people living in New Zealand (e.g. British Expats in New Zealand, American Expats in New Zealand), and regional New Zealand groups.

Many construction, forestry and tradesmen recruitment organisations were approached, and the researcher attended multiple interviews with management to seek assistance with gathering participants. Several of these organisations were available to assist in the distribution of the advertisement and the survey to their employees/high-risk workers. These organisations either emailed the survey directly to employees or affiliated persons, posted it on their social media sites, or included it in their newsletters. Many other organisations were approached but could not distribute the survey due to other surveys being run or their organisational policy not allowing university surveys to be distributed. Due to a low number of responses from the recruitment methods above, fliers were also distributed (see Appendix D). These were placed in offices and coffee shops.

Procedure

In this study, responses were collected from participants through an electronic survey using Qualtrics. Participants were presented with the research advertisement and the link to the survey. Those who chose to participate were taken to an information and consent page (see Appendix A). By continuing with the survey after viewing the information and consent page, participants were providing consent and began the survey (see Appendix B). At the end of the survey, participants were automatically taken to a separate Qualtrics survey to enter their email address if they wished to receive a copy of results or go into the prize draw to win one of nine \$100 grocery vouchers (the incentive to participate in this study). Participants were taken to a separate survey to enter this information so that it could not be linked with any responses from the research survey to meet ethical requirements by preserving the anonymity of the responses.

Measures

All variables in this study were measured using a self-report survey (see Appendix B).

Group Classification. In order to classify participants into groups and gather other information including their industry of work, tenure in industry, and how long it had been since they had relocated (if they had relocated), a series of questions were asked at the beginning of the survey. To group participants into non-relocated and relocated groups, participants were asked the following: “Have you relocated for your present job?”. If they answered yes, they were then asked whether they relocated nationally or internationally, creating two relocated groups - the relocated within New Zealand group and the relocated from overseas group.

Safety Outcomes. Safety outcomes were measured by asking participants to report how many near-misses, minor injuries, and lost time injuries they had experienced at work in the last two months.

Attentional Lapses. Attentional lapses were measured using a 15-item Short Inventory of Minor Lapses scale (SIML; Reason, 1993). Participants rate how often each item describing an everyday attention problem has occurred to them in the last two months. Example items include “how often do you forget to say something you were going to mention?” and “how often do you find you have forgotten to do something you intended to do?”. Participants responded on a 5-point Likert scale where 1 = *hardly ever*, 2 = *sometimes*, 3 = *quite often*, 4 = *frequently*, and 5 = *nearly all the time*. The Cronbach’s alpha for the SIML was .85 (Reason, 1993; Merckelbach, Muris & Rassin, 1999).

Homesickness. The Dundee Relocation Inventory (DRI; Fisher, 1989) was used to measure the intensity of homesickness in relocated participants. The DRI included 24-items (two dummy items were removed) and described feelings about the individual’s current environment. Descriptions included positive wording (e.g. “I feel fulfilled here”) and negative wording (e.g. “I feel uneasy here”). Fisher (1989) used a 3-point response scale, however, the current study expanded this to a 5-point scale to offer participants a greater range and keep the response scale the same as other scales used. For the 5-point scale 1 = *never*, 2 = *rarely*, 3 = *sometimes*, 4 = *often*, and 5 = *always*. Fisher (1989) noted a test-retest reliability of .71 (after two weeks) and .81 (after six months) for people who were not homesick, and .59 and .21 for people who were homesick. This suggested that homesickness is not a stable state (as it can change over time) whereas non-homesickness is stable. Additionally, Fisher (1989) assessed construct validity through teacher-ratings of homesickness apparent in boarding school pupils which produced a correlation of .40 ($p < 0.02$).

Perceived Job Risk. Perceived job risk was included in this study to control for variations in the level of risk in a job on the participants reported negative safety outcomes. To measure perceptions of job-risk a 10-item work safety scale was used (Hayes, Perander, Smecko & Trask, 1998). Example items of this scale include “dangerous”, “scary”, and “unsafe”.

Participants responded on a 5-point Likert scale where 1 = *strongly disagree*, 2 = *disagree*, 3 = *neither agree nor disagree*, 4 = *agree*, and 5 = *strongly agree*. This scale has a reported Cronbach's alpha of .82 (Burt, Banks & Williams, 2014).

Results

Preliminary Statistical Analyses

Exploratory factor analyses. Before testing the hypotheses, the dimensionality of each scale used in the study was assessed with exploratory factor analysis using principal axis factoring with oblique rotation (direct oblimin). For relevant factor analysis information (rotated factor loadings, communalities, eigenvalues, and percentage of variance) of each scale see Tables A to H in Appendix E. In all scales sampling was identified as acceptable due to significant Kaiser-Meyer-Olkin values (ranging from .78 to .94) and Bartlett's tests for sphericity (Field, 2014). For all scales used the factor inclusion criteria was eigenvalues more than one, items that loaded only onto one factor with a factor loading of at least .40, and no cross loadings of more than .30 (DeVilles, 2016; Field, 2014; Shultz, Whitney & Zickar, 2013).

The initial factor analysis for the homesickness scale revealed four factors (see Table A in Appendix E). Upon examination, the eight items that loaded on the first factor reflected a construct of "thoughts about the new/current environment", while the four items that loaded on the second factor reflected a construct of "thoughts about home". This lines up with research in the homesickness field stating that homesickness is the combined effect of difficulty adapting to the new environment and an attachment to home, and difficulty with separating from home (Fisher, 1989; Fisher, Elder & Peacock, 1990; Stroebe, Schut & Nauta, 2016). The third factor revealed in the factor analysis with an eigenvalue after extraction of above 1 appeared to indicate "feeling unsettled" (adjusting for the reverse coding of items) and included

seven items. The fourth factor had an eigenvalue of less than 1 and was therefore excluded. Items HS1(R), HS6, and HS8 were excluded because of cross loading on other factors. The three remaining factors were labelled 'HS New Location' (factor 1), 'HS Missing Home' (factor 2), and 'HS Feeling Unsettled' (factor 3). HS New Location accounted for 58.18% of variance, HS Missing Home accounted for 65.90% of variance, and HS Feeling Unsettled accounted for 57.30% of variance (see Table B, Table C and Table D in Appendix E).

The initial factor analysis for the attentional lapses scale revealed two factors, however, the second factor had an eigenvalue less than 1 after extraction and was subsequently removed. This left one factor with an eigenvalue greater than one and included eight items to make the attentional lapses scale which explained 52.88% of variance (see Table E and Table F in Appendix E).

For the last factor analysis, results initially showed two factors present for the perceived job risk scale, however the second factor had an eigenvalue less than 1 and was removed. This left five items which all loaded on the first factor to make the perceived job risk scale which accounted for 56.44% of variance (see Table G and Table H in Appendix E).

Reliability analyses were conducted after the exploratory factor analyses to assess internal consistency of the scales. As seen in Table 1, all scales had a Cronbach's alpha greater than Cronbach's (1951) recommendation of .70 which indicated all scales had good reliability (Brace, Kemp, & Snelgar, 2016; Field, 2014; George & Mallery, 2003).

Descriptive statistics and correlation coefficients. Means, standard deviations, reliability coefficients, and correlations for all variables across all groups in this study can be seen in Table 1. Overall, participants reported mean levels of homesickness on the lower end of the scale in all three homesickness constructs (a mean less than 3 on a 5-point scale), with a standard deviation just below 1 scale point for both constructs. The reported attentional lapses

showed similar means to homesickness. Participants reported moderate levels of perceived job risk (a mean slightly over the midpoint of 3) with a standard deviation just within one scale point, indicating that participants rated their job as moderately risky. The mean for near misses was 2.16 with a standard deviation of 4.86, indicating that there was a great amount of variability in how many near-misses participants experienced. The minor injury variable had a smaller mean and variability ($M = .80$, $SD = 1.88$) than the near miss variable, as did the lost time injury variable with an even smaller mean and variability ($M = .27$, $SD = .78$).

The associations between the scales are shown in the correlation matrix in Table 1. Consistent with previous research stating that homesickness is the combined effect of thoughts of the new environment and thoughts of the old environment, HS New Location and HS Missing Home were positively and significantly correlated. HS Feeling Unsettled also showed a strong positive and significant correlation with the other two homesickness factors. All three homesickness factors were positively and significantly correlated with attentional lapses. However, none of the three homesickness factors were significantly correlated with safety outcomes (near miss, minor injury, lost time injury). Perceived job risk was not significantly correlated with any of the safety outcome variables, but all the safety outcome variables were positively and significantly correlated with each other.

Table 1

Summary of Descriptive Statistics, Correlations, and Internal Consistency for all Variables

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1. HS New Location	2.19	.84	(.92)						
2. HS Missing Home	2.28	.92	.49**	(.88)					
3. HS Feeling Unsettled	2.33	.81	.75**	.45**	(.90)				
5. Attentional Lapses	2.28	.74	.51**	.38**	.39**	(.90)			
4. Perceived Job Risk	3.38	.89	.27*	.16	.18	.21**	(.86)		
6. Near Miss	2.16	4.86	.07	-.02	-.06	.14	.29**		
7. Minor Injury	.80	1.88	.03	-.12	-.09	.15	.26**	.67**	
8. Lost Time Injury	.27	.78	-.15	-.08	-.24	.06	.19*	.42**	.64**

Note. Internal consistency (α) scores presented on the diagonal.

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

Control Variables. To examine whether possible confounding variables might need to be controlled for in later analyses, an ANOVA was conducted to examine the mean differences of participant group (non-relocated, relocated within New Zealand, relocated from overseas) across the three control variables (time in industry, time since move, and perceived job risk). No significant between-group differences were found for any of the control variables. Because of this, it was deemed unnecessary to control for these variables in later analyses.

Hypotheses Testing

Multiple Regression Analyses. Multiple regression analyses were conducted to examine the relationships between homesickness factors and the outcome variables (attentional lapses, near miss, minor injury, and lost time injury). Results from these analyses are presented below in Table 2. Multicollinearity was assessed by examining Tolerance and Variance Inflation Factor (VIF). Collinearity was not deemed to be a problem in analyses because all VIF values were well below the maximum of 10 and all Tolerance values were above 0.2 (Bowerman & O'Connell, 1990; Menard, 1995; Myers, 1990).

Results of the regression indicate that HS New Location is a moderate and significant predictor for attentional lapses ($\beta = .43, p < .05$), and accounts for 28% of variance. However, HS Missing Home and HS Feeling Unsettled were not significantly associated with attentional lapses. Additionally, none of the homesickness variables were significantly associated with any of the safety outcome variables. These findings provide support for hypothesis 1a, which proposed that feelings of homesickness would be positively and significantly associated with attentional lapses, but failed to support hypothesis 2a, which stated that feelings of homesickness would be positively and significantly associated with negative safety outcomes.

Table 2

Summary of Multiple Regression Analyses for all Variables

	<u>Attentional Lapses</u>				<u>Near Miss</u>				<u>Minor Injury</u>				<u>Lost Time Injury</u>			
	B	SE	β	<i>p</i>	B	SE	β	<i>p</i>	B	SE	β	<i>p</i>	B	SE	β	<i>p</i>
HS New Location	.38	.15	.43*	.02	1.60	1.15	.28	.17	.64	.44	.29	.15	.06	.18	.07	.73
HS Missing Home	.14	.11	.17	.19	-.28	.81	-.05	.73	-.32	.31	-.15	.31	.02	.13	.02	.89
HS Unsettled Feelings	-.01	.16	-.01	.98	1.44	1.18	-.24	.23	-.56	.45	-.24	.22	-.29	.19	-.31	.12
<i>R</i> ²				.28				.04				.05				.06
<i>F</i> for change in <i>R</i> ²				7.50				.71				1.04				1.30
Sig <i>F</i> change				.00				.55				.38				.29

Note. *N* = 62.**p* < .05

T-test for independent samples. A t-test between the two relocated groups (relocated within New Zealand and relocated from overseas) was conducted to investigate whether they differed on levels of homesickness. As seen in Table 2, the relocated within New Zealand (RNZ) and relocated from overseas (RO) groups do not significantly differ on any of the homesickness factors. This meant that RO did not experience more homesickness, experience more attentional lapses, or report more safety outcomes than RNZ. This result fails to support hypothesis 1b, which stated that relocated from overseas participants would experience significantly higher levels of homesickness than relocated within New Zealand participants.

Table 3

Results of t-test and Descriptive Statistics for Homesickness (HS New Location, HS Missing Home, and HS Feeling Unsettled) between Relocated Groups

	Relocated Group						95% CI for Mean Difference	t	df	p
	Within NZ			Overseas						
	M	SD	N	M	SD	N				
HS New Location	2.18	.82	35	2.20	.89	27	-.46, .41	-.11	60	.91
HS Missing Home	2.42	.84	35	2.51	.97	27	-.56, .37	-.41	60	.69
HS Feeling Unsettled	2.30	.84	35	2.37	.80	27	-.49, .35	-.32	60	.75

A second t-test was conducted to examine the differences in attentional lapses and safety outcomes (near misses, minor injuries, lost time injuries) between the non-relocated group and the relocated group. The relocated group consisted of both RO and RNZ groups combined. As seen below in Table 4, the relocated group significantly differ from the non-relocated group on all outcome variables. The relocated group had a significantly greater mean for attentional lapses, near misses, minor injuries, and lost time injuries compared to the non-relocated group. This meant that the relocated group experienced a greater number of attentional lapses and a greater number of all negative safety outcomes. These results supported hypothesis 1c, which proposed that relocated participants would report a significantly greater number of attentional lapses than non-relocated participants, and hypothesis 2b, which proposed that relocated participants would report a significantly greater number of negative safety outcomes than non-relocated participants.

Table 4

Results of t-test and Descriptive Statistics for Attentional Lapses, Near Misses, Minor Injuries, and Lost Time Injuries Between Non-Relocated and Relocated Groups

	Relocated Group						95% CI for Mean Difference	t	df	p
	Non-Relocated			Relocated						
	M	SD	N	M	SD	N				
Attentional Lapses	2.04	.59	100	2.68	.79	62	-.85, -.42	-5.83**	160	.00
Near Miss	1.02	2.50	100	4.00	6.83	62	-4.46, -1.50	-3.96**	160	.00
Minor Injury	.24	.57	100	1.69	2.73	62	-2.01, -.90	-5.15**	160	.00
Lost Time Injury	.04	.24	100	.65	1.13	62	-.84, -.37	-5.17**	160	.00

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

Analysis of Variance. A one-way ANOVA was conducted to examine the mean differences of the non-relocated (NR), RNZ, and RO groups on attentional lapses and safety outcomes (near miss, minor injury, lost time injury). *Levene's F* test was utilised to assess the homogeneity of variance and displayed a significant result (indicating that the variances were unequal) for all outcome variables ($p < .01$). Because of this, the *Welch's F* test was used. ANOVA results showed that the groups significantly differ on attentional lapses, *Welch's F*(2, 50.84) = 15.15, $p < .00$, near-misses, *Welch's F*(2, 42.34) = 5.29, $p < .01$, minor injuries, *Welch's F*(2, 40.32) = 8.71, $p < .01$, and lost time injuries, *Welch's F*(2, 40.81) = 8.75, $p < .01$.

The Games-Howell post-hoc procedure was utilised to investigate which of the three groups significantly differed on the outcome variables (see Table I in Appendix F). For attentional lapses, NR ($M = 2.04$, $SD = .59$) had a significantly lower score than RNZ ($M = 2.66$, $SD = .69$), $p < .01$ and RO ($M = 2.69$, $SD = .91$), $p < .01$. This meant that NR experienced significantly fewer attentional lapses than both relocated groups. The two relocated groups did not significantly differ on attentional lapses. For near misses, NR ($M = 1.02$, $SD = 2.50$) had a significantly lower score than RNZ ($M = 3.97$, $SD = 6.84$), $p < .05$ but not RO ($M = 4.04$, $SD = 6.94$). For minor injuries, NR ($M = .24$, $SD = .57$) had a significantly lower score than RNZ ($M = 1.94$, $SD = 2.73$), $p < .01$ but not RO ($M = 1.37$, $SD = 2.75$). The result was also the same for lost time injuries, with NR ($M = .04$, $SD = .24$) showing a significantly lower score than RNZ ($M = .86$, $SD = 1.31$), $p < .01$ but not RO ($M = .37$, $SD = .79$). These results meant that NR experienced significantly fewer near misses, minor injuries, and lost time injuries than RNZ, but not than RO. RNZ and RO did not significantly differ on any of the safety outcome variables. These results partly supported hypothesis 1d, which stated that relocated from overseas participants would report a significantly greater number of attentional lapses than relocated within New Zealand participants, and both these relocated groups would report a significantly greater number of attentional lapses than non-relocated participants. Additionally,

the results partly support hypothesis 2c, which proposed that relocated from overseas participants would report a significantly greater number of negative safety outcomes than relocated within New Zealand participants, and both these relocated groups would report a significantly greater number of negative safety outcomes than non-relocated participants. Hypothesis 1d was only partly supported because even though the relocated group experienced significantly fewer attentional lapses compared to the two relocated groups, the relocated groups did not significantly differ. Hypothesis 2c was only partly supported because relocated within New Zealand participants had a significantly greater number of safety outcomes than the non-relocated participants but relocated from overseas did not. Additionally, hypothesis 2c was only partly supported because relocated from overseas participants did not significantly differ in number of safety outcomes to relocated within New Zealand participants.

Discussion

The aim of the current study was to examine whether and how homesickness was associated with attentional lapses and safety outcomes. In addition, the current study aimed to explore whether non-relocated workers and relocated workers significantly differ with regards to attentional lapses, and to safety outcomes. A self-report survey was administered to high-risk workers living in New Zealand to examine whether those who had relocated differed on feelings of homesickness, and whether relocated workers reported more attentional lapses and negative safety outcomes. This study is one of very few to investigate whether homesickness is associated with attentional lapses outside the realm of education, as well as one of the only studies to investigate whether homesickness is associated with negative safety outcomes.

Results from this study indicated that relocated participants did experience a degree of homesickness, although the levels of homesickness tended to be at the lower end of the scale,

with a mean of 2.26 on a 5-point scale. Previous research would suggest that a move from overseas would result in a greater degree of homesickness due to moving further away from home and possibly to a culturally dissimilar environment (Fisher et al., 1985; Hannigan, 2007; Stroebe et al., 2002; Sun & Hagedom, 2016). However, this study found that relocated from overseas participants did not significantly differ on homesickness compared to relocated within New Zealand participants. While this result is surprising, geographical distance from home and its impact on homesickness has revealed inconsistent results, with some studies finding geographical distance does not impact the intensity of homesickness (Brewin et al., 1986; Fisher, Frazer & Murray, 1986). Additionally, it has been argued that it is not geographical distance that affects homesickness, but rather psychological distance (Scopelliti & Tiberio, 2010; Van Tilburg et al., 1996). Ease of communication with home and the travel time necessary to visit home impact the psychological distance from home (Scopelliti & Tiberio, 2010; Van Tilburg et al., 1996). Homesickness research has not received much attention in recent years and with the rapid advancement of communication technology, it is possible that technological advancements in communication may have contributed to a reduction in homesickness. In terms of the effect of cultural difference on homesickness, perhaps the participants in this study who had relocated from overseas had relocated to New Zealand from culturally similar and English-speaking countries. This possibility is supported by the fact that the United Kingdom and Ireland are the highest source of migrants to the Canterbury region, where most of the current study's participants were located (Christchurch City Council, n.d). Future studies could collect information from participants regarding their home country to examine this.

Initial exploratory analyses revealed different homesickness dimensions (i.e., thoughts about the new location, missing home, and feeling unsettled) and this finding is consistent with previous research stating that homesickness is the combined effect of thoughts of the new

environment and thoughts of the old environment (Fisher, 1989; Fisher et al., 1990; Stroebe et al., 2016). This provided support for the DPM-HS model which states that homesickness is a multidimensional construct that is comprised of thoughts about the new environment and thoughts about home (Stroebe et al., 2016).

Regarding the effect of homesickness on attentional lapses, results showed that the homesickness dimension of thoughts about the new environment was positively and significantly associated with attentional lapses. This result suggested that homesickness in the form of thoughts about the new environment and difficulty adapting to the new environment is associated with a greater number of reported attentional lapses. This provided support for the study's hypothesised effect and is consistent with research in the homesickness and attention domain – that difficulty adapting to the new environment can result in attentional and concentration issues (Burt, 1993; Fisher, 1989). Additionally, the significant association found between homesickness and attentional lapses lines up with the Work-Home Resources model, which states that homesickness causes depletion of personal resources necessary for attention at work (Du et al., 2018; ten Brummelhuis & Bakker, 2012). However, the remaining homesickness dimensions (missing home and unsettled feelings) were not shown to be significantly associated with attentional lapses. This suggests that it is the degree to which individuals feel adjusted to the new environment that affects attentional lapses, rather than thoughts of home.

Contrary to what was hypothesised in the current study, none of the homesickness dimensions were significantly associated with the negative safety outcomes. While there is little existing research examining homesickness and safety outcomes, this result is inconsistent with research suggesting that substandard conditions of individuals operating in high-risk environments can lead to accidents (Shappell & Wiegmann, 2000). Substandard conditions include mental limitations and adverse mental and physical states, all of which are reported

outcomes of homesickness (Stroebe et al., 2015). Several possible explanations exist to explain this unexpected finding. Firstly, the use of self-report measurement for safety outcomes may have impacted the results because participants may be inclined to report fewer incidents, as that may seem the socially desirable response (Holtgraves, 2004). Therefore, it is possible that participants reported fewer safety outcomes than occurred. Secondly, positive workplace factors such as high levels of support and a strong organisational safety climate may have mitigated the occurrence of negative safety outcomes (Kraimer, Wayne & Jaworski, 2001; Neal & Griffin, 2006; Shen & Hall, 2009). Lastly, attentional lapses may operate as a mediating variable between homesickness and safety outcomes. It is widely established in literature that lapses in attention lead to accidents (Shappell & Wiegmann, 2000; Wallace & Chen, 2005). Although this relationship was not investigated in this study, initial results showed a strong and significant relationship between attentional lapses and all negative safety outcome variables. This finding suggests that future research is needed to explore the mediating role of attentional lapses.

When examining differences in attentional lapses between non-relocated participants, relocated within New Zealand participants, and relocated from overseas participants, it was found that non-relocated participants experienced significantly fewer attentional lapses than the relocated from overseas participants and the relocated within New Zealand participants. However, the two relocated groups did not significantly differ on attentional lapses. This finding is inconsistent with what one might expect based upon the literature that states the greater distance from home results in greater feelings of homesickness (Fisher et al, 1985; Stroebe et al., 2002; Sun & Hagedom, 2016), and that greater homesickness results in decreased attention (Burt, 1993; Fisher, 1989; Van Tilburg et al., 1999). This finding is also inconsistent with what was hypothesised. However, it may be explained by the fact that relocated from

overseas participants and relocated from within New Zealand participants did not significantly differ in their reported homesickness levels.

Upon examination of the safety outcomes between the three groups, it was found that non-relocated participants experienced significantly fewer negative safety outcomes than the relocated within New Zealand participants, but not significantly different safety outcomes than relocated from overseas participants. It was expected that relocated from overseas participants would experience significantly greater negative safety outcomes compared to non-relocated participants, and to participants who relocated within New Zealand. While there were no significant differences between non-relocated and overseas relocated participants with regards to safety outcomes, individuals who relocated within New Zealand reported significantly more negative safety outcomes than non-relocated participants. A possible explanation for this result is that organisations may provide greater support and take the time to effectively communicate safety guidelines to employees who have relocated from overseas versus employees who have relocated within New Zealand, because of the assumption that it is more difficult to adjust to a different country than to a different city. The evidence suggests that when organisations provide a high level of support and direction with relocation to their employees, performance is less likely to be negatively affected (Kraimer et al., 2001; Shen & Hall, 2009). Future research could explore this area and investigate differences in support offered to internationally and nationally relocated employees to see whether it does explain this result. Additionally, relocated from overseas participants in this study were likely to have migrated from the United Kingdom and Ireland because that is where most migrants to Christchurch come from (Christchurch City Council, n.d.). The United Kingdom has been shown to have better established and higher safety standards than New Zealand (Independent Taskforce on Workplace Health and Safety, 2012), and New Zealand's workplace injury rates are almost six times that of the United Kingdom (Independent Taskforce on Workplace Health and Safety,

2012). While New Zealand is making steps towards improvement with the Health and Safety at Work Act (2015), workers from the United Kingdom may be accustomed to following more stringent safety procedures and this may explain why relocated from overseas participants experienced fewer negative safety outcomes than relocated within New Zealand participants.

At a simpler level, when the two relocated groups were merged for an analysis of relocated vs non-relocated participants, results showed that relocated participants reported significantly greater attentional lapses and negative safety outcomes compared to non-relocated participants. These results were consistent with research suggesting that relocated individuals were likely to experience greater difficulties in attention and more likely to experience an accident at work (Burt, 1993; Fisher, 1989; Shappell & Wiegmann, 2000). However, results obtained in the current study indicate that it is the relocated within New Zealand participants who are driving the difference between relocated and non-relocated participants. This suggests that a fine-grained analysis of different types of relocated groups was necessary and more helpful to investigate.

Limitations and Directions for Future Research

The current study has several limitations that should be considered. Firstly, the design of this study was cross-sectional and solely utilised self-report measures, which increases susceptibility to biases. Due to the cross-sectional design, the results may have been influenced by collecting predictor and outcome data at the same time, and not temporally separating the data collection. If the predictor and outcome variables had been collected at different times, it is possible the results would have been different (Levin, 2006; Podsakoff, MacKenzie, Lee & Podsakoff, 2003; Podsakoff & Organ, 1986). The use of cross-sectional, self-report surveys meant the current study was susceptible to common method variance and socially desirable responding. Common method variance can occur when the same method is used to measure

multiple constructs and can potentially inflate the relationship between variables (Conway & Lance, 2010; Podsakoff et al., 2003). To minimise the effect of common method variance in this study, the order of the predictor and outcome variables in the survey were counterbalanced (Podsakoff et al., 2003). Additionally, social desirability bias may have occurred in this study due to collecting data through self-report. Social desirability is the tendency for individuals to respond to questions in a manner they anticipate as being favourably perceived by others, rather than a truthful response (Podsakoff, MacKenzie & Podsakoff, 2012; Van de Mortel, 2008). Individuals may overstate how often they experience desirable outcomes and understate how often they experience undesirable ones (Holtgraves, 2004). In the context of this study, this could mean individuals underreporting how many attentional lapses and negative safety outcomes they experienced, as they might expect that others would judge high numbers as undesirable. To minimise the effect of socially desirable responding in this study, participants were assured at the outset of anonymity of their responses (Paulhus & Vazire, 2005).

Despite the susceptibility to biases with the use of self-report, it was appropriate to use in the current research. Self-reports allow for greater detail in data when asking participants about themselves that other methods cannot provide (Paulhus & Vazire, 2005). Especially for questions regarding feelings, perspectives and well-being (Paulhus & Vazire, 2005; Podsakoff et al., 2003). In order to capture participants' feelings of homesickness it was necessary to directly ask them. For attentional lapses and negative safety outcomes it is possible that a different and more objective measure could yield more accurate results. However, due to time, anonymity, and cost restraints objective measures could not be collected. Future research could investigate this topic using both self-report data and objective measures collected within a single or small group of organisations. Furthermore, future research could utilise a longitudinal study design to mitigate common method variance and more soundly establish the relationship between relocation, homesickness, attentional lapses, and safety outcomes. This approach

would be especially valuable to examine whether homesickness levels reduce or vary over time, and how this variability affects safety outcomes over time (Bell & Bromnick, 1998; Brewin et al., 1989; Stroebe et al., 2015; Van Vliet, 2001).

Another limitation in the current study is the possibility of other unaccounted for contextual variables that may moderate the relationship between homesickness, attentional lapses, and safety outcomes. An example of this could be participants experiencing culture shock, rather than homesickness. Culture shock is a similar phenomenon to homesickness, and involves the disorientation associated with experiencing an unfamiliar culture and way of life when living in a new country that is often accompanied by anxiety and stress (Furnham, 1997; Macionis & Gerber, 2010; Rajasekar & Renand, 2013). It is possible a phenomenon like culture shock could explain the differences in outcome variables, however it may be unlikely in the current case because relocated within New Zealand participants also experienced increased attentional lapses, and that is unlikely to be due to cultural differences. Future research should attend to such contextual variables that may moderate the relationships or explain the differences between groups examined in this study.

A final limitation present in this study is the small sample sizes for the relocated from overseas group and the relocated from within New Zealand group. The relocated from overseas group had 27 participants, the relocated within New Zealand group had 35 participants, and the non-relocated group had 100 participants. If these sample sizes of the two relocated groups had been larger, then some results may have shown as significant. The moderate magnitude of effects between the two relocated groups suggests that a greater sample size would have elicited statistically significant results (Sullivan, Gail & Feinn, 2012).

Practical Implications

The results from this study have implications that high-risk organisations should consider in order to reduce attentional lapses and negative safety outcomes. The results suggest that it is likely that homesickness is associated with attentional lapses and negative safety outcomes. Hence, organisations should seriously consider homesickness of relocated employees. Despite the possibility that there could have been something other than homesickness affecting attentional lapses and safety outcomes, there was a significant difference in these outcomes between relocated and non-relocated individuals. Therefore, it is important for organisations to focus on supportive practices for relocated employees to prevent or minimise the negative effects of relocation on employees. The research suggests that preventive and palliative measures to address homesickness are limited (Hack-Polay, 2012; Van Tilburg et al., 1996). However, Fisher (1989) proposed a stress management approach to homesickness in which an organisation could help employees accept and understand homesickness, foster acclimation in the new environment, organise social events, and implement training programmes (Van Tilburg et al., 1996). When organisations provide high levels of post-relocation support to their relocated employees, job performance is less likely to be negatively affected (Kraimer, et al., 2001; Shen & Hall, 2009). Additionally, organisations should implement relocation preparation programmes for prospective employees who will relocate. This is because when employees are supported and prepared before the move they are more likely to respond positively to the relocation, have improved mental health, and be more content with their job (Martin, 1999). Preparation should inform employees they may experience negative affective states (e.g., homesickness) upon moving, and the organisation should stress that this is a normal aspect of relocation and employees will receive support to mitigate such negative affective states. Additionally, preparation from the organisation should provide employees with clear safety guidelines to ensure standardised

practice and compliance across individuals with different occupational training and backgrounds. While the provision of support programmes for relocated employees may initially appear expensive to organisations in terms of time and money, avoiding expatriate failure would quickly make up for this because expatriate failure is extremely costly (Minter, 2008).

Conclusion

The aim of the current study was to examine whether and how homesickness was associated with attentional lapses and safety outcomes. In addition, the current study aimed to explore whether non-relocated workers and relocated workers significantly differ with regards to attentional lapses, and to safety outcomes. The findings revealed that homesickness has the potential to increase attentional lapses in high-risk employees. However, the effect of homesickness on safety outcomes is less clear until future research addresses the limitations discussed. The finding that relocated employees experience significantly more attentional lapses and negative safety outcomes than non-relocated employees has important implications for the workplace. Namely, organisations should endeavour to provide pre-move and post-move support to employees who are relocating to foster successful relocation and adaptation to the new environment.

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Appendix A: Information and Consent

The Effect of Relocation on Attention

The aim of this research is to investigate the effects that relocation may have on workers in higher-risk industries.

Who Can Participate?

You need to be employed in New Zealand to participate in this research, and in an industry that could be considered higher-risk (e.g. construction, manufacturing etc).

You can have relocated for your job (internationally or nationally) or have worked in the same area for a long time (local).

Your Participation

If you choose to participate, you will complete a 10-15 minute survey and you will have the opportunity to go in the draw to win one of nine \$100 grocery vouchers.

In the completion of this survey, there is a slight possibility of mental/emotional harm for those who find thoughts of home/relocation and feelings of their new location/home distressing. Please find information regarding services that could help you if you are distressed at the bottom of this page.

Your Rights

Participation is voluntary and you have the right to withdraw at any point. Your data and participation will be anonymous. To ensure this, no identifying information will be collected with your data. You will be asked to enter your email through a separate link should you wish to go in the prize draw and/or get a summary of results. Your email will not be linked with any responses and will be confidential.

By proceeding with the survey, you are providing consent for participation in this research and publication of results.

Other Information

Only the researcher and primary supervisor will have access to the obtained data, and this data will be securely stored on a password-protected computer at the University of Canterbury. The data will be destroyed after 5 years. A thesis is a public document and will be available through the UC Library. The results of the project may be published, but you may be assured of the complete confidentiality of data gathered.

The project is being carried out as a requirement for a Master's in Applied Psychology by Kathryn van Empel (kathryn.vanempel@pg.canterbury.ac.nz) under the supervision of Associate Professor Christopher Burt, who can be contacted at christopher.burt@canterbury.ac.nz.

This project has been reviewed and approved by the University of Canterbury Human Ethics Committee. Address any complaints to The Chair, Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz).

Lifeline New Zealand offers free phone-based counselling and support. Lifeline can be contacted at 0800 543 354

The New Zealand Association of Counsellors provides a counsellor search tool which enables you to find counselling services and is accessible at <http://www.nzac.org.nz>

Appendix B: Survey

1. What industry do you work in?
 - Construction
 - Manufacturing
 - Transportation
 - Dairy
 - Forestry
 - Gas
 - Electrical
 - Plumbing
 - Other (please specify): _____

2. How long have you been working in this industry?
3. How long have you been working in your present job?
4. Have you relocated for your present job? (A significant relocation such as between cities or internationally – not between suburbs within the same city)
 - Yes No

5. Did you relocate for your present job from another location in New Zealand, or from another country to New Zealand?
 - Relocated from another location in New Zealand
 - Relocated from another country to New Zealand (international relocation)

6. How long ago did you move from your home/previous location to your present location?

For the following questions, please indicate which answer best describes how you have felt since relocating. The questions are in relation to how you feel about living in your current location.

Items are measured on a 1-5 Likert Scale. 1 = Never, 5 = Always

7. I feel able to cope here
8. I miss home
9. I feel optimistic about life here
10. I miss having someone close to talk to
11. I feel happy here
12. I miss my family
13. I feel fulfilled here
14. I feel unloved here
15. I feel unsettled here
16. When I have problems, I contact my family
17. I feel excited about work here
18. I feel needed here

19. I feel uneasy here
20. I would like to go home more often than I do
21. I regret having moved here
22. There are people here in whom I can confide
23. I feel secure here
24. I cannot stop thinking of home
25. I feel very satisfied here
26. I have many friends here
27. I feel threatened here
28. I wake up wishing that I were home
29. I made a mistake moving here
30. I feel lonely here

In the last two months, how often have you experienced the following?

Items are measured on a 1-5 Likert Scale. 1 = Never, 5 = Nearly all the time

31. Forgot to say something you were going to mention
32. Have the feeling that you should be doing something, either now or later, but you cannot remember what it is
33. Find your mind continuing to dwell upon something that you would prefer not to think about
34. Find you can't remember what you have just done or where you have just been (e.g. when walking or driving)
35. Leave some necessary step out of a task (e.g. forgetting to put tea in the teapot)
36. Find that you can't immediately recall the name of a familiar person, place or object
37. Think you're paying attention to something when you're actually not (e.g. when reading a book or watching TV)
38. Have the "what am I here for" feeling when you find you have forgotten what it was you came to do
39. Find yourself repeating something you have already done or carrying out some unnecessary action
40. Find you've forgotten to do something you intended to do
41. Decide to do something and then find yourself side-tracked into doing something different
42. Find yourself searching for something that you've just put down or are still carrying with you
43. Forget to do something that you were going to do after dealing with an unexpected interruption
44. Find your mind wandering when you're doing something that needs your concentration
45. Make errors in which you do the right actions but with the wrong objects (e.g. unwrapping a sweet, throwing the sweet away and putting the paper in your mouth)

Please indicate the extent to which you agree or disagree that the following words/phrases describe your current job.

46.

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
Dangerous	1	2	3	4	5
Safe	1	2	3	4	5
Hazardous	1	2	3	4	5
Risky	1	2	3	4	5
Unhealthy	1	2	3	4	5
Could get hurt easily	1	2	3	4	5
Unsafe	1	2	3	4	5
Fear for health	1	2	3	4	5
Chance of death	1	2	3	4	5
Scary	1	2	3	4	5

In the last two months, how many times have you experienced each type of accident/incident (near-miss incident, minor injury, lost time injury) at work?

47. **Near miss incident**, which could have resulted in injury or damage

48. **Minor injury** requiring medical attention (e.g. first aid treatment or a visit to a doctor)

49. **Lost Time Injury** that has required time off work

50. Gender

- Male
- Female
- Gender Diverse

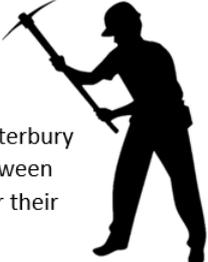
51. Age

Appendix C: Advertisement

Are you employed in New Zealand in an industry that could be considered high-risk (e.g. construction)? If you are, please take this survey on the effect of relocation for work on safety and attention. It's open to people who have relocated for work, and those who haven't. The survey takes less than 15 minutes and by participating you can go in the draw to win one of nine \$100 grocery vouchers. Your participation will be kept anonymous and no identifying information will be gathered. This research is being conducted to complete a master's dissertation in Applied Psychology at the University of Canterbury.

To participate in the survey or for more information click the link provided.

Appendix D: Flier

 <p>UC UNIVERSITY OF CANTERBURY <i>Te Whare Wānanga o Waitaha</i> CHRISTCHURCH NEW ZEALAND</p>	<p><u>Are you employed in an industry that could be considered high risk (e.g. construction)?</u></p>
	<p>If so, please take this survey (it takes about 10 minutes and your responses are anonymous). By participating you can enter the draw to win one of nine \$100 grocery vouchers. Use the QR code to take the survey or email kathryn.vanempel@pg.canterbury.ac.nz for the link.</p>
<p>This survey is a part of research conducted at the University of Canterbury and aims to identify whether there are differences in attention between relocated and non-relocated workers and what this might mean for their safety.</p>	

Appendix E: Factor Analysis Results

Table A

Initial Factor Loadings and Communalities for the Homesickness Scale

Item Code	Item	Factor 1	Factor 2	Factor 3	Factor 4	Communalities
HS1(R)	I feel able to cope here	.45	.10	.42	-.01	.68
HS2	I miss home	-.12	.82	.11	.02	.67
HS3 (R)	I feel optimistic about life here	-.08	-.10	.70	.13	.39
HS4	I miss having someone close to talk to	1.08	-.13	-.12	.17	.88
HS5 (R)	I feel happy here	.11	.23	.64	-.16	.75
HS6	I miss my family	.10	.63	.03	.44	.67
HS7 (R)	I feel fulfilled here	-.01	.02	.76	-.10	.62
HS8	I feel unloved here	.60	.06	.39	.23	.81
HS9	I feel unsettled here	.28	.15	.56	.06	.68
HS10	When I have problems, I contact my family	.06	.38	.07	.43	.38
HS11 (R)	I feel excited about work here	.00	.09	.80	-.08	.72
HS12 (R)	I feel needed here	.24	.02	.54	.00	.51
HS13	I feel uneasy here	.52	.19	.25	-.12	.68
HS14	I would like to go home more often than I do	.04	.79	-.12	.03	.59
HS15	I regret having moved here	.33	.33	.31	-.38	.83
HS16 (R)	There are people here in whom I can confide	.64	.00	.16	.06	.55
HS17 (R)	I feel secure here	.44	.11	.24	-.37	.68
HS18	I can't stop thinking about home	-.04	.90	.02	-.06	.78
HS19 (R)	I feel very satisfied here	.28	.09	.45	-.23	.60

HS20 (R)	I have many friends here	.52	-.07	.15	-.23	.46
HS21	I feel threatened here	.57	.17	-.05	-.19	.47
HS22	I wake up wishing that I were home	.19	.68	.06	-.21	.72
HS23	I made a mistake moving here	.49	.18	.21	-.30	.71
HS24	I feel lonely here	.66	.26	.06	.01	.72
Eigenvalue		11.50	2.20	1.04	0.84	
Percent of the variance (after extraction)		47.91	9.16	4.33	3.51	

Note. Principal axis factor analysis, direct oblimin rotation

Table B

Final Factor Loadings and Communalities for the HS New Environment Factor of the Homesickness Scale

Item Code	Item	Factor 1	Communalities
HS4	I miss having someone close to talk to	.80	.64
HS13	I feel uneasy here	.82	.68
HS16 (R)	There are people here in whom I can confide	.72	.53
HS17 (R)	I feel secure here	.76	.57
HS20 (R)	I have many friends here	.67	.44
HS21	I feel threatened here	.67	.45
HS23	I made a mistake moving here	.81	.66
HS24	I feel lonely here	.83	.69
Eigenvalue		4.65	
Percent of the variance (after extraction)		58.18	

Note. Principal axis factor analysis, direct oblimin rotation

Table C

Final Factor Loadings and Communalities for the HS Missing Home Factor of the Homesickness Scale

Item Code	Item	Factor 1	Communalities
HS2	I miss home	.81	.65
HS14	I would like to go home more often than I do	.72	.52
HS18	I can't stop thinking about home	.93	.87
HS22	I wake up wishing I were home	.77	.60
Eigenvalue		2.64	
Percent of the variance (after extraction)		65.90	

Note. Principal axis factor analysis, direct oblimin rotation

Table D

Final Factor Loadings and Communalities for the HS Feeling Unsettled Factor of the Homesickness Scale

Item Code	Item	Factor 1	Communalities
HS3 (R)	I feel optimistic about life here	.52	.27
HS5 (R)	I feel happy here	.85	.73
HS7 (R)	I feel fulfilled here	.76	.58
HS9	I feel unsettled here	.80	.64
HS11 (R)	I feel excited about work here	.87	.75
HS12 (R)	I feel needed here	.72	.52
HS19 (R)	I feel very satisfied here	.72	.52
Eigenvalue		4.01	
Percent of the variance (after extraction)		57.30	

Note. Principal axis factor analysis, direct oblimin rotation

Table E

Initial Factor Loadings and Communalities for the Attentional Lapses Scale

Item Code	Item	Factor 1	Factor 2	Communalities
Lapse1	Forgot to say something you were going to mention	.91	.18	.62
Lapse2	Have the feeling that you should be doing something, either now or later, but you cannot remember what it is	.63	-.16	.58
Lapse3	Find your mind continuing to dwell upon something that you would prefer not to think about	.53	-.16	.44
Lapse4	Find you can't remember what you have just done or where you have just been (e.g. when walking or driving)	-.13	-.96	.75
Lapse5	Leave some necessary step out of a task (e.g. forgetting to put tea in the teapot)	.03	-.78	.64
Lapse6	Find that you can't immediately recall the name of a familiar person, place or object	.17	-.56	.48
Lapse7	Think you're paying attention to something when you're actually not (e.g. when reading a book or watching TV)	.31	-.51	.59
Lapse8	Have the "what am I here for" feeling when you find you have forgotten what it was you came to do	.30	-.48	.53
Lapse9	Find yourself repeating something you have already done or carrying out some unnecessary action	.25	-.54	.55

Lapse10	Find you've forgotten to do something you intended to do	.61	-.14	.52
Lapse11	Decide to do something and then find yourself side-tracked into doing something different	.84	.07	.62
Lapse12	Find yourself searching for something that you've just put down or are still carrying with you	.56	-.13	.44
Lapse13	Forget to do something that you were going to do after dealing with an unexpected interruption	.66	-.16	.61
Lapse14	Find your mind wandering when you're doing something that needs your concentration	.57	-.14	.46
Lapse15	Make errors in which you do the right actions but with the wrong objects (e.g. unwrapping a sweet, throwing the sweet away and putting the paper in your mouth)	.31	-.44	.49
Eigenvalue		7.67	.66	
Percent of the variance (after extraction)		51.15	4.38	

Note. Principal axis factor analysis, direct oblimin rotation

Table F

Final Factor Loadings and Communalities for Attentional Lapses Scale

Item Code	Item	Factor 1	Communalities
Lapse1	Forgot to say something you were going to mention	.76	.58
Lapse2	Have the feeling that you should be doing something, either now or later, but you cannot remember what it is	.77	.59
Lapse3	Find your mind continuing to dwell upon something that you would prefer not to think about	.70	.45
Lapse10	Find you've forgotten to do something you intended to do	.71	.50
Lapse11	Decide to do something and then find yourself side-tracked into doing something different	.78	.61
Lapse12	Find yourself searching for something that you've just put down or are still carrying with you	.65	.43
Lapse13	Forget to do something that you were going to do after dealing with an unexpected interruption	.78	.60
Lapse14	Find your mind wandering when you're doing something that needs your concentration	.69	.47
Eigenvalue		4.23	
Percent of the variance (after extraction)		52.88	

Note. Principal axis factor analysis, direct oblimin rotation

Table G

Initial Factor Loadings and Communalities for the Perceived Job Risk Scale

Item Code	Item	Factor 1	Factor 2	Communalities
Risk1	Dangerous	.80	.04	.68
Risk2 (R)	Safe	-.05	.53	.25
Risk3	Hazardous	.84	-.18	.58
Risk4	Risky	.74	.05	.59
Risk5	Unhealthy	-.03	.67	.43
Risk6	Could get hurt easily	.69	.17	.62
Risk7	Unsafe	.19	.63	.55
Risk8	Fear for health	.02	.82	.69
Risk9	Chance of death	.54	.20	.44
Risk10	Scary	.28	.41	.37
Eigenvalue		4.24	.97	
Percent of the variance (after extraction)		42.40	9.67	

Note. Principal axis factor analysis, direct oblimin rotation

Table H

Final Factor Loadings and Communalities for the Perceived Job Risk Scale

Item Code	Item	Factor 1	Communalities
Risk1	Dangerous	.82	.68
Risk3	Hazardous	.73	.53
Risk4	Risky	.77	.59
Risk6	Could get hurt easily	.79	.62
Risk9	Chance of death	.63	.40
Eigenvalue		2.82	
Percent of the variance (after extraction)		56.44	

Note. Principal axis factor analysis, direct oblimin rotation

Appendix F: Post-Hoc Results

Table I

Post-hoc Results of Attentional Lapses, Near Misses, Minor Injuries, and Lost Time Injuries between Non-Relocated, Relocated Within NZ, and Relocated from Overseas Groups.

	Group	Mean Difference (I-J)	
		1	2
Attentional Lapses	1. Non-Relocated	--	--
	2. Relocated Within NZ	-.62**	--
	3. Relocated from Overseas	-.65**	-.03
Near Miss	1. Non-Relocated	--	--
	2. Relocated Within NZ	-2.95*	--
	3. Relocated from Overseas	-3.02	-.07
Minor Injury	1. Non-Relocated	--	--
	2. Relocated Within NZ	-1.70**	--
	3. Relocated from Overseas	-1.13	.57
Lost Time Injury	1. Non-Relocated	--	--
	2. Relocated Within NZ	-.82**	--
	3. Relocated from Overseas	-.33	.49

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