

**Examining isolation and commitment as mechanisms by which remote  
work influences subsequent individual and organisational outcomes**

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### **Abstract**

As the prevalence of remote work rises, so too does the uncertainty surrounding associated outcomes. The current research examined factors associated with remote work and how these related to individual and organisational outcomes. To further understand these relationships, the mediating influence of social and professional isolation and organisational commitment was assessed. Sixty-seven remote workers completed online surveys at three time points separated by two-week intervals. Social and professional isolation mediated relationships between need for relatedness and remote work reason, and the outcome variables of organisational commitment, job satisfaction, and advancement opportunities. Organisational commitment mediated relationships between physical isolation, management support, and remote work reason, and all outcomes variables (social and professional isolation, job satisfaction, remote work effectiveness, advancement opportunities, turnover intent). Results highlight the significance of social and professional isolation and organisational commitment in determining outcomes, and encourage remote working individuals and organisations to consider these important areas of focus.

## Introduction

The way in which people work is changing. Employees no longer have to be in the same physical space, or even be working in the same time zone to collaborate effectively (Van Yperen, Rietzschel, & De Jonge, 2014). The capacity to achieve this has been facilitated by the rapid adoption and advancement of technology. Access to this enabling infrastructure allows real-time contact between organisational members to occur seamlessly, encouraging workers to be more flexible in, for example, the location of their work. While the ability to suit work environments to individual needs is advantageous, transitioning from traditional to flexible work arrangements can require considerable adjustments by both employees and organisations.

A popular aspect of flexible work is remote work, also known as telework or virtual work. Remote work can be defined as “an alternative work arrangement in which employees perform tasks elsewhere that are normally done in a primary or central workplace, for at least some portion of their work schedule” (Gajendran & Harrison, 2007, p. 1525). Normally this arrangement does not alter employee tasks and responsibilities, however, it changes the work environment and ways in which employees engage with the organisation and interact with one another (Golden, Veiga, & Dino, 2008). Given these changes, it is important to investigate how individuals and organisations are affected, and how any potential negative consequences could be prevented (Gajendran & Harrison, 2007).

A large meta-analysis indicated that remote work mainly had beneficial effects on job satisfaction, work-life balance, and job performance, and generally had no detrimental effects on the quality of work relationships or perceived career opportunities (Gajendran & Harrison, 2007). Yet, a multitude of conflicting qualitative and quantitative evidence (Bailey & Kurland, 2002; Gajendran & Harrison, 2007), leaves the topic unresolved. Employees regularly cite a fear of becoming isolated through remote work (Cooper & Kurland, 2002) and with remote work being highly variable, there is added complexity in determining a clear-cut approach for

conducting work and predicting subsequent outcomes (Bartel, Wrzesniewski, & Wiesenfeld, 2012). The adoption of remote work is set to continue, making research in the area highly relevant and the resulting knowledge necessary for ensuring beneficial outcomes result (Gajendran & Harrison, 2007). Additionally, technology advancements allow employee interaction similar to that experienced face to face, while being physically distanced from the organisation. This may contribute to remote workers' perceptions of social presence and organisational identity – issues remote workers have faced in the past (Fonner & Roloff, 2012). With the nature of workplace interactions changing, past research may become less relevant. By updating knowledge to reflect advanced capabilities, research can better support current trends and needs in remote work (Fonner & Roloff, 2012).

The present study will investigate aspects of remote and their relationship with various outcomes for remote workers and their organisations. Past research has highlighted physical isolation as an important factor in determining outcomes of remote work, however, the current research will also explore the influence of other potentially important aspects. In addition, two intervening variables relevant to individuals and organisations will be examined through two mediation models. The major contribution of this research will be to determine which aspects of remote work lead to which outcomes, and how organisations can be successful in implementing remote work arrangements. The resulting knowledge will contribute to research in the field, benefit organisations and employees engaging in remote work, provide useful information surrounding potential threats or outcomes, and allow further advancements to be made in the contemporary work environment.

## **Remote Work**

**Advantages of remote work.** Often cited are the many ways in which individuals, organisations, and society can benefit from the adoption of remote work. For example,

individuals can enjoy increased autonomy and responsibility, work flexible hours, improve their time management, and save time and travel expenses (Harpaz, 2002). With increased flexibility and opportunity for work-life balance, these individuals can experience increased work effectiveness and improved quality of work and life (Gajendran & Harrison, 2007). While remote work may be particularly appealing for parents and caregivers (Shockley & Allen, 2007), others are just as likely to benefit. The ability to tailor work requirements to employee physical, personal, or family needs creates a number of opportunities for those currently limited or constrained by standard work arrangements.

By introducing remote work, organisations can increase productivity, reduce expenses through lower real estate costs, decrease absences, and gain a more positive public image (Harpaz, 2002). In 2003, the New Zealand Business Council for Sustainable Development calculated that organisations comprising of 100 or more staff could potentially save \$100,000 NZD per annum if 20% of their employees worked from home 2.5 days per week (New Zealand Business Council for Sustainable Development, 2003). This would be due to space savings, increased productivity, staff retention and reducing electricity consumption by at least 10% (Rasmussen & Corbett, 2008). Further, there are associated environmental and societal benefits. With less office space required, and the pollution and congestion involved with commuting reduced, organisations can have a wider positive influence (Harpaz, 2002). In New Zealand, if 5% of Auckland drivers used their cars two fewer days per week by working remotely, it could reduce the amount of greenhouse gasses and pollutants entering the atmosphere by 29,700 tonnes (New Zealand Business Council for Sustainable Development, 2003). These benefits are supported internationally (Berube Kowalski & Swanson, 2005), highlighting the power remote work has to create positive change. New Zealand organisations currently have a relatively low number of remote workers, with employees rarely working predominantly or solely from home (Statistics New Zealand, 2014). Although slightly dated,

the above predictions express strong financial, societal, and environmental gains could result from an increased, yet still limited, uptake, suggesting New Zealand could benefit tremendously.

In addition, organisations and employees are embracing remote work as a source of competitive advantage (Gamal Aboelmaged & Mohamed El Subbaugh, 2012). In traditional work environments, talent is confined by geography, whereas with remote work, the pool of talented recruits is exponential and global (Offstein, Morwick, & Koskinen, 2010). For those who may have previously had difficulty commuting and working in a traditional office setting, such as parents and workers with special needs, this is especially beneficial (Offstein et al., 2010). A further advantage of remote work, therefore, is its contribution to creating a workplace with equal opportunities and reducing marginalisation (Rasmussen & Corbett, 2008). This expands the talent pool, allowing organisations to increase their competitive advantage.

**Challenges of remote work.** Based on the evidence presented, it is not difficult to recognise why remote work is appealing. However, there are associated challenges that need appropriate recognition so that remote work can become more widespread and successful. These key obstacles may limit the degree to which employees and organisations adopt remote work (Cooper & Kurland, 2002) and the extent to which benefits are achieved. Individuals can experience impaired feelings of belonging, become isolated, struggle to separate work from home, suffer relational and informational impoverishment, lack career advancement, and face ambiguity in tasks and roles (Harpaz, 2002; Van Yperen et al., 2014). Although it has been suggested that remote work offers employees the opportunity to be more productive and satisfied (Gajendran & Harrison, 2007), these benefits may not be felt by those who feel isolated or unsupported (Golden et al., 2008). The above negative feelings may harm other

outcomes such as organisational commitment, and increase the likelihood of turnover (Bartel et al., 2012).

Failed implementation of remote work and application of arrangements that have not been designed or evaluated appropriately is also common (Akyeampong, 2007). More organisations are offering remote work without having the formal processes and procedures in place, leading to confusion and subsequent negative outcomes (Wheatley, 2012). Organisations must pay due attention to how they implement changes in work arrangements as like with any change, there is the possibility of failure. Remote work is relatively new to many organisations. If others witness failure in arrangements taken on by colleagues, they are expected to be less likely to work remotely themselves, eliminating the chance for individuals and organisations to experience the advantages highlighted above. While much research has previously been undertaken on the advantages and disadvantages, there is a lack of clear consensus in findings, leaving individuals and organisations unsure as to how to best implement remote work arrangements. While there is much to gain from remote work, there are also challenges that need to be recognised and managed. This study will investigate factors associated with remote work, and different outcomes associated with remote work. First, the outcomes will be discussed, and in the next section, the role of various aspects of remote work in predicting these outcomes will be outlined.

### **Outcomes of Remote Work**

A variety of outcomes may result from remote work, each with arguments as to how they may positively or negatively influence the individuals and organisations involved. In particular, the current study will focus on the outcomes of social and professional isolation, organisational commitment, job satisfaction, remote work effectiveness, advancement opportunities, and turnover intent. Social and professional isolation and organisational

commitment are suggested as important links between the aspects of remote work and the outcome variables, and will be introduced as mediators.

**Social and professional isolation.** While it has been argued that if individuals do not work remotely frequently they will not be isolated, isolation has been commonly cited as a disadvantage and a reason to limit remote work, indicating it is a real fear for many individuals (Cooper & Kurland, 2002). Isolation can manifest itself socially or professionally (Tomaskovic-Devey & Risman, 1993). Fundamentally, it is the feeling of being “cut off from others” (Diekema, 1992, p. 484) and “occurs when the desire for support, understanding, and other social and emotional aspects of interaction are not met” (Taha & Caldwell, 1993, p. 277). These feelings can result through an impaired ability to influence other people and events in the workplace, the inability to talk to others and share achievements, and a lack of inclusion in organisational rituals and ceremonies (e.g. lunch with co-workers) (Harpaz, 2002; Wiesenfeld, Raghuram, & Garud, 2001). Golden et al. (2008) define these feelings as social and professional isolation, a belief that one lacks sufficient connection to critical networks of influence and social contact. In previous research, employees commonly express the challenge of being separated from social networks in the organisation, missing out on informal interaction with colleagues, and feeling like they cannot easily advance their career while working remotely (Harpaz, 2002; Kirkman, Rosen, Gibson, Tesluk, & McPherson, 2002).

Social interaction is a central component in enhancing the connectedness and trust necessary for feelings of inclusion (Golden et al., 2008). While informal interactions such as hallway meetings are often taken for granted in traditional work environments, they are argued to contribute significantly to organisational functioning. Being physically separated from others and lacking in social interaction can exacerbate feelings of social and professional isolation and have harmful effects on performance and wellbeing. Without the ability to compare oneself to others in the organisation, remote workers may find it difficult to determine

how they should behave and react to work events (Vega, 2003). Additionally, when tasks are complex and ambiguous, the inability to communicate, gain support, and learn from others may have a negative impact (Golden et al., 2008). No organisation wants employees carrying out tasks with limited insights, information, and feedback caused by a lack of interaction with other organisational members. Thus, fears of isolation should not be dismissed and every effort should be made to diminish any impact, especially in the case of remote workers.

Based on the above, social and professional isolation is expected to influence important individual and organisational outcomes. Further to being considered an outcome variable of remote work, the current study argues that a perception of social and professional isolation could constitute a link between the different aspects of remote work and outcomes of remote work by mediating the relationships (presented in Model 1). It is plausible that an employee who feels “out of the loop” also feels dissatisfied and less effective in their role, overlooked for promotion, and a lowered sense of organisational commitment and desire to remain. Social and professional isolation has not previously been investigated as providing a link between aspects of remote work and outcomes of remote work, making the current research unique. If social and professional isolation does, in fact, mediate the relationship, the results would be valuable in providing suggestions to organisations and employees seeking positive outcomes, informing them of the importance in prioritising social and professional inclusiveness whilst engaging in remote work.

**Organisational commitment.** Organisational commitment can be regarded as highly important to employee and organisational functioning and worthy of investigation in any context (Balfour & Wechsler, 1996). Experiences at work, the impact of organisational arrangements, and characteristics of the job itself have all been found to influence the level of commitment experienced by an individual (Balfour & Wechsler, 1996). Broadly, organisational commitment can be defined as the psychological attachment an individual has

to an organisation (Kacmar, Carlson, & Brymer, 1999). An important basis of this attachment is the social relationships established within the work group and the perception that members of the organisation care about others wellbeing (O'Reilly & Chatman, 1986). Working remotely can create challenges for employees seeking to build attachment to the organisation and its members, leaving them feeling less part of a team (Bartel et al., 2012). It is important for employees to have opportunities to connect socially with other organisational members as perceptions of belonging, and consequently, organisational commitment can have an integral relationship with engagement, productivity, and performance (Belle, Burley, & Long, 2015).

Further, organisational commitment can include an individual's feelings of identification with the organisation's mission, purpose, and achievements. Balfour and Wechsler (1996) suggest individuals cannot identify strongly with an organisation if they have little contribution in decision-making or if their work isolates them. Consequently, remote workers may not feel connected to the organisation and struggle to establish a high level of identification due to the time they are spending away from the organisation and the isolation which may result (Bartel et al., 2012). Organisational commitment can be enhanced when an organisation recognises the contributions of employees, shows concern, and provides support and encouragement (Balfour & Wechsler, 1996). For employees working outside of the central organisation office space, this can often be difficult. Hence, organisations may need to actively encourage and acknowledge remote workers involvement and participation in tasks (Barsness, Diekmann, & Seidel, 2005). In contrast, providing employees with the opportunity to work remotely may symbolise the organisation's willingness to alter the work environment to fit employee needs, thereby increasing organisational commitment (Gajendran & Harrison, 2007). However, from the above, it can be gathered that remote workers have a greater risk of developing reduced feelings of commitment towards their organisation. Other organisational members will become less accessible (Napier & Ferris, 1993), identification with the

organisation will be more difficult to develop (Wiesenfeld et al., 2001), and members will have fewer casual interactions and feel less psychological inclusion (Allen, Renn, & Griffeth, 2003). Based on this and the relationships organisational commitment has with outcomes such as job satisfaction, intentions to leave, and job involvement (Balfour & Wechsler, 1996), it is possible that organisations are reluctant to implement and encourage remote work.

Further to being considered an outcome variable of remote work, the current study argues that organisational commitment could constitute a link between different aspects of remote work and outcomes of remote work by mediating the relationships (presented in Model 2). As with social and professional isolation, organisational commitment has not previously been investigated as a mediator with the variables of interest, making the current research unique. Again, if mediation is shown, the results would be valuable in providing suggestions to organisations and employees seeking positive outcomes whilst engaging in remote work.

As part of the mediation model, social and professional isolation is expected to be negatively related to subsequent organisational commitment, and organisational commitment negatively related to subsequent social and professional isolation.

**Job satisfaction.** Job satisfaction is a positive emotional state based on an employee's subjective experience of their job (Locke, 1976), and is comprised of employee perceptions of task activities, achievement, rewards, working conditions, and management practices (Bentley et al., 2016). Some researchers argue that for employees who value the ability to work away from the central office location, working remotely could increase job satisfaction (Gajendran & Harrison, 2007). Contributing to this satisfaction is increased autonomy, the ability to balance family, home, and work demands, no commute time, fewer distractions, and less stress (Wheatley, 2012). Nevertheless, workplace social interaction including friendship, rich communication, feedback, and information sharing, are important determinants of job satisfaction (Sims, Szilagyi, & Keller, 1976). With physical separation being a major challenge

for remote workers (Berry, 2011), reduced job satisfaction is expected to result from limited social interactions with managers and colleagues, and a perception of isolation and loneliness (Davis & Cates, 2013).

As part of the mediation model, social and professional isolation is expected to be negatively related to subsequent job satisfaction, and organisational commitment positively related to subsequent job satisfaction.

**Remote work effectiveness.** Improved productivity is one of the most widely advertised benefits associated with remote work (McCloskey & Igarria, 2003). This is argued possible due to minimised disruptions while working, increased work hours, flexible work schedules, and the opportunity to tailor individual work environments for maximum work effectiveness (Bailey & Kurland, 2002; Gajendran & Harrison, 2007). On the other hand, without the usual structure and guidance provided by managers and colleagues in the workplace, remote workers may receive less feedback and support, and consequently find it more difficult to complete tasks effectively (Bentley et al., 2016). Further, if remote workers are experiencing reduced organisational commitment and increased isolation, they are unlikely to display increased work effectiveness or feel they are working productively (Gajendran & Harrison, 2007). Thus, while some workers may experience increased work effectiveness when working remotely, others may not.

As part of the mediation model, social and professional isolation is expected to be negatively related to subsequent remote work effectiveness, and organisational commitment positively related to subsequent remote work effectiveness.

**Advancement opportunities.** A potential negative effect often causing concern in remote workers is a lack of advancement opportunities. Remote workers may not always be around the workplace, receiving support and job training, and communicating face-to-face with their managers and colleagues, making them more likely to be overlooked during opportunities

for promotion and career advancement (Bloom, Liang, Roberts, & Ying, 2014; Gamal Aboelmaged & Mohamed El Subbaugh, 2012). Remote workers may also feel others view them as less committed and loyal to the organisation for prioritising their personal life over professional obligations, regardless of whether this is accurate (McCloskey & Igarria, 2003). Cooper and Kurland (2002) suggest that interaction is inextricably linked to employee development activities that are vital for organisations to effectively adapt and compete in turbulent environments. These activities include interpersonal networking with colleagues, informal learning enhancing work-related skills and information distribution, and mentoring from colleagues and managers. Working away from the organisational office space, employees may miss out on these informal interactions and development activities, leaving both the employee and organisation at a disadvantage (Piskurich, 1996).

In a study by Bloom et al. (2014) these concerns were confirmed. Controlling for increases in performance when working remotely, rates of promotion dropped approximately 50%. Results were explained by employees being “out of sight, out of mind”, with managers unable to notice their improved performance. However, it is possible that the employees who were working remotely lacked the interpersonal skills needed to succeed in managerial jobs, or did not want to be promoted if it meant returning to the office (Bloom et al., 2014). With numerous mixed findings, the need for further research is indicated (Olson, 1985).

As part of the mediation model, social and professional isolation is expected to be negatively related to subsequent advancement opportunities, and organisational commitment positively related to subsequent advancement opportunities.

**Turnover intent.** Turnover intent details an employee’s interest in seeking alternative employment and leaving the organisation (Balfour & Wechsler, 1996). In providing opportunities for remote work, organisations can gain a competitive edge and reduce turnover intent by attracting and retaining talent who might have quit if these arrangements were not

available (Vega, 2003). The provision of remote work also visibly demonstrates the organisation's trust and support for employee wellbeing, and may generate greater feelings of commitment (Rhoades & Eisenberger, 2002). When individuals identify with an organisation, find the employment relationship rewarding, and have strong social attachments, they are likely to want to remain in the organisation, reducing their turnover intent. As theorised, employee turnover intent is largely influenced by organisational commitment, which as described, is suggested to be reduced by remote work, thus increasing turnover intent.

As part of the mediation model, social and professional isolation is expected to be positively related to subsequent turnover intent, and organisational commitment negatively related to subsequent turnover intent.

### **Aspects of Remote Work**

It is clear from the above that while valid positive and negative arguments have been presented, there are no consistently established associations specifying how remote work influences the various outcomes. In seeking to uncover why contrasting outcomes may previously have been seen when investigating these arrangements, the current study identifies a number of factors associated with remote work. These include physical isolation, need for relatedness, management support, and remote work reason, and are regarded as predictor variables.

**Physical isolation.** Remote workers include those working in settings where they are not co-located with fellow organisations members, whether that be at home, a café, or shared working space, as opposed to the 'regular' workplace (Bartel et al., 2012). Significant to remote work outcomes is the amount of time an employee spends working remotely - their physical isolation from the organisation and their colleagues. Physical isolation has been described as the main challenge facing remote workers, implying a reduction in the level of direct contact

with others as well as detachment from the organisation itself (McCloskey & Igarria, 2003). Conventional wisdom suggests that for these employees, the nature of their interpersonal interactions with colleagues would be altered, potentially endangering their perceived value and influence in the workplace (Bartel et al., 2012).

Results of previous research have pointed in different directions. Davis and Cates (2013) found a negative correlation between workplace isolation and employee engagement, suggesting that without experiencing human interaction, workers may become disengaged. Supporting this, lack of social interaction and feelings of loneliness were cited as main reasons why more than 50% of workers requested to return to the office following a Chinese experimental study (Bloom et al., 2014). This was despite a 13% performance increase when working remotely, as well as the time and financial savings employees experienced while not having to commute. A hindered ability to forge relationships with colleagues and establish respect among peers has also been linked to a reduced sense of organisational identification among those physically isolated (Bartel et al., 2012). The amount of time an employee spends away from the office is, therefore, regarded as highly important.

Greater levels of physical isolation are expected to be related to subsequent increased levels of social and professional isolation. If employees are physically isolated and lacking in interaction, it is understandable that they may feel socially and professionally isolated. The negative emotions associated with this isolation are expected to flow on, making other positive emotions difficult to develop. This is expected to later be associated with a detriment to outcomes of organisational commitment, job satisfaction, advancement opportunities, remote work effectiveness, and turnover intent.

*Hypothesis 1: Social and professional isolation (time 2) mediates the relationship between physical isolation (time 1) and all outcome variables (time 3)*

Additionally, greater levels of physical isolation are expected to be related to subsequent decreased levels of organisational commitment. Employees who are physically isolated from the organisation are unlikely to be able to develop a sense of identification and belonging with the organisation. As research has shown organisational commitment to be significant in determining other outcomes, lowered commitment is expected to later be associated with a detriment to outcomes of social and professional isolation, job satisfaction, advancement opportunities, remote work effectiveness, and turnover intent.

*Hypothesis 2: Organisational commitment (time 2) mediates the relationship between physical isolation (time 1) and all outcome variables (time 3)*

Overall however, Gajendran and Harrison (2007) found remote work had beneficial effects on proximal and distal work outcomes such as work-family conflict, job autonomy, job satisfaction, performance, turnover intent, and role stress. These results further emphasise the presence of conflicting findings and suggest factors other than physical isolation may be influencing the outcome variables. The current study expands on this by identifying a number of other factors associated with remote work.

**Need for relatedness.** Need for relatedness can be understood as an inherent striving and desire to feel socially connected in the workplace and is based on a wish to feel connected to others and be a member of a group (Baumeister & Leary, 1995; Van Yperen et al., 2014). Remote work entails being away from colleagues and the organisational space for varying periods of time and may result in individuals feeling disconnected from others and consequently, socially and professionally isolated (Bartel et al., 2012). Additionally,

disconnection and a reduced sense of belonging can lead to decreased feelings of ownership and commitment, resulting in outcomes such as increased turnover intentions (Golden et al., 2008). While it can be unquestionably difficult to establish feelings of social connection when physically separated, social and professional isolation is not an inherent outcome of remote work. Some individuals can feel isolated and out of the loop despite working side by side with colleagues (Smith, 1998), while others are able to sustain feelings of connectedness even when regularly absent from the workplace (Diekema, 1992). In general, however, remote workers who have a greater need for relatedness at work are expected to experience greater social and professional isolation, followed by negative outcomes (Baumeister & Leary, 1995).

Greater levels of need for relatedness in remote workers are expected to be related to subsequent increased levels of social and professional isolation. Remote workers with greater need for interaction are likely to experience greater social and professional isolation when this need is not fulfilled. The negative emotions associated with this isolation are expected to flow on, making other positive emotions difficult to develop. This is expected to be later associated with a detriment to outcomes of organisational commitment, job satisfaction, advancement opportunities, remote work effectiveness, and turnover intent.

*Hypothesis 3: Social and professional isolation (time 2) mediates the relationship between need for relatedness (time 1) and all outcome variables (time 3)*

Additionally, greater levels of need for relatedness in remote workers are expected to be related to subsequent decreased levels of organisational commitment. Deprived of frequent interaction with the organisation, employees high in need for relatedness may struggle to form a high sense of organisational commitment. As research has shown organisational commitment to be significant in determining other outcomes, lowered commitment is expected to later be

associated with a detriment to outcomes of social and professional isolation, job satisfaction, advancement opportunities, remote work effectiveness, and turnover intent.

*Hypothesis 4: Organisational commitment (time 2) mediates the relationship between need for relatedness (time 1) and all outcome variables (time 3)*

**Management support.** While need for relatedness is a relatively fixed individual characteristic, management support can be manipulated by organisations. Perceived management support refers to employee's views concerning the degree to which their managers value their contributions and care about their wellbeing (Kottke & Sharafinski, 1988). Support from managers is highly relevant across a variety of areas for its influence on perceived organisational support and consequent outcomes of increased job satisfaction, positive mood, and reduced strains, for example (Rhoades & Eisenberger, 2002). Support also indicates the organisation is one the employee should be proud to identify with and belong to, promoting organisational commitment and associated outcomes (Balfour & Wechsler, 1996; Carnevale & Wechsler, 1992).

For remote workers in an inherently isolating physical setting, promoting a supportive environment is even more crucial (Carnevale & Wechsler, 1992). Employees cannot be expected to work effectively when distanced from the organisation if they are not supported (Scholefield, 2008). Without the opportunity for informal conversations, managers need to make a concentrated effort (often electronically) to remind employees they have not been forgotten. Remote work success relies on a manager's ability to recognise employee work efficiency based solely on output measures, rather than directly seeing the employee at work (Rasmussen & Corbett, 2008). Support communicates to employees that the time and effort they contribute to the organisation is appreciated, thus strengthening organisational

commitment (Balfour & Wechsler, 1996). It is reassuring for employees who may not always be seen to know that the work they do is not ignored or taken for granted. Managers should also provide remote workers with coaching and mentoring similar to that which they would otherwise receive (Cooper & Kurland, 2002).

Often managers find the adjustment in communication and support difficult and unfamiliar. Previous research has shown that generally, managers are especially uneasy with the adoption of remote work as a contemporary working practice, and have been considered the most significant obstacle to the introduction of remote work (Lupton & Haynes, 2000). Researchers argue that commonly, deficient support stems from a lack of understanding from both managers and employees regarding the complexities and challenges associated with remote work (Bloom et al., 2014), as well as a lack of trust in employees to successfully work remotely (Scholefield, 2008). Without appropriate support, employees are likely to encounter increased isolation, reducing feelings of organisational commitment and lowered job satisfaction (Willis, 2016). On the other hand, if effective, support and availability from managers can limit perceived isolation by reinforcing a positive relationship between the employer and organisation. Management support can, therefore, be regarded as vital for successful implementation of remote work (Watad & DiSanzo, 2000).

Greater levels of management support are expected to be related to subsequent decreased levels of social and professional isolation. When remote workers feel they are connected to their managers, they are likely to feel less isolated. The positive emotions associated with this inclusion and belonging are expected to flow on, developing other positive emotions. This is expected to be later associated with a benefit to outcomes of organisational commitment, job satisfaction, advancement opportunities, remote work effectiveness, and turnover intent.

*Hypothesis 5: Social and professional isolation (time 2) mediates the relationship between management support (general) (time 1) and all outcome variables (time 3)*

Additionally, greater levels of management support are expected to be related to subsequent increased levels of organisational commitment. Managers provide a link between remote workers and the organisation. If employees feel supported by their managers, they are likely to also feel supported by their organisation, fostering a sense of organisational commitment. As research has shown organisational commitment to be significant in determining other outcomes, increased commitment is expected to later be associated with a positive influence on outcomes of social and professional isolation, job satisfaction, advancement opportunities, remote work effectiveness, and turnover intent.

*Hypothesis 6: Organisational commitment (time 2) mediates the relationship between management support (general) (time 1) and all outcome variables (time 3)*

**Remote work reason.** The reason why employees work remotely is highly relevant, yet under-researched. For example, some employees may be required to work remotely at times due to a lack of organisational space, whereas others may choose to for personal preference or family reasons. A difference in remote work reason may determine how often one works remotely (Konradt, Hertel, & Schmook, 2003), have a significant impact on how an individual experiences remote work, and influence their results on the outcome variables (Gajendran & Harrison, 2007). Voluntary remote work supports perceived autonomy, empowers employees by giving them choice, and may have a more positive influence on the outcome variables (Gajendran & Harrison, 2007). If an employee wants to work remotely, they are likely to feel more satisfied and thankful the organisation has provided them with the opportunity. Where

remote work is more mandatory, and necessary for organisations to implement due to space restrictions, for example, a lack of choice may result in a more detrimental influence on the outcome variables (Gajendran & Harrison, 2007). It, therefore, appears to be essential that an employee's reason for working remotely is taken into account.

In the current study, working remotely for personal preference is considered the most voluntary reason and is thus expected to be associated with the least negative impact on social and professional isolation. If employees choose to work remotely, they are thought to have done so because they believe it will suit their needs and make them more productive members of the organisation. This is in comparison to working remotely for work requirement, which is expected to have the most negative effect on social and professional isolation, as employees may not be suited to, willing, or prepared for remote work. Working remotely for family reasons is expected to fall somewhere in between. While different reasons are thought to differ in the severity of their influence, all are expected to produce a negative effect on social and professional isolation. The negative emotions associated with this isolation are expected to flow on, making other positive emotions difficult to develop. This is expected to be later associated with a detriment to outcomes of organisational commitment, job satisfaction, advancement opportunities, remote work effectiveness, and turnover intent.

*Hypothesis 7: Social and professional isolation (time 2) mediates the relationship between remote work reason (time 1) and all outcome variables (time 3)*

Additionally, working remotely for personal preference is expected to be associated with the least negative impact on organisational commitment. Employees are likely to have come to an arrangement with the organisation where both parties' needs are fulfilled. This is in comparison to working remotely for work requirement, which is expected to have the most

negative effect on organisational commitment. Employees may not wish to be involved in remote work, and may feel the organisation does not care about their needs, thereby reducing organisational commitment. Again, working remotely for family reasons is expected to fall somewhere in between. While different reasons are thought to differ in the severity of their influence, all are expected to produce a negative effect on organisational commitment. As research has shown organisational commitment to be significant in determining other outcomes, lowered commitment is expected to later be associated with a detriment to outcomes of social and professional isolation, job satisfaction, advancement opportunities, remote work effectiveness, and turnover intent.

*Hypothesis 8: Organisational commitment (time 2) mediates the relationship between remote work reason (time 1) and all outcome variables (time 3)*

### **Control Variables**

A number of additional variables may influence how individuals respond to the variables of interest in the study and will, therefore, be controlled for in the analyses.

**Age.** Workers who are young (often low tenured and in entry level positions) may be eager to learn from more experienced colleagues and less inclined to work remotely due to fears it could reduce opportunities for career advancement. They may also be more sensitive to the effects of being isolated. Older workers (usually longer tenure and in higher level positions) have had time to earn the trust of other organisational members. With their expertise and experience, they may thrive on the self-management that remote work provides and be less sensitive to the impact of isolation (Van Yperen et al., 2014). However, the significance of technology to remote work success may produce conflicting effects. Younger workers may be more comfortable working remotely with a high reliance on technology than older workers

accustomed to a traditional work environment, leaving older employees feeling more isolated when working remotely (Van Yperen et al., 2014).

**Gender.** Gender provides interesting information in relation to a number of variables in this study (Bartel et al., 2012). For example, males may feel remote work for family reasons is less legitimate for them and may feel less supported compared to females (Olson & Primps, 1984; Sullivan & Lewis, 2001). Females may have a higher need for relatedness and be more likely to feel the effects of social and professional isolation when physically isolated. Females may also be less inclined to work remotely due to a perception of already facing difficulty gaining advancement opportunities.

**Tenure.** The decision to remain a member of the organisation implies commitment and acceptance of organisational purpose. Individuals with high tenure are expected to have a greater stake in the organisation's goals and mission (Mowday, Porter, & Steers, 1982), to have increased feelings of cohesiveness and affiliation (Balfour & Wechsler, 1996), and to have established themselves within the organisation's social and informational networks. Long tenured employees may feel they contribute significantly to the identity of the organisation and vice versa, increasing the cost of leaving and feelings of commitment (Meyer & Allen, 1984).

**Remote Work Tenure.** The amount of time an employee has spent working remotely may also influence their results on the outcome variables. Employees who are newer to remote work may still be engrossed in the benefits of flexibility and reduced commute time, for example, and may not have experienced sufficient isolation from the organisation and their colleagues for it to be having a negative impact (Gajendran & Harrison, 2007). Those who have a longer remote work tenure may be accustomed to the associated benefits and therefore, more likely to express feelings of isolation. The reverse may also be argued. After working remotely for an extended period of time, employees may know how to make the arrangement work for them and how to maintain their productivity and satisfaction, for example. Newer

remote workers may still be coming to terms with the arrangement and in the process of seeing what works for them in regard to interaction with the organisation.

**Legitimacy.** Remote work challenges the degree to which an employee can act in prototypical ways and the extent to which their colleagues are able to observe these efforts (Bartel et al., 2012). This can impact an employee's belief that they are a valued and accepted member who has influence and status within the organisation (De Cremer & Tyler, 2005). Legitimacy is defined as "a generalised perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions" (Suchman, 1995, p. 574). If remote work is perceived to be uncommon, it may not be supported by the organisation or other employees, and those working remotely may feel as though they are less legitimate members. In these cases, management support is expected to be especially significant. Low legitimacy is likely to distance remote workers from the organisational community, increasing social and professional isolation (Bartel et al., 2012), lowering levels of organisational commitment, and having a detrimental effect on the outcome variables.

## **Models**

The proposed relationships and models in the current study are expressed in Figure 1 and Figure 2. Both models use the same predictor variables, outcome variables, and control variables, across the same period of time. In Model 1, social and professional isolation is investigated as a mediator variable rather than an outcome variable and in Model 2, organisational commitment is investigated as a mediator variable rather than an outcome variable.

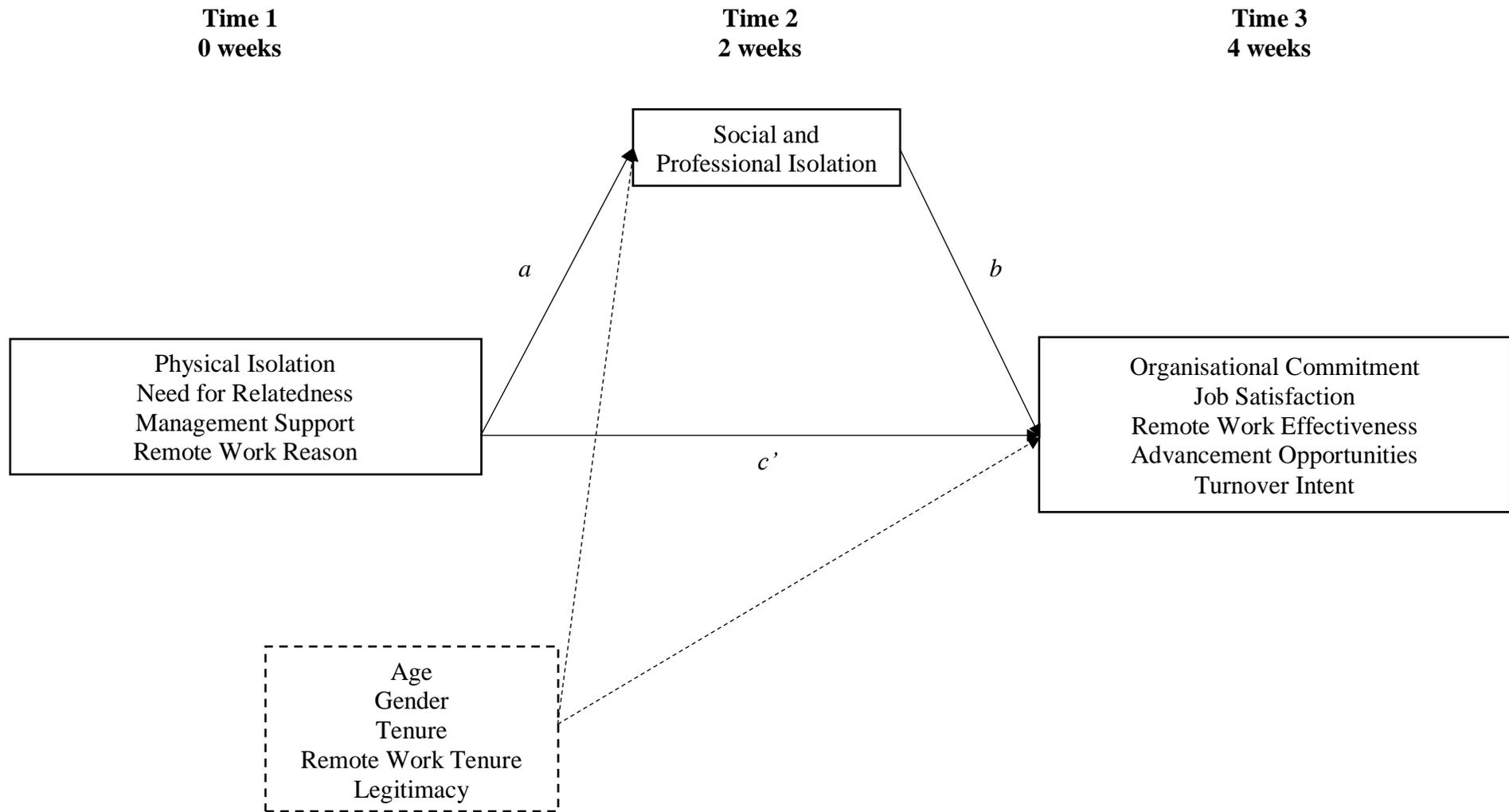


Figure 1. Model 1 of the relationships between study variables investigated with social and professional isolation as the mediator.

Note. Total Effect C =  $ab + c'$  (not illustrated in model). Dashed lines represent the effects of the control variables.

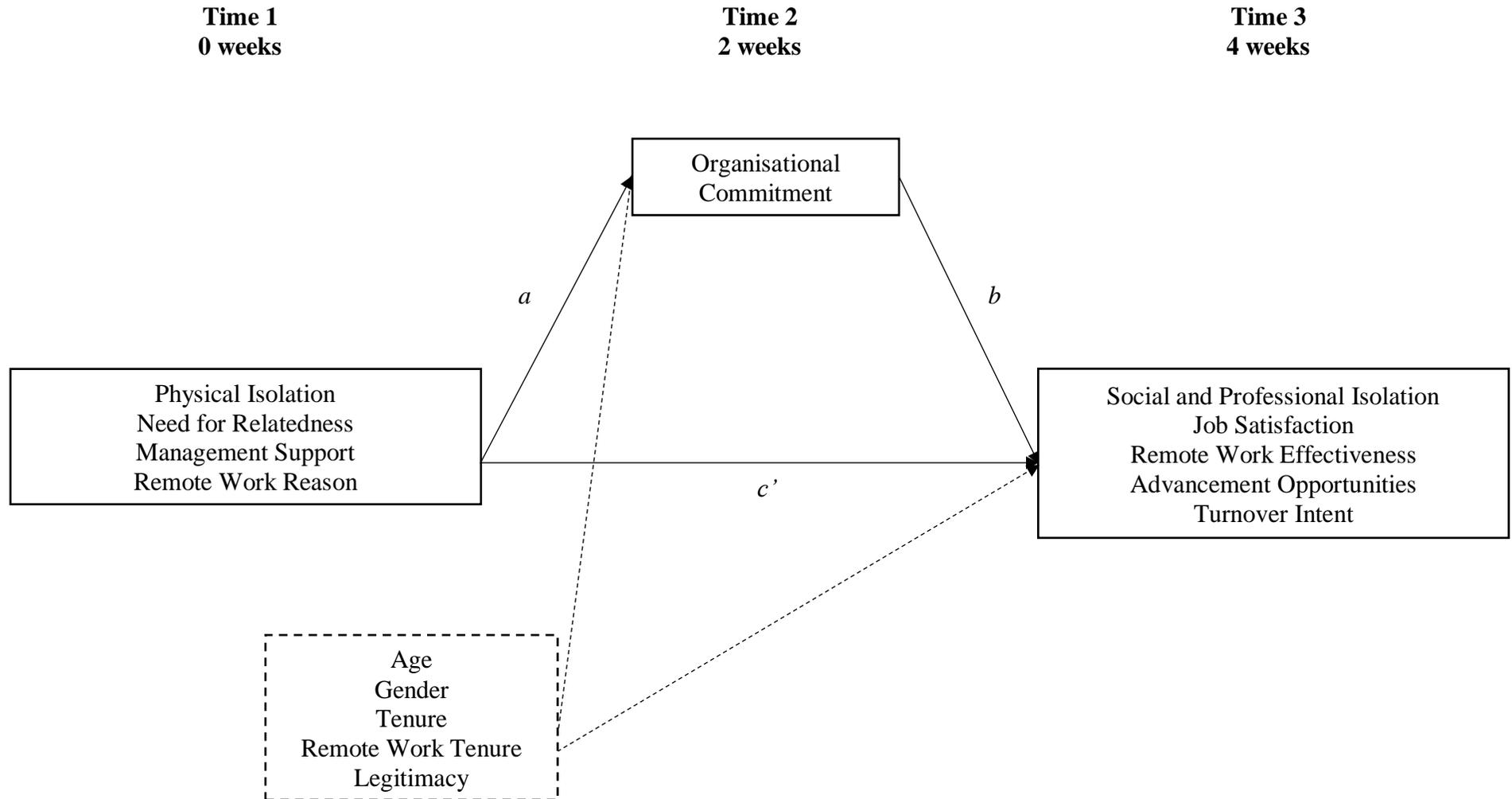


Figure 2. Model 2 of the relationships between study variables investigated with organisational commitment as the mediator.

Note. Total Effect C =  $ab + c'$  (not illustrated in model). Dashed lines represent the effects of the control variables.

## Method

### Design

A three-wave quantitative survey was used in this study, administered online using the Qualtrics survey platform ([www.qualtrics.com](http://www.qualtrics.com)). The three surveys were separated by two-week intervals, with the study lasting four weeks in total for each participant. This time lag allowed for the temporal separation of predictors from the mediators and outcomes. All variables were assessed at all three time points. Demographic variables were measured at Time 1 only. The current study did not seek to predict changes in the mediator and outcome variables, but to explore the relation between the predictors and the absolute levels of the mediators and the outcomes, and as such, previous levels of these variables were not controlled for in the analyses.

### Participants

The sample who completed the survey at Time 1 comprised of 129 participants, 109 of which provided their email address. Of the 109 participants sent an invitation to complete the Time 2 survey, 83 participants (76.1% retention) completed it. Of the 83 participants sent an invitation to complete the Time 3 survey, 72 (86.7% retention) completed it. Five participants were removed due to missing data at previous time points that was necessary for the final analysis, leaving 67 participants in the final sample. Of the 67 participants, 26 (38.8%) were male, 40 (59.7%) were female, and 1 other (1.5%). The mean age was 38.67 years ( $SD = 11.33$ ), with participants ranging from 21 to 63 years of age. Participants had been working for an average of 5.87 years ( $SD = 6.20$ ) and working remotely for an average of 5.44 years ( $SD = 6.26$ ). Participants worked an average of 39.40 hours per week ( $SD = 8.41$ ), with an average of 26.60 hours per week ( $SD = 15.65$ ) spent working remotely. The majority of participants

worked full time (79.1%), were based in New Zealand (73.1%), and worked remotely due to personal preference (52.2%). Dropout analysis revealed no significant differences between the groups of participants who completed the survey at each of the three time points.

## **Procedure**

Participants were recruited using a variety of methods. New Zealand businesses were approached, as were individuals, with each participant encouraged to share the survey with others who were eligible to participate (snowball sampling). Advertising on social media (Facebook, LinkedIn, Twitter, blogs) was also utilised (shown in Appendix A). To be eligible to partake in the study, participants were required to be in continuous employment, to have worked in their current role for at least three months, and to work remotely for at least 1 hour per week. As an incentive to participate in the study at all three time points, participants were entered into a prize draw (5x \$100 grocery vouchers). The winners were notified via email on 28/9/17.

The survey was administered via Qualtrics so that participants could complete it in their own time. Participants could access the first survey using an anonymous link, with a link to surveys 2 and 3 distributed to via email within the specified time frame. Up to three reminder emails were sent at each time point to increase retention of participants. Individuals were informed that participation in the study would take no longer than 30 minutes across the three time points. An information sheet on the first page of the survey (Appendix B) provided participants with a rationale for conducting the study, gave the following consent statement “by completing this survey, it is understood that you agree to the conditions outlined above”, and reminded individuals that participation was voluntary and they could withdraw at any time. Participants were assured that confidentiality would be maintained throughout the data collection process by assigning each participant an identification number. This allowed

responses to be tracked across the time points throughout the course of the study. Contact details of the researcher and supervisors were provided for questions and comments. Each survey ended with a statement thanking individuals for their participation and time. This study was reviewed and approved by the University of Canterbury Human Ethics committee on 29/05/17.

## Measures

A full list of survey items is shown in Appendix C. Responses for all measures were recorded on a 7-point Likert-type scale where 1 = *strongly disagree* and 7 = *strongly agree*. Each scale was prefaced with a sentence explaining what the scale was intended to measure. An optional comments section was also provided at the end of each scale to allow participants to further express their views. At Time 1, participants were asked to answer the questions thinking about their job and organisation in general. At Time 2 and 3, participants were asked to answer thinking about their experiences over the past two weeks, and hence all items were transformed into past tense. Predictor variables were taken from Time 1, mediator variables from Time 2, and outcome variables from Time 3 (refer to Figure 1 and Figure 2). All scales chosen had previously demonstrated high reliability. Factor analyses (principal axis factoring) and reliability analyses were conducted for all scales where possible. The results of these were satisfactory unless otherwise mentioned. For 2-item scales, the correlation between the items is presented in place of factor analysis. Reliabilities are presented in Table 1. Before primary data collection, the survey was piloted on 4 psychology postgraduate students to check for clarity, ease of comprehension, and average completion time. No changes were made following this.

**Demographics.** Demographic information was collected to be able to control for salient factors when testing the proposed relationships. Participants first entered their age and chose a

gender option. They then provided information about their organisation by indicating their employment status, how many hours they worked per week, their tenure at their current organisation, and where the organisation was located. In relation to remote work, participants indicated the number of hours they worked remotely per week, and how long they had been engaging remote work. At the end of the final survey, participants were given the option to comment on the main benefits and drawbacks of remote work that they have experienced. A full list of demographic questions can be found in Appendix C.

**Legitimacy.** A 3-item scale was developed in order to determine how remote work was perceived within participants' organisations. An example item was "*It is acceptable for employees in my organisation to work remotely*". Factor analysis (principal axis factoring) revealed a one factor structure. Reliability is displayed in Table 1.

**Physical isolation.** Physical isolation was measured by using the following demographic questions: "How many hours, on average, do you work per week?" and "How many hours do you work outside of the main organisational office per week?". Participants responded by stating the number of hours worked. This information was converted to a percentage by dividing remote work hours by total hours, representing the amount of time employees spend being physically separated from their organisation and colleagues.

**Need for relatedness.** This refers to an individual's wish to feel connected to others and be a member of a group at work. Participants were given a 4-item scale created by Van Yperen et al. (2014) to assess need for relatedness. A sample item was "*At work I have the need to hang out with people*". Following factor analysis (principal axis factoring), item 4 was removed due to loading poorly and lowering scale reliability. Upon closer inspection, the item appeared to be targeting a different aspect of the variable to the other three items. High scores indicated that participants value social interaction and connection with others whilst at work.

**Management support.** Management support was measured using a 7-item scale adapted from the original full scale created by Eisenberger, Huntington, Hutchison, and Sowa (1986). This assessed employee's beliefs around whether their organisation values their contribution and cares about their wellbeing. An example item was "*Help is available from my manager when I have a problem*". Low scores indicated that participants perceived they had little support from their managers.

**Remote work reason.** At Time 1, participants were asked why they partake in remote work. Participants responded by nominating either family reasons, work requirement, personal preference, or other. Responses were then dummy coded into three new variables in order for each reason to be analysed separately.

**Social and professional isolation.** This was measured using a 7-item scale developed by Golden et al. (2008). Example items included "*I miss face-to-face contact with coworkers*" and "*I feel left out on activities and meetings that could enhance my career*". High scores indicated that participants were experiencing high levels of social and professional isolation from the organisation.

**Organisational commitment.** Participants' organisational commitment was measured using a 9-item scale developed by Balfour and Wechsler (1996). The Organisational Commitment Scale targets three types of overall organisational commitment: Identification Commitment, Affiliation Commitment, and Exchange Commitment. Example items are as follows: Identification Commitment "*I am quite proud to be able to tell people who it is I work for.*" Affiliation Commitment "*I feel a strong sense of belonging to this organisation.*" Exchange Commitment "*This organization appreciates my accomplishments on the job*". In the current study, all items loaded on a single factor, and thus the scale was analysed as a whole. Participants' high scores indicated they had a high sense of identity and belonging towards the organisation, and felt recognised for their efforts.

**Job satisfaction.** Participants' overall job satisfaction was measured using a 3-item scale developed by Cammann, Fichman, Jenkins, and Klesh (1983) as part of the Michigan Organisational Assessment Questionnaire (OAQ). A sample item was "*All in all, I am satisfied with my job*". Participants' high scores indicated a high level of satisfaction towards working in their job and organisation.

**Opportunities for advancement.** Participant perceptions of opportunities for advancement within their organisation were measured using a 2-item scale created by Balfour and Wechsler (1996). A sample item was "*This organisation provides me with a fair opportunity for advancement or promotion*". Participants' low scores indicated a perception of little opportunity for advancement within their current organisation. Correlation between the items was .71.

**Remote work effectiveness.** Perceptions of effectiveness while working remotely were assessed using a 4-item scale adapted from Staples, Hlland, and Higgins (1999). A sample item was "*Working remotely is an efficient way for me to work*". Participants' high scores indicated they believed they were more productive when working remotely.

**Turnover intent.** Participants' intention to leave their organisation was measured using 2 items taken from The Michigan Organisational Assessment Questionnaire (Cammann, Fichman, Jenkins, & Klesh, 1979). The third scale item was omitted due to similarity when modified to fit the 7-point Likert-type scale used in the survey (1 = *strongly disagree* and 7 = *strongly agree*). A sample item was "*I often think about quitting this job*". Low scores indicated participants wish to stay within their current organisation. Correlation between items was .86.

Table 1

*Means, Standard Deviations, Correlations and Reliability Estimates (Cronbach's Alpha) for all Variables in the Study*

SCALE	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1 PI	.69	.37																			
2 NR	3.02	1.43	<b>-.32*</b>	(.88)																	
3 MS	6.02	1.05	.13	.03	(.93)																
4 FR			-.06	<b>.29*</b>	.05																
5 WR			.13	-.16	.03																
6 PP			-.12	-.10	-.12																
7 SPI2	2.73	1.52	-.12	<b>.46*</b>	-.00	<b>.40*</b>	.00	<b>-.25*</b>	(.92)												
8 SPI3	2.48	1.28	-.07	<b>.34*</b>	-.17	<b>.40*</b>	.08	<b>-.31*</b>	<b>.72*</b>	(.93)											
9 OC2	5.46	1.01	-.13	.07	<b>.51*</b>	-.02	-.06	-.01	<b>-.25*</b>	<b>-.30*</b>	(.89)										
10 OC3	5.38	1.02	-.00	.10	<b>.45*</b>	-.06	-.10	.04	-.17	<b>-.36*</b>	<b>.72*</b>	(.90)									
11 JS	5.51	1.11	.13	-.05	<b>.47*</b>	-.11	.08	-.06	<b>-.24*</b>	<b>-.45*</b>	<b>.66*</b>	<b>.79*</b>	(.86)								
12 AO	4.50	1.60	-.14	.09	<b>.45*</b>	.01	-.11	.00	<b>-.20*</b>	<b>-.32*</b>	<b>.60*</b>	<b>.68*</b>	<b>.65*</b>	(.83)							
13 RE	6.10	1.05	<b>.32*</b>	<b>-.40*</b>	.10	-.10	.10	-.06	<b>-.35*</b>	<b>-.20*</b>	<b>.26*</b>	<b>.35*</b>	<b>.40*</b>	.13	(.78)						
14 TI	3.22	1.79	-.18	-.05	<b>-.44*</b>	.00	.08	.00	.14	<b>.32*</b>	<b>-.50*</b>	<b>-.56*</b>	<b>-.72*</b>	<b>-.60*</b>	-.16	(.92)					
15 AG	38.67	11.33	-.02	-.16	-.05	-.04	.06	-.02	-.04	-.07	.00	.16	.12	-.04	<b>.24*</b>	-.01					
16 GE			.12	.01	.12	<b>.28*</b>	-.18	-.06	.19	.20	-.00	-.01	.00	.04	.17	-.05	-.11				
17 TE	5.87	6.20	-.17	.00	-.08	.02	.07	-.03	-.13	.08	-.01	-.02	-.07	-.01	.11	.06	<b>.49*</b>	-.03			
18 RT	5.44	6.26	-.07	-.14	-.17	-.03	<b>.24*</b>	-.15	.10	.08	-.15	-.04	-.11	-.10	.04	.14	<b>.50*</b>	-.05	<b>.55*</b>		
19 LG	5.38	1.09	.16	.09	.15	-.01	-.01	-.00	.07	-.02	.11	.05	.12	-.04	-.05	-.11	<b>-.27*</b>	.18	-.15	-.11	(.78)

Note. N=67.

<sup>+</sup>p<.10. \*p<.05 (two-tailed), bolded for clarity. Cronbach's alpha in italicised brackets.

1=Physical Isolation (0-1); 2=Need for Relatedness; 3=Management Support; 4=Family Reasons N=13 (19.4%); 5= Work Requirement N=17 (25.4%); 6=Personal Preference N=35 (38.8%); 7=Social and Professional Isolation T2; 8=Social and Professional Isolation T3; 9= Organisational Commitment T2; 10=Organisational Commitment T3; 11=Job Satisfaction; 12=Advancement Opportunities; 13=Remote Work Effectiveness; 14=Turnover Intent; 15=Age (years); 16=Gender (Male) N=26 (38.8%); 17=Tenure (years); 18=Remote Work Tenure (years); 19=Legitimacy.

## Results

All statistical procedures and analyses were conducted using SPSS version 24 for macOS Sierra operating system. PROCESS v2.16.3 (Hayes, 2013) was installed in SPSS for analysis of the hypotheses. This facilitated the testing of multiple predictors, control variables, and outcome variables in a mediation analysis, and also estimated standard errors and confidence intervals for the indirect effects by bootstrapping estimation technique. A 95% bootstrap (bias corrected) confidence interval was estimated using 5000 re-samples for the indirect effects.

Results of the mediation analyses are presented in Tables 2-11, with each model having one table per outcome variable (5 tables each). When interpreting the tables, the total effect ( $C$ ) is the sum of the direct effect of  $X$  on  $Y$  and the indirect effect of  $X$  on  $Y$  through  $M$ . The total effect is the sum of two pathways of influence and can be estimated by simply regressing  $Y$  on  $X$ . The indirect effect ( $ab$ ) quantifies how much two cases that differ by one unit on  $X$  are estimated to differ on  $Y$  as a result on  $X$ 's influence on  $M$ , which in turn influences  $Y$ . The direct effect ( $c'$ ) quantifies the estimated difference in  $Y$  between two cases that differ by one unit on  $X$  independent of  $M$ 's influence on  $Y$ . Direct effects also include path  $a$  and path  $b$ , which can be understood as a simple regression of  $M$  on  $X$  ( $a$ ) and  $Y$  on  $M$  ( $b$ ). Mediation was indicated by the presence of a significant indirect effect of the predictor on the outcome, as indicated by the 95% confidence interval not including 0, rather than a significant decrease in the direct effect (Hayes, 2013).

The results will be presented in the following order. Firstly, the results for the separate components of each model will be presented, with Model 1 followed by Model 2. The results of the mediation analyses will then be reported by predictor variable and hypothesis, rather

than by model. Tables displaying the mediation results are then presented, followed by a table summarising the hypothesis results.

### **Model 1 (Figure 1, Tables 2-6)**

**Predictors (T1) → social and professional isolation (T2).** As shown in Tables 2-6, physical isolation and management support were not related to social and professional isolation. Need for relatedness was positively related to social and professional isolation, such that on a 7-point scale, for every 1 point increase in need for relatedness, there was a .49 point increase in perceived social and professional isolation. All reasons for remote work (family, work, personal) had a positive relationship with social and professional isolation, with family reasons being the strongest predictor, followed by work requirement and personal preference. The relationships were all in the same direction. This is in contrast to the relationships displayed in the correlation matrix, where personal preference was negatively correlated with social and professional isolation, and work requirement unrelated. Of the control variables, tenure was negatively related to social and professional isolation and remote work tenure positively related, relationships not shown in the correlation matrix.

**Social and professional isolation (T2) → outcomes (T3).** Social and professional isolation was negatively related to organisational commitment, job satisfaction, and advancement opportunities, with advancement opportunities being the strongest predictor. Social and professional isolation was not related to remote work effectiveness or turnover intent. The relationship between social and professional isolation and organisational commitment was stronger in the regression than in the correlation analysis, where it was not significant. This was the opposite for remote work effectiveness, which was the strongest predictor in the correlation analysis, yet unrelated in the regression.

**Model 2 (Figure 2, Tables 7-11)**

**Predictors (T1) → organisational commitment (T2).** As shown in Tables 7-11, need for relatedness was not related to organisational commitment. Of the reasons for remote work, family reasons and personal preference had a negative relationship with organisational commitment, with personal preference not related. Physical isolation was negatively related to organisational commitment, and management support positively related. Interestingly, physical isolation and all remote work reasons were unrelated to organisational commitment in the correlation analysis. Further, these relationships differ slightly to the ones reported in the Model 1 results using data from different time points. This may be attributed to the small sample size and using a measure of organisational commitment from a different time point.

**Organisational commitment (T2) → outcomes (T3).** Organisational commitment was strongly related to all of the outcome variables. It was positively related to job satisfaction, advancement opportunities, and remote work effectiveness, and negatively related to social and professional isolation and turnover intent, as also indicated in the correlation analysis.

**Physical Isolation**

**H1: physical isolation (T1) → social and professional isolation (T2) → outcomes (T3).** For Hypothesis 1, no evidence was found to suggest social and professional isolation mediated the relationship between physical isolation and any of the outcome variables. Physical isolation was also not directly related to any outcome variable.

**H2: physical Isolation (T1) → organisational commitment (T2) → outcomes (T3).** Organisational commitment mediated the relationship between physical isolation and all of the outcome variables, fully supporting Hypothesis 2. For job satisfaction, advancement opportunities, and remote work effectiveness, there were negative indirect effects, the strongest

of which being for advancement opportunities. For turnover intent and social and professional isolation, the indirect effects were positive.

Direct effects were observed for remote work effectiveness (positive) and turnover intent (negative), highlighting the presence of suppressor effects. This means that physical isolation had a significant effect on remote work effectiveness and turnover intent, but only when the effect of organisational commitment was taken into account. As indirect effects were also present, it suggests the presence of parallel pathways between physical isolation and the outcome variables.

### **Need for Relatedness**

**H3: need for relatedness (T1) → social and professional isolation (T2) → outcomes (T3).** Social and professional isolation was found to mediate the relationship between need for relatedness and organisational commitment, job satisfaction, and advancement opportunities, with all effects through the indirect path being negative. Social and professional isolation did not mediate the relationship between need for relatedness and turnover intent or remote work effectiveness. The results partly support Hypothesis 3.

Although the confidence interval for remote work effectiveness included zero, the significant effect between need for relatedness and remote work effectiveness was removed when accounting for social and professional isolation, providing some evidence of an indirect effect. Lack of significant evidence of an indirect effect could also be explained by the just non-significant path between social and professional isolation and remote work effectiveness. Need for relatedness was not directly related any outcome variables.

**H4: need for relatedness (T1) → organisational commitment (T2) → outcomes (T3).** Organisational commitment did not mediate the relationship between need for relatedness and any of the outcome variables, not supporting Hypothesis 4. No direct effects were shown

between need for relatedness and job satisfaction, advancement opportunities, or turnover intent. However, need for relatedness had a direct negative relationship with remote work effectiveness and a direct positive relationship with social and professional isolation.

### **Management Support**

**H5: management support (T1) → social and professional isolation (T2) → outcomes (T3).** Social and professional isolation did not mediate the relationship between management support and any of the outcome variables, leaving Hypothesis 5 unsupported. However, strong direct effects were found between management support and the outcome variables, with management support positively relating to organisational commitment, job satisfaction, and advancement opportunities, and negatively relating to turnover intent. Management support was not directly related to remote work effectiveness.

**H6: management support (T1) → organisational commitment (T2) → outcomes (T3).** Fully supporting Hypothesis 6, organisational commitment mediated the relationship between management support and all of the outcome variables. Negative indirect effects were shown for turnover intent, and social and professional isolation, and positive indirect effects for advancement opportunities, job satisfaction, and remote work effectiveness.

Additionally, there was a direct positive relationship between management support and advancement opportunities, suggesting the presence of parallel pathways.

### **Remote Work Reason**

**H7: remote work reason (T1) → social and professional isolation (T2) → outcomes (T3).** Hypothesis 7 was partly supported. Social and professional isolation mediated the relationship between all remote work reasons (family, work, personal) and organisational commitment, job satisfaction, and advancement opportunities. In each set of indirect effects,

family reasons had the strongest negative effect on the outcome variables, followed by work requirement and then personal preference. No indirect effects were observed for remote work effectiveness or turnover intent. Further, no direct effects between remote work reasons and the outcomes variables were shown.

**H8: remote work reason (T1) → organisational commitment (T2) → outcomes (T3).** Organisational commitment mediated the relationship between all remote work reasons (family, work, personal) and all outcome variables, fully supporting Hypothesis 8. For job satisfaction, advancement opportunities, and remote work effectiveness, this produced negative indirect effects. For turnover intent and social and professional isolation, the indirect effects were positive. In each set of indirect effects, family reasons had the strongest effect on the outcome variables, followed by work requirement and then personal preference.

No direct relationships were observed between any remote work reasons and the outcome variables, except for a direct positive relationship between family reasons and social and professional isolation.

### **Control Variables**

Age was positively related to organisational commitment and job satisfaction. Age was also positively related to remote work effectiveness with social and professional isolation as a mediator. Gender had a direct positive relationship with remote work effectiveness. Higher tenure was directly related to lower social and professional isolation, while higher remote work tenure was directly related to higher social and professional isolation. Legitimacy was not directly related to any variables in the regression analysis.

Table 2

Results of the Mediation Analysis for Organisational Commitment (Model 1). Unstandardised Coefficients with Standard Errors (SE)

	Mediator Variable Social and Professional Isolation (T2)			Outcome Variable Organisational Commitment (T3)									
	Direct effects ( <i>a</i> )			Total effect ( <i>C</i> )			Direct effects ( <i>c'</i> , <i>b</i> )			Indirect effect ( <i>ab</i> )		CI indirect effect	
	Coefficient	SE	<i>p</i>	Coefficient	SE	<i>p</i>	Coefficient	SE	<i>p</i>	Coefficient	SE	LLCI	ULCI
Constant	-1.76	1.77	.33	<b>3.01*</b>	1.33	.03	<b>2.70*</b>	1.32	.05				
Physical Isolation (T1)	-.04	.46	.92	-.14	.35	.69	-.15	.34	.66	.00	.09	-.15	.23
Need for Relatedness (T1)	<b>.49*</b>	.12	.00	.08	.09	.38	.17	.10	.10	<b>-.09*</b>	.06	-.24	-.01
Management Support (T1)	-.01	.15	.93	<b>.43*</b>	.11	.00	<b>.43*</b>	.11	.00	.00	.04	-.05	.08
Family Reasons (T1)	<b>2.71*</b>	.97	.01	<b>-1.41<sup>+</sup></b>	.73	.06	-.92	.77	.23	<b>-.49*</b>	.29	-1.31	-.07
Work Requirement (T1)	<b>2.07*</b>	.95	.03	<b>-1.39<sup>+</sup></b>	.72	.06	-1.02	.73	.17	<b>-.37*</b>	.25	-1.08	-.05
Personal Preference (T1)	<b>1.69<sup>+</sup></b>	.93	.07	-1.10	.70	.12	-.80	.70	.26	<b>-.31*</b>	.20	-.88	-.05
Age (years) (T1)	.01	.02	.42	<b>.02<sup>+</sup></b>	.01	.10	<b>.02<sup>+</sup></b>	.01	.06				
Gender (male) (T1)	.39	.32	.23	-.02	.24	.92	.05	.24	.85				
Tenure (years) (T1)	<b>-.09*</b>	.03	.00	-.01	.02	.58	-.03	.03	.23				
RW Tenure (years) (T1)	<b>.07*</b>	.03	.04	.00	.02	.90	.02	.02	.53				
Legitimacy (T1)	.04	.15	.81	.02	.11	.86	.03	.11	.81				
Social and Professional Isolation ( <i>path b</i> ) (T2)							<b>-.18<sup>+</sup></b>	.10	.08				
<i>R</i> <sup>2</sup>	<b>.46*</b>		.00	<b>.32*</b>		.02	<b>.36*</b>		.01				

Note. Listwise *N* = 67; LLCI, lower limit of 95% confidence interval; ULCI, upper limit of 95% confidence interval.

\**p* < .05. <sup>+</sup>*p* < .10, bolded for clarity. \*Significant at 95% CI. <sup>+</sup>Significant at 90% CI.

Table 3

*Results of the Mediation Analysis for Job Satisfaction (Model 1). Unstandardised Coefficients with Standard Errors (SE)*

	Mediator Variable Social and Professional Isolation (T2)			Outcome Variable Job Satisfaction (T3)									
	Direct effects (a)			Total effect (C)			Direct effects (c', b)			Indirect effect (ab)		CI indirect effect	
	Coefficient	SE	p	Coefficient	SE	p	Coefficient	SE	p	Coefficient	SE	LLCI	ULCI
Constant	-1.76	1.77	.33	2.37	1.46	.11	1.98	1.43	.17				
Physical Isolation (T1)	-.04	.46	.92	.03	.38	.95	.02	.37	.97	.01	.11	-.20	.26
Need for Relatedness (T1)	<b>.49*</b>	.12	.00	-.01	.10	.94	.10	.11	.37	<b>-.11*</b>	.07	-.28	-.01
Management Support (T1)	-.01	.15	.93	<b>.45*</b>	.12	.00	<b>.44*</b>	.12	.00	-.00	.04	-.05	.12
Family Reasons (T1)	<b>2.71*</b>	.97	.01	-1.09	.80	.18	-.49	.83	.56	<b>-.60*</b>	.33	-1.44	-.11
Work Requirement (T1)	<b>2.07*</b>	.95	.03	-.65	.78	.41	-.19	.79	.81	<b>-.46*</b>	.31	-1.30	-.08
Personal Preference (T1)	<b>1.69<sup>+</sup></b>	.93	.07	-.84	.76	.27	-.47	.76	.54	<b>-.38*</b>	.23	-1.02	-.07
Age (years) (T1)	.01	.02	.42	<b>.02<sup>+</sup></b>	.01	.09	<b>.03*</b>	.01	.05				
Gender (male) (T1)	.39	.32	.23	-.00	.26	1.00	.09	.26	.74				
Tenure (years) (T1)	<b>-.09*</b>	.03	.00	-.01	.03	.67	-.03	.03	.24				
RW Tenure (years) (T1)	<b>.07*</b>	.03	.04	-.02	.03	.43	-.01	.03	.83				
Legitimacy (T1)	.04	.15	.81	.10	.12	.45	.10	.12	.40				
Social and Professional Isolation (path b) (T2)							<b>-.22*</b>	.11	.04				
R <sup>2</sup>	<b>.46*</b>		.00	<b>.30*</b>		.03	<b>.35*</b>		.01				

*Note.* Listwise  $N = 67$ ; LLCI, lower limit of 95% confidence interval; ULCI, upper limit of 95% confidence interval.

\* $p < .05$ . <sup>+</sup> $p < .10$ , bolded for clarity. \*Significant at 95% CI. <sup>+</sup>Significant at 90% CI.

Table 4

*Results of the Mediation Analysis for Remote Work Effectiveness (Model 1). Unstandardised Coefficients with Standard Errors (SE)*

	Mediator Variable Social and Professional Isolation (T2)			Outcome Variable Remote Work Effectiveness (T3)									
	Direct effects ( <i>a</i> )			Total effect ( <i>C</i> )			Direct effects ( <i>c'</i> , <i>b</i> )			Indirect effect ( <i>ab</i> )		CI indirect effect	
	Coefficient	SE	<i>p</i>	Coefficient	SE	<i>p</i>	Coefficient	SE	<i>p</i>	Coefficient	SE	LLCI	ULCI
Constant	-1.76	1.77	.33	<b>5.87*</b>	1.37	.00	<b>5.59*</b>	1.36	.00				
Physical Isolation (T1)	-.04	.46	.92	.48	.35	.18	.47	.35	.18	.01	.09	-.14	.24
Need for Relatedness (T1)	<b>.49*</b>	.12	.00	<b>-.24*</b>	.09	.01	-.16	.11	.13	-.08	.06	-.24	.03
Management Support (T1)	-.01	.15	.93	.05	.12	.70	.04	.12	.71	.00	.03	-.05	.10
Family Reasons (T1)	<b>2.71*</b>	.97	.01	-.98	.75	.20	-.54	.79	.50	-.44	.34	-1.28	.10
Work Requirement (T1)	<b>2.07*</b>	.95	.03	-.72	.73	.33	-.38	.75	.61	-.33	.29	-1.17	.08
Personal Preference (T1)	<b>1.69<sup>+</sup></b>	.93	.07	-.93	.71	.20	-.66	.73	.37	-.27	.24	-.95	.04
Age (years) (T1)	.01	.02	.42	.02	.01	.14	<b>.02<sup>+</sup></b>	.01	.10				
Gender (male) (T1)	.39	.32	.23	.41	.25	.10	<b>.47<sup>+</sup></b>	.25	.06				
Tenure (years) (T1)	<b>-.09*</b>	.03	.00	.03	.02	.29	.01	.03	.67				
RW Tenure (years) (T1)	<b>.07*</b>	.03	.04	-.03	.03	.25	-.02	.03	.49				
Legitimacy (T1)	.04	.15	.81	-.04	.12	.75	-.03	.11	.78				
Social and Professional Isolation ( <i>path b</i> ) (T2)							-.16	.10	.12				
<i>R</i> <sup>2</sup>	<b>.46*</b>		.00	<b>.32*</b>		.02	<b>.35*</b>		.01				

*Note.* Listwise *N* = 67; LLCI, lower limit of 95% confidence interval; ULCI, upper limit of 95% confidence interval.

\**p* < .05. <sup>+</sup>*p* < .10, bolded for clarity. \*Significant at 95% CI. <sup>+</sup>Significant at 90% CI.

Table 5

Results of the Mediation Analysis for Advancement Opportunities (Model 1). Unstandardised Coefficients with Standard Errors (SE)

	Mediator Variable Social and Professional Isolation (T2)			Outcome Variable Advancement Opportunities (T3)									
	Direct effects ( <i>a</i> )			Total effect ( <i>C</i> )			Direct effects ( <i>c'</i> , <i>b</i> )			Indirect effect ( <i>ab</i> )		CI indirect effect	
	Coefficient	SE	<i>p</i>	Coefficient	SE	<i>p</i>	Coefficient	SE	<i>p</i>	Coefficient	SE	LLCI	ULCI
Constant	-1.76	1.77	.33	<b>3.85<sup>+</sup></b>	2.10	.07	3.30	2.05	.11				
Physical Isolation (T1)	-.04	.46	.92	-.83	.54	.13	-.85	.53	.11	.01	.16	-.27	.39
Need for Relatedness (T1)	<b>.49*</b>	.12	.00	.01	.14	.96	.16	.16	.32	<b>-.15*</b>	.11	-.42	-.00
Management Support (T1)	-.01	.15	.93	<b>.71*</b>	.18	.00	<b>.71*</b>	.17	.00	-.00	.06	-.09	.18
Family Reasons (T1)	<b>2.71*</b>	.97	.01	<b>-2.20<sup>+</sup></b>	1.15	.06	-1.34	1.19	.27	<b>-.85*</b>	.52	-2.22	-.08
Work Requirement (T1)	<b>2.07*</b>	.95	.03	<b>-2.33*</b>	1.12	.04	-1.68	1.14	.15	<b>-.65*</b>	.46	-2.02	-.04
Personal Preference (T1)	<b>1.69<sup>+</sup></b>	.93	.07	<b>-2.02<sup>+</sup></b>	1.09	.07	-1.49	1.10	.18	<b>-.53*</b>	.38	-1.71	-.06
Age (years) (T1)	.01	.02	.42	-.01	.02	.60	-.01	.02	.75				
Gender (male) (T1)	.39	.32	.23	.08	.38	.84	.20	.37	.59				
Tenure (years) (T1)	<b>-.09*</b>	.03	.00	.01	.04	.76	-.02	.04	.65				
RW Tenure (years) (T1)	<b>.07*</b>	.03	.04	.00	.04	.91	.03	.04	.50				
Legitimacy (T1)	.04	.15	.81	-.16	.18	.39	-.14	.17	.41				
Social and Professional Isolation ( <i>path b</i> ) (T2)							<b>-.31*</b>	.16	.05				
R <sup>2</sup>	<b>.46*</b>		.00	<b>.31*</b>		.03	<b>.36*</b>		.01				

Note. Listwise *N* = 67; LLCI, lower limit of 95% confidence interval; ULCI, upper limit of 95% confidence interval.

\**p* < .05. <sup>+</sup>*p* < .10, bolded for clarity. \*Significant at 95% CI. <sup>+</sup>Significant at 90% CI.

Table 6

Results of the Mediation Analysis for Turnover Intent (Model 1). Unstandardised Coefficients with Standard Errors (SE)

	Mediator Variable Social and Professional Isolation (T2)			Outcome Variable Turnover Intent (T3)									
	Direct effects ( <i>a</i> )			Total effect ( <i>C</i> )			Direct effects ( <i>c'</i> , <i>b</i> )			Indirect effect ( <i>ab</i> )		CI indirect effect	
	Coefficient	SE	<i>p</i>	Coefficient	SE	<i>p</i>	Coefficient	SE	<i>p</i>	Coefficient	SE	LLCI	ULCI
Constant	-1.76	1.77	.33	<b>7.34*</b>	2.44	.00	<b>7.72*</b>	2.45	.00				
Physical Isolation (T1)	-.04	.46	.92	-.71	.63	.26	-.70	.63	.27	-.01	.13	-.34	.21
Need for Relatedness (T1)	<b>.49*</b>	.12	.00	-.10	.17	.55	-.21	.19	.28	.10	.10	-.07	.33
Management Support (T1)	-.01	.15	.93	<b>-.69*</b>	.21	.00	<b>-.68*</b>	.21	.00	-.00	.05	-.15	.07
Family Reasons (T1)	<b>2.71*</b>	.97	.01	1.51	1.34	.26	.93	1.42	.52	.58	.52	-.35	1.73
Work Requirement (T1)	<b>2.07*</b>	.95	.03	1.69	1.31	.20	1.24	1.36	.36	.45	.46	-.24	1.64
Personal Preference (T1)	<b>1.69<sup>+</sup></b>	.93	.07	1.29	1.27	.32	.92	1.31	.48	.36	.35	-.17	1.30
Age (years) (T1)	.01	.02	.42	-.01	.02	.64	-.01	.02	.55				
Gender (male) (T1)	.39	.32	.23	.05	.44	.90	-.03	.44	.95				
Tenure (years) (T1)	<b>-.09*</b>	.03	.00	-.01	.04	.87	.01	.05	.78				
RW Tenure (years) (T1)	<b>.07*</b>	.03	.04	.02	.04	.73	.00	.05	.99				
Legitimacy (T1)	.04	.15	.81	-.05	.21	.79	-.06	.21	.77				
Social and Professional Isolation ( <i>path b</i> ) (T2)							.22	.18	.25				
<i>R</i> <sup>2</sup>	<b>.46*</b>		.00	<b>.25<sup>+</sup></b>		.10	<b>.27<sup>+</sup></b>		.10				

Note. Listwise *N* = 67; LLCI, lower limit of 95% confidence interval; ULCI, upper limit of 95% confidence interval.

\**p* < .05. <sup>+</sup>*p* < .10, bolded for clarity. \*Significant at 95% CI. <sup>+</sup>Significant at 90% CI.

Table 7

*Results of the Mediation Analysis for Social and Professional Isolation (Model 2). Unstandardised Coefficients with Standard Errors (SE)*

	Mediator Variable			Outcome Variable									
	Organisational Commitment (T2)			Social and Professional Isolation (T3)									
	Direct effects ( <i>a</i> )			Total effect ( <i>C</i> )			Direct effects ( <i>c'</i> , <i>b</i> )			Indirect effect ( <i>ab</i> )		CI indirect effect	
	Coefficient	SE	<i>p</i>	Coefficient	SE	<i>p</i>	Coefficient	SE	<i>p</i>	Coefficient	SE	LLCI	ULCI
Constant	<b>3.68*</b>	1.27	.01	1.54	1.63	.35	2.66	1.72	.13				
Physical Isolation (T1)	<b>-.65<sup>+</sup></b>	.33	.06	.22	.42	.60	.03	.43	.95	<b>.20*</b>	.15	.00	.64
Need for Relatedness (T1)	-.02	.09	.78	<b>.28*</b>	.11	.02	<b>.27*</b>	.11	.02	.01	.03	-.05	.08
Management Support (T1)	<b>.48*</b>	.11	.00	<b>-.23<sup>+</sup></b>	.14	.10	-.09	.16	.58	<b>-.14<sup>+</sup></b>	.09	-.35	.00
Family Reasons (T1)	<b>-1.19<sup>+</sup></b>	.70	.09	<b>2.06*</b>	.90	.03	<b>1.70<sup>+</sup></b>	.90	.07	<b>.36*</b>	.22	.01	.88
Work Requirement (T1)	<b>-1.14<sup>+</sup></b>	.68	.10	<b>1.61<sup>+</sup></b>	.88	.07	1.26	.88	.16	<b>.35<sup>+</sup></b>	.22	-.00	.86
Personal Preference (T1)	-1.10	.66	.10	.98	.85	.26	.64	.86	.46	<b>.33*</b>	.20	.00	.79
Age (years) (T1)	.01	.01	.62	-.01	.02	.62	-.01	.02	.70				
Gender (male) (T1)	-.06	.23	.80	.37	.29	.22	.35	.29	.23				
Tenure (years) (T1)	.01	.02	.63	.01	.03	.86	.01	.03	.77				
RW Tenure (years) (T1)	-.02	.02	.39	.01	.03	.68	.01	.03	.83				
Legitimacy (T1)	.08	.11	.47	-.06	.14	.64	-.04	.14	.76				
Organisational Commitment ( <i>path b</i> ) (T2)							<b>-.30<sup>+</sup></b>	.17	.08				
<i>R</i> <sup>2</sup>	<b>.36*</b>		.01	<b>.35*</b>		.01	<b>.39*</b>		.00				

*Note.* Listwise *N* = 67; LLCI, lower limit of 95% confidence interval; ULCI, upper limit of 95% confidence interval.

\**p* < .05. <sup>+</sup>*p* < .10, bolded for clarity. \*Significant at 95% CI. <sup>+</sup>Significant at 90% CI.

Table 8

Results of the Mediation Analysis for Job Satisfaction (Model 2). Unstandardised Coefficients with Standard Errors (SE)

	Mediator Variable Organisational Commitment (T2)			Outcome Variable Job Satisfaction (T3)									
	Direct effects (a)			Total effect (C)			Direct effects (c', b)			Indirect effect (ab)		CI indirect effect	
	Coefficient	SE	p	Coefficient	SE	p	Coefficient	SE	p	Coefficient	SE	LLCI	ULCI
Constant	<b>3.68*</b>	1.27	.01	2.37	1.46	.11	-.05	1.30	.97				
Physical Isolation (T1)	<b>-.65<sup>+</sup></b>	.33	.06	.03	.38	.95	.45	.32	.17	<b>-.42<sup>+</sup></b>	.25	-.96	.02
Need for Relatedness (T1)	-.02	.09	.78	-.01	.10	.94	.01	.08	.92	-.02	.06	-.11	.08
Management Support (T1)	<b>.48*</b>	.11	.00	<b>.45*</b>	.12	.00	.13	.12	.27	<b>.31*</b>	.12	.18	.51
Family Reasons (T1)	<b>-1.19<sup>+</sup></b>	.70	.09	-1.09	.80	.18	-.31	.68	.65	<b>-.78*</b>	.28	-1.28	-.39
Work Requirement (T1)	<b>-1.14<sup>+</sup></b>	.68	.10	-.65	.78	.41	.10	.66	.88	<b>-.75*</b>	.26	-1.18	-.39
Personal Preference (T1)	-1.10	.66	.10	-.84	.76	.27	-.12	.65	.85	<b>-.72*</b>	.22	-1.10	-.39
Age (years) (T1)	.01	.01	.62	<b>.02<sup>+</sup></b>	.01	.09	<b>.02<sup>+</sup></b>	.01	.08				
Gender (male) (T1)	-.06	.23	.80	-.00	.26	1.00	.04	.22	.87				
Tenure (years) (T1)	.01	.02	.63	-.01	.03	.67	-.02	.02	.39				
RW Tenure (years) (T1)	-.02	.02	.39	-.02	.03	.43	-.01	.02	.72				
Legitimacy (T1)	.08	.11	.47	.10	.12	.45	.04	.10	.67				
Organisational Commitment (path b) (T2)							<b>.66*</b>	.13	.00				
R <sup>2</sup>	<b>.36*</b>		.01	<b>.30*</b>		.03	<b>.53*</b>		.00				

Note. Listwise N = 67; LLCI, lower limit of 95% confidence interval; ULCI, upper limit of 95% confidence interval.

\*p < .05. <sup>+</sup>p < .10, bolded for clarity. \*Significant at 95% CI. <sup>+</sup>Significant at 90% CI.

Table 9

*Results of the Mediation Analysis for Remote Work Effectiveness (Model 2). Unstandardised Coefficients with Standard Errors (SE)*

	Mediator Variable Organisational Commitment (T2)			Outcome Variable Remote Work Effectiveness (T3)									
	Direct effects ( <i>a</i> )			Total effect ( <i>C</i> )			Direct effects ( <i>c'</i> , <i>b</i> )			Indirect effect ( <i>ab</i> )		CI indirect effect	
	Coefficient	SE	<i>p</i>	Coefficient	SE	<i>p</i>	Coefficient	SE	<i>p</i>	Coefficient	SE	LLCI	ULCI
Constant	<b>3.68*</b>	1.27	.01	<b>5.87*</b>	1.37	.00	<b>4.50*</b>	1.39	.00				
Physical Isolation (T1)	<b>-.65<sup>+</sup></b>	.33	.06	.48	.35	.18	<b>.72*</b>	.35	.04	<b>-.24*</b>	.17	-.67	-.00
Need for Relatedness (T1)	-.02	.09	.78	<b>-.24*</b>	.09	.01	<b>-.23*</b>	.09	.01	-.01	.03	-.07	.04
Management Support (T1)	<b>.48*</b>	.11	.00	.05	.12	.70	-.13	.13	.31	<b>.18*</b>	.08	.07	.34
Family Reasons (T1)	<b>-1.19<sup>+</sup></b>	.70	.09	-.98	.75	.20	-.54	.73	.46	<b>-.44*</b>	.25	-.96	-.12
Work Requirement (T1)	<b>-1.14<sup>+</sup></b>	.68	.10	-.72	.73	.33	-.29	.71	.69	<b>-.43*</b>	.22	-.85	-.14
Personal Preference (T1)	-1.10	.66	.10	-.93	.71	.20	-.52	.69	.45	<b>-.41*</b>	.20	-.79	-.13
Age (years) (T1)	.01	.01	.62	.02	.01	.14	.02	.01	.17				
Gender (male) (T1)	-.06	.23	.80	.41	.25	.10	<b>.43<sup>+</sup></b>	.23	.07				
Tenure (years) (T1)	.01	.02	.63	.03	.02	.29	.02	.02	.35				
RW Tenure (years) (T1)	-.02	.02	.39	-.03	.03	.25	-.02	.02	.37				
Legitimacy (T1)	.08	.11	.47	-.04	.12	.75	-.07	.11	.55				
Organisational Commitment ( <i>path b</i> ) (T2)							<b>.37*</b>	.14	.01				
<i>R</i> <sup>2</sup>	<b>.36*</b>		.01	<b>.32*</b>		.02	<b>.40*</b>		.00				

*Note.* Listwise *N* = 67; LLCI, lower limit of 95% confidence interval; ULCI, upper limit of 95% confidence interval.

\**p* < .05. <sup>+</sup>*p* < .10, bolded for clarity. \*Significant at 95% CI. <sup>+</sup>Significant at 90% CI.

Table 10

Results of the Mediation Analysis for Advancement Opportunities (Model 2). Unstandardised Coefficients with Standard Errors (SE)

	Mediator Variable Organisational Commitment (T2)			Outcome Variable Advancement Opportunities (T3)									
	Direct effects ( <i>a</i> )			Total effect ( <i>C</i> )			Direct effects ( <i>c'</i> , <i>b</i> )			Indirect effect ( <i>ab</i> )		CI indirect effect	
	Coefficient	SE	<i>p</i>	Coefficient	SE	<i>p</i>	Coefficient	SE	<i>p</i>	Coefficient	SE	LLCI	ULCI
Constant	<b>3.68*</b>	1.27	.01	<b>3.85<sup>+</sup></b>	2.09	.07	1.17	2.03	.57				
Physical Isolation (T1)	<b>-.65<sup>+</sup></b>	.33	.06	-.83	.54	.13	-.36	.51	.48	<b>-.47*</b>	.29	-1.13	-.01
Need for Relatedness (T1)	-.02	.09	.78	.01	.14	.96	.03	.13	.84	-.02	.06	-.12	.09
Management Support (T1)	<b>.48*</b>	.11	.00	<b>.71*</b>	.18	.00	<b>.37<sup>+</sup></b>	.19	.06	<b>.35*</b>	.17	.15	.65
Family Reasons (T1)	<b>-1.19<sup>+</sup></b>	.70	.09	<b>-2.20<sup>+</sup></b>	1.15	.06	-1.33	1.07	.22	<b>-.87*</b>	.36	-1.49	-.37
Work Requirement (T1)	<b>-1.14<sup>+</sup></b>	.68	.10	<b>-2.33*</b>	1.12	.04	-1.50	1.04	.16	<b>-.83*</b>	.34	-1.41	-.36
Personal Preference (T1)	-1.10	.66	.10	<b>-2.02<sup>+</sup></b>	1.09	.07	-1.22	1.01	.23	<b>-.80*</b>	.29	-1.30	-.37
Age (years) (T1)	.01	.01	.62	-.01	.02	.60	-.01	.02	.42				
Gender (male) (T1)	-.06	.23	.80	.08	.38	.84	.12	.34	.73				
Tenure (years) (T1)	.01	.02	.63	.01	.04	.76	.00	.03	.92				
RW Tenure (years) (T1)	-.02	.02	.39	.00	.04	.91	.02	.04	.58				
Legitimacy (T1)	.08	.11	.47	-.16	.18	.39	-.21	.16	.19				
Organisational Commitment ( <i>path b</i> ) (T2)							<b>.73*</b>	.20	.00				
<i>R</i> <sup>2</sup>	<b>.36*</b>		.01	<b>.31*</b>		.03	<b>.44*</b>		.00				

Note. Listwise *N* = 67; LLCI, lower limit of 95% confidence interval; ULCI, upper limit of 95% confidence interval.

\**p* < .05. <sup>+</sup>*p* < .10, bolded for clarity. \*Significant at 95% CI. <sup>+</sup>Significant at 90% CI.

Table 11

Results of the Mediation Analysis for Turnover Intent (Model 2). Unstandardised Coefficients with Standard Errors (SE)

	Mediator Variable Organisational Commitment (T2)			Outcome Variable Turnover Intent (T3)									
	Direct effects ( <i>a</i> )			Total effect ( <i>C</i> )			Direct effects ( <i>c'</i> , <i>b</i> )			Indirect effect ( <i>ab</i> )		CI indirect effect	
	Coefficient	SE	<i>p</i>	Coefficient	SE	<i>p</i>	Coefficient	SE	<i>p</i>	Coefficient	SE	LLCI	ULCI
Constant	<b>3.68*</b>	1.27	.01	<b>7.34*</b>	2.44	.00	<b>9.96*</b>	2.45	.00				
Physical Isolation (T1)	<b>-.65<sup>+</sup></b>	.33	.06	-.71	.63	.26	<b>-1.17<sup>+</sup></b>	.61	.06	<b>.46*</b>	.33	.00	1.26
Need for Relatedness (T1)	-.02	.09	.78	-.10	.17	.55	-.12	.16	.45	.02	.07	-.08	.13
Management Support (T1)	<b>.48*</b>	.11	.00	<b>-.69*</b>	.21	.00	-.35	.23	.13	<b>-.34*</b>	.17	-.61	-.12
Family Reasons (T1)	<b>-1.19<sup>+</sup></b>	.70	.09	1.51	1.34	.26	.67	1.28	.61	<b>.84*</b>	.45	.27	1.67
Work Requirement (T1)	<b>-1.14<sup>+</sup></b>	.68	.10	1.69	1.31	.20	.88	1.26	.49	<b>.81*</b>	.37	.27	1.43
Personal Preference (T1)	-1.10	.66	.10	1.29	1.27	.32	.51	1.22	.68	<b>.78*</b>	.36	.25	1.43
Age (years) (T1)	.01	.01	.62	-.01	.02	.64	-.01	.02	.76				
Gender (male) (T1)	-.06	.23	.80	.05	.44	.90	.01	.41	.97				
Tenure (years) (T1)	.01	.02	.63	-.01	.04	.87	.00	.04	.98				
RW Tenure (years) (T1)	-.02	.02	.39	.02	.04	.73	.00	.04	.98				
Legitimacy (T1)	.08	.11	.47	-.05	.21	.79	.00	.19	.99				
Organisational Commitment ( <i>path b</i> ) (T2)							<b>-.71*</b>	.24	.00				
<i>R</i> <sup>2</sup>	<b>.36*</b>		.01	<b>.25<sup>+</sup></b>		.10	<b>.36*</b>		.01				

Note. Listwise *N* = 67; LLCI, lower limit of 95% confidence interval; ULCI, upper limit of 95% confidence interval.

\**p* < .05. <sup>+</sup>*p* < .10, bolded for clarity. \*Significant at 95% CI. <sup>+</sup>Significant at 90% CI.

**Summary**

A summary of direct relationships between predictors, mediators, and outcomes is shown in Table 12. A summary of the hypotheses for each model is shown in Table 13 (Model 1) and Table 14 (Model 2).

Table 12

*Summary of Predictor, Mediator, and Outcomes Variable Relationships*

<b>Predictor (T1) and Mediator (T2) Variables</b>	<b>Mediator (T2) and Outcome (T3) Variables</b>							
	Social and Professional Isolation (T2)	Organisational Commitment (T2)	Social and Professional Isolation (T3)	Organisational Commitment (T3)	Job Satisfaction	Remote Work Effectiveness	Advancement Opportunities	Turnover Intent
Physical Isolation	✘	✓-	✘	✘	✘	✘/✓+	✘	✘/✓-
Need for Relatedness	✓+	✘	✓+	✘	✘	✘/✓-	✘	✘
Management Support	✘	✓+	✘	✓+	✓+/✘	✘	✓+	✓-/✘
Remote Work Reason	✓+	✓-	✘	✘	✘	✘	✓-	✘
Social and Professional Isolation (T2)				✓-	✓-	✘	✓-	✘
Organisational Commitment (T2)			✓-		✓+	✓+	✓+	✓-

*Note.* ✘ = no relationship, ✓- = direct negative effect, ✓+ = direct positive effect, / = relationship with social and professional isolation as mediator / relationship with organisational commitment as mediator.

Table 13

*Summary of Model One Hypotheses – Mediator = Social and Professional Isolation (T2)*

<b>Predictor Variables (T1)</b>	<b>Outcome Variables (T3)</b>				
	Organisational Commitment	Job Satisfaction	Remote Work Effectiveness	Advancement Opportunities	Turnover Intent
H1: Physical Isolation	✘	✘	✘	✘	✘
H3: Need for Relatedness	✓-	✓-	✘	✓-	✘
H5: Management Support	✘	✘	✘	✘	✘
H7: Remote Work Reason	✓-	✓-	✘	✓-	✘

*Note.* ✓ = supported, ✘ = not supported, - = negative indirect effect, + = positive indirect effect

Table 14

*Summary of Model Two Hypotheses – Mediator = Organisational Commitment (T2)*

<b>Predictor Variables (T1)</b>	<b>Outcome Variables (T3)</b>				
	Social and Professional Isolation	Job Satisfaction	Remote Work Effectiveness	Advancement Opportunities	Turnover Intent
H2: Physical Isolation	✓+	✓-	✓-	✓-	✓+
H4: Need for Relatedness	✘	✘	✘	✘	✘
H6: Management Support	✓-	✓+	✓+	✓+	✓-
H8: Remote Work Reason	✓+	✓-	✓-	✓-	✓+

*Note.* ✓ = supported, ✘ = not supported, - = negative indirect effect, + = positive indirect effect

## Discussion

The aim of the current study was to determine how individuals and organisations can be successful when participating in remote work. To achieve this, the study investigated which features of remote work influenced individual and organisational outcomes, and through which mechanisms these effects occurred. Direct effects between the predictor variables (physical isolation, need for relatedness, management support, remote work reason) and outcome variables (social and professional isolation, organisational commitment, job satisfaction, advancement opportunities, remote work effectiveness, turnover intent) were assessed, and the significance of the mediator variables (social and professional isolation, organisational commitment) examined, with potentially confounding variables controlled for (age, gender, tenure, remote work tenure, legitimacy). Participant responses were gathered using three online surveys separated by two-week intervals, with predictor variables assessed at time 1, mediator variables at time 2, and outcome variables at time 3. Results fully supported three out of the ten hypotheses, with two partly supported and five not supported.

### Results Supporting Hypotheses

Hypotheses 2, 6, and 8 were fully supported, and Hypotheses 3 and 7 were partly supported. Results of these hypotheses will be interpreted in the following section.

**Physical isolation.** Consistent with Hypothesis 2, analyses showed organisational commitment mediated the relationship between physical isolation and each of the outcome variables. The observed direct negative association between physical isolation and organisational commitment (T2) was expected. While the ability to work remotely could symbolise the organisation's willingness to cater to individual employee needs (Gajendran & Harrison, 2007), it seems being physically separated from the organisation for an extended

period of time can negatively impact feelings of organisational commitment. This may be explained by a lack of workplace interaction and decreased involvement in organisational functioning, resulting in an inability to identify and connect with the organisation (Belle et al., 2015; Wiesenfeld et al., 2001).

Assessing the mediation, positive indirect effects were observed for social and professional isolation and turnover intent and negative indirect effects were observed for job satisfaction, remote work effectiveness, and advancement opportunities. Results indicate that employees spending more time outside of the main organisational space will experience heightened social and professional isolation, be more likely to leave, and have lowered job satisfaction, remote work effectiveness, and advancement opportunities as explained by a lowered sense of organisational commitment.

Organisational commitment (T2) was positively related to job satisfaction, advancement opportunities, and remote work effectiveness, and negatively related to social and professional isolation (T3) and turnover intent. These relationships are consistent with previous research, which has regarded organisational commitment as highly important to employee and organisational functioning (Balfour & Wechsler, 1996). Research has also expressed the importance that a sense of organisational identity and belonging play in reducing the impact of isolation, increasing satisfaction, and in helping encourage employees to stay with the organisation (Willis, 2016).

The results indicated the presence of suppression in the relationships between physical isolation and remote work effectiveness, and physical isolation and turnover intent. These relationships only surfaced when controlling for organisational commitment, and suggest future research is needed to understand the effects. Future research is especially warranted for turnover intent, where the direct effect was negative and the indirect effect positive.

In summary, Hypothesis 2 results suggest that if remote workers spend an increased amount of time physically isolated from their organisation, they may be at risk of experiencing negative outcomes due to a lowered sense of organisational commitment.

**Need for relatedness.** As predicted, need for relatedness was positively related to social and professional isolation. This relationship demonstrates the difficulty that employees face in establishing feelings of social connection (Baumeister & Leary, 1995) and shows that, despite the rapid advancement of communication technologies, social and professional isolation may be more salient to those with high need for relatedness.

Hypothesis 3 was only partly supported. Social and professional isolation mediated the relationship between need for relatedness and organisational commitment, job satisfaction, and advancement opportunities (three out of five outcome variables), with negative indirect effects observed for each outcome variable. High need for relatedness in remote workers is associated with higher perceptions of social and professional isolation, which in turn relates to lower feelings of organisational commitment, job satisfaction, and advancement opportunities. These relationships were only observed through the mediator and not directly from need for relatedness. In observing the mediator to outcome relationships, social and professional isolation (T2) was negatively associated with organisational commitment (T3), job satisfaction, and advancement opportunities. This provides support for the impact that feeling isolated and lonely can have in determining important job outcomes (Bloom et al., 2014).

Support of Hypothesis 3 is consistent with the theory presented, which argues that employees who have a need to interact with others in the workplace will not feel as satisfied or valued within the organisation when they feel “out of the loop” (Golden et al., 2008). Consequently, for remote workers who have a need to interact with others in the workplace,

some negative outcomes may be experienced as a result of feeling socially and professionally isolated from the organisation and its members.

**Management support.** Organisational commitment mediated the relationship between management support and each of the outcome variables, fully supporting Hypothesis 6. As predicted, a direct positive association was observed between management support and organisational commitment. Through positive interactions with the manager, remote workers feel the organisation values and is invested in them (Balfour & Wechsler, 1996), thereby resulting in greater levels of organisational commitment. As above, organisational commitment is highly important (Balfour & Wechsler, 1996) and was shown to be related to all outcome variables in the current study.

For the mediation, social and professional isolation and turnover intent displayed negative indirect effects, with positive indirect effects shown for job satisfaction, remote work effectiveness, and advancement opportunities. Encouragingly, the results indicate that if remote workers feel supported by their managers, they will experience increased job satisfaction, feel they have sufficient advancement opportunities, feel they are effective in their work, feel less isolated, and be less likely to leave, as explained through increased organisational commitment. While the positive significance of supportive managers is well recognised (Rhoades & Eisenberger, 2002), the results provide further evidence for the importance of supporting remote workers so that they do not struggle to adapt to an inherently isolating environment.

The detection of organisational commitment as a mediator of these relationships provides information about the mechanisms linking the predictor and outcome variables. In saying that, a parallel pathway was observed for advancement opportunities. A parallel pathway implies a direct relationship as well as an indirect effect and could be investigated in future research.

Overall, remote workers who feel supported by their managers are likely to experience more positive outcomes as a result of feeling committed to their organisation.

**Remote work reason.** Relationships between remote work reasons and the outcome variables were mediated by both social and professional isolation and organisational commitment.

All remote work reasons were positively related to social and professional isolation (T2), with family reasons having the strongest influence, followed by work requirement and personal preference. As predicted, the relationships suggest that all reasons of remote work are associated with an increase in social and professional isolation. Hypothesis 9 was partly supported, with social and professional isolation mediating the relationship between all remote work reasons and organisational commitment, job satisfaction, and advancement opportunities (three out of five outcome variables). All indirect effects were negative, with family reasons having the strongest negative effect, followed by work requirement, and personal preference.

The results indicate that those working remotely due to family reasons are experiencing the greatest social and professional isolation, and thus facing the most detriment to the final outcome variables (organisational commitment, job satisfaction, advancement opportunities, remote work effectiveness, turnover intent). This could be explained by family reasons representing a less voluntary remote work reason than personal preference (Gajendran & Harrison, 2007). Employees working remotely for family reasons may do so in order to simplify their personal life, however, may not see remote work as a better option for them in regard to their work. Some may also see remote work as the only option due to the high cost and low availability of childcare, rather than as a choice (Christensen, 1987). In contrast, those working remotely for personal preference may see remote work as a more satisfactory, yet still negative, work method for them, regardless of what it may mean for their personal life.

It was expected that work requirement would represent the least voluntary remote work reason, and therefore, result in the most detrimental effects compared to family reasons and personal preference. Interestingly, this was not the case, with work requirement falling somewhere in between the other two reasons. The difference may stem from how work requirement as a reason was defined. It was expected that employees would choose this option if they were required to work remotely due to a push from their organisation. However, from the comments made by these participants, it appears many defined their reason as work requirement if they had chosen to live elsewhere to the organisational office space, or seek work in a different city, and therefore, to fulfil their role must work remotely. Under this definition, work requirement becomes more voluntary, providing explanation for the results observed (Gajendran & Harrison, 2007).

All remote work reasons were negatively related to organisational commitment (T2), with family reasons having the strongest effect, followed by work requirement and then personal preference. Fully supporting Hypothesis 10, organisational commitment mediated the relationship between all remote work reasons and all outcome variables. Results displayed negative indirect effects for job satisfaction, advancement opportunities, and remote work effectiveness, and positive indirect effects for turnover intent, and social and professional isolation, as well as a direct effect between family reasons and social and professional isolation. The results indicate that all remote workers experienced lowered levels of organisational commitment, which lead to unfavourable effects on the outcome variables. Those working remotely for family reasons experienced the most detrimental effects across all variables, followed by work requirement and then personal preference. It is possible those working remotely for family reasons felt less supported in this choice than those working remotely for personal preference or as a work requirement. Organisations may not have as much respect for or trust in employees working remotely for family reasons as they may believe it will be more

difficult for these employees to be effective organisational members while juggling family commitments, for example (Sullivan & Lewis, 2001). Organisational attitudes such as these do not send positive signals to employees and are likely to be reciprocated with lowered organisational commitment.

### **Results Not Supporting Hypotheses**

Hypotheses 1, 4, and 5 were not supported, and Hypotheses 3 and 7 were partly not supported. Results of these hypotheses will be interpreted in the following section.

**Physical isolation.** Unlike with organisational commitment, no relationships between physical isolation and the outcome variables were mediated by social and professional isolation, leaving Hypothesis 1 not supported. This can be understood by examining the direct effects, where physical isolation was not directly related to social and professional isolation as a mediator, and social and professional isolation not directly related to remote work effectiveness or turnover intent.

Additionally, physical isolation was not directly related to any of the outcome variables in Model 1. The results can be interpreted as positive for remote work. Working remotely and being physically separated from the organisation for longer periods of time is not associated with increased employee social and professional isolation. Additionally, being away from the organisation more often is not directly associated with employee organisational commitment, job satisfaction, remote work effectiveness, advancement opportunities, or turnover intent. This may be reassuring for employees and organisations wishing to increase their involvement in remote work as it demonstrates that negative effects are not certain to develop.

**Need for relatedness.** Although need for relatedness was positively associated with social and professional isolation (T2), social and professional isolation (T2) was not associated with remote work effectiveness or turnover intent. Consequently, social and professional isolation did not mediate the relationship between need for relatedness and remote work

effectiveness, and need for relatedness and turnover intent, leaving Hypothesis 3 partly not supported. These non-significant results are in contrast to what was expected from theory (Vega, 2003). It appears feeling socially and professionally isolated does not impact an employee's feelings of effectiveness while working remotely, or their desire to remain with the organisation. The result is counterintuitive, suggesting the lack of significance may be attributed to, for example, the small sample size rather than no true association. As highlighted in the results, the confidence interval for remote work effectiveness was very close to not including zero, with the direct effect removed when the mediator was accounted for, providing further support for a significant association.

Need for relatedness was not associated with organisational commitment (T2) and thus, organisational commitment did not mediate any of the relationships between need for relatedness and any of the outcome variables, not supporting Hypothesis 4. Although in contrast to the result expected, the results are positive for remote work. Whether a remote worker has high need for relatedness at work appears to have little impact on their commitment to the organisation or on subsequent outcomes. This encourages all employees to be open to working remotely, no matter their need states.

**Management support.** Similarly, management support was not related to social and professional isolation (T2), and thus, social and professional isolation did not mediate any of the relationships between management support and the outcome variables, not supporting Hypothesis 5. This result is in contrast to the theory presented (Watad & DiSanzo, 2000; Willis, 2016). Nevertheless, as supported by the results of Hypothesis 6, the significance of management support should not be overlooked when implementing remote work arrangements.

**Remote work reason.** Social and professional isolation did not mediate the relationships between any of the remote work reasons and remote work effectiveness and turnover intent, leaving Hypothesis 7 partly not supported. As with need for relatedness

(Hypothesis 3), this result may be explained by a lack of association between social and professional isolation (T2) and remote work effectiveness and turnover intent. Further, no direct effects were observed in Model 1. Lack of direct effects indicate that any association between predictor and outcome is due to the variables respective relationships with the mediator. No direct relationship between the remote work reasons and the outcome variables suggests that it does not matter why employees are working remotely, the outcomes should not differ significantly. This is positive for individuals and organisations as it means remote work should be accessible and promoted for all.

### **Limitations and Future Research Suggestions**

A limitation of the current study was the small sample size ( $N = 67$ ) and subsequent risk of reduced power. Retention of participants across the three time points was satisfactory; therefore, to increase the overall sample, more individuals should have been initially approached. Due to the time constraints and niche population eligible to participate, this was less achievable. Despite a small sample size, many significant effects were observed. This may be interpreted as emphasising the strength of the relationships shown in the current study and highlighting the importance of future research in this area. Additionally, more significant results could have been observed with a larger sample and greater power (Field, 2013), potentially obtaining more results in line with the theory presented. However, this potential limitation was partly counteracted by increasing the significant alpha level to a more lenient  $p = .10$ . Future research should endeavour to replicate the current study with a greater number of participants.

The study used self-report scales in order to gather information regarding the variables of interest, as this was regarded the most appropriate for assessing individual perceptions. While participants were assured their responses would remain confidential, elements of bias or

common method variance may have influenced the results. The predictors, mediators, and outcomes were separated in time in order to reduce these issues (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003), although there is always likely to be some measurement error. Surveys in the current study were separated by two-week intervals. This was sufficient to separate the variables, however, was not deemed long enough for the predictor variables to influence the mediator variables and then the outcome variables. Future research should seek to study the variables over a longer period of time in order to examine directionality and whether the predictors lead to changes in the mediators and then the outcomes. This would also allow previous levels of the variables to be controlled for in any analyses.

While recruiting participants from a number of organisations and countries increased the generalisability of findings, it meant there were more differences between the participants. For example, different organisations are likely to have unique policies and programmes designed for implementing remote work, each with varying levels of success. These may determine how participants respond to the variables of interest, altering the results. For example, some organisations may require all remote workers to come into the office once a fortnight to interact with other members, or may have a policy around weekly check-ins with managers. If this was the case for participants in the study, it is thought to have impacted on variables such as isolation and management support. Controlling for these effects would require a deeper understanding of the participants' organisations, information that was not collected in the current study, but which may be useful to examine in future research.

Reason for participating in remote work has been highly under researched, and as such, the measures used in the current study were somewhat simplistic. Three categories were used (family reasons, work requirement, personal preference), however these were not mutually exclusive, with some participants commenting multiple categories would be true for them. As indicated by the significant results, an employee's reason for working remotely may be

important in determining how they experience remote work. Perhaps due to the multifaceted nature of some participants remote work reason, future research could focus on developing a scale measuring the extent to which participants work remotely voluntarily or due to specific reasons.

To investigate the associations presented in further detail, objective measures of some variables could be utilised. For example, future research could measure participants' actual effectiveness and number of offered advancement opportunities while working remotely rather than this being based on participant perceptions. While self-report data can be fairly accurate when measuring individuals' experiences, an objective measure would provide more precise detail and be valuable when drawing conclusions (Podsakoff et al., 2003).

A variable not assessed in the current study was frequency of communication. Due to the importance of social and professional isolation and organisational commitment to work outcomes, it is necessary to further understand the mechanisms behind these feeling states. With virtual communication becoming more functional, it is being used more frequently for both work and non-work communication. In relation to social and professional isolation, non-work communication may be highly significant as it represents employees building relationships. For remote workers who are physically separated, feeling socially connected through virtual non-work communication may be vital in reducing perceptions of isolation. Virtual work communication is also relevant. Increased interaction between managers and remote workers about work-related topics may represent a fundamental aspect of support, and may in turn increase feelings of commitment. Future research could investigate both perceived and actual frequency of work and non-work communication to better understand its influence on remote work outcomes.

### **Theoretical Implications**

The current study adds to research in the area on a theoretical level. Neither social and professional isolation nor organisational commitment have previously been investigated for their mediating influence on remote work outcomes. As highlighted in the introduction, remote work research is generally inconsistent in its findings (Gajendran & Harrison, 2007), with a lack of understanding existing around how and why different outcomes are experienced. Identifying two relevant mediating variables helps to disentangle the mechanisms behind previously reported effects and makes it easier for researchers to provide more straightforward recommendations for employees and organisations.

Additionally, there is little quantitative research examining the relevance of different employee reasons for working remotely. The current study not only controlled for different reasons, but also found employees differed significantly on a number of variables based on their reason for working remotely. This encourages future research to take reason for working remotely into account when examining outcomes.

The current study was also unique in its focus on multiple predictors. This is in contrast to solely investigating the time an employee spends distanced from the organisation or whether they work remotely or not. The significance of predictors other than physical isolation on the outcome variables supports this research decision. Through expanding the scope of factors associated with remote work, it is suggested the relationships between remote work and subsequent outcomes may become clearer and easier to understand.

### **Practical Implications**

The findings from the current study may be reassuring for organisations and employees participating in remote work. While indirect effects through the mediators were shown, few direct effects between predictors and outcomes were observed. This is encouraging for

employees concerned they may be disadvantaged due to working remotely. It shows outcomes are not dependent on the decision to work remotely more or less often, but on the way in which the arrangement is managed. Rather than the focus being solely on the physical characteristics (e.g. where they work from, time they are isolated), it should also include the way in which employees are interacting with remote work (e.g. why they do it, how they are supported). It is hoped the results will change the mindset of organisations and employees considering or participating in remote work.

In a practical sense, the results suggest positive outcomes can be achieved through focusing on reducing employee social and professional isolation and increasing organisational commitment. To decrease social and professional isolation, organisations should provide employees with the ability to talk to others and share achievements, and make an effort to include them in organisational rituals and ceremonies where possible (Harpaz, 2002; Wiesenfeld et al., 2001). Designing policies around interaction may be beneficial. This could signal to employees that the organisation understands their fears of becoming isolated, and is taking preventive measures to reduce the potential for negative outcomes.

To increase organisational commitment, organisations should make an effort to recognise remote workers contributions, show concern for their wellbeing, and provide them with support and encouragement (Balfour & Wechsler, 1996). Results also identified management support as an important factor in increasing organisational commitment. Fortunately, this is a variable that can be manipulated and improved. To increase perceptions of management support, managers should frequently communicate with remote workers, express the value of their contributions, provide feedback, and show concern for their wellbeing (Kottke & Sharafinski, 1988). The difficulty of this is that it largely needs to be communicated virtually for remote workers, requiring greater effort. However, the benefits of greater support are clear, indicating the effort is worthwhile.

Again, policy could be created to encourage and monitor support. Additionally, implementing policy could help to reassure remote workers that they will not be forgotten while absent from the organisational work space. As it is not just remote workers who are at risk of feeling isolated and uncommitted, an organisational focus on improving social and professional isolation and organisational commitment should only bring positive outcomes for the employees and organisation as a whole.

### **Conclusion**

The study revealed that multiple significant factors should be taken into account when seeking to determine the various outcomes of remote work. In contrast to previous research, many factors only related to the outcome variables through the inclusion of a mediator, rather than as a result of the remote working factors directly. Social and professional isolation and organisational commitment were highlighted as particularly important. Remote workers and their organisations should be mindful of the potential for isolation and reduction in commitment when employees are physically distanced from the organisation. Through exploring the findings in future research, the inconsistencies associated with remote work research can be further reduced. Improved consistency will allow benefits to be realised at a greater frequency than challenges, encouraging employees and organisations to embrace contemporary work environments and be confident in what they can achieve.

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**Appendix A – Recruitment Advertisement**

**\*\* REMOTE WORK RESEARCH \*\***

Hi there,

My name is Rebecca McLaughlin and I am a student at the University of Canterbury, New Zealand. As part of my Masters in Applied Psychology Dissertation I am conducting research on remote workers. Specifically, I am investigating for whom remote work is best suited, how organisations can ensure success in implementation, and the potential outcomes of these arrangements. The resulting knowledge will contribute by allowing the benefits of remote work to be more widely enjoyed and further advancements to be made in the contemporary working environment.

If you work remotely, I would greatly appreciate your participation - you even have the chance to win a prize! Additionally, if you know of others who remote work please share this information with them. The more people who participate, the more accurate and valuable the results. Your help with the distribution of this survey is much appreciated!

Survey Link

[http://canterbury.qualtrics.com/jfe/form/SV\\_eD0ejEIFoxzTT3D](http://canterbury.qualtrics.com/jfe/form/SV_eD0ejEIFoxzTT3D)

Thank you,

Rebecca McLaughlin  
Department of Psychology  
University of Canterbury

# REMOTE WORK RESEARCH

I am looking for individuals who...

- Work remotely for 1 hour or more per week  
*Note: This refers to doing work, which could otherwise be done in a central organisational space, from a different location e.g. home*
- Are in continuous employment
- Have been in their current role for at least 3 months

What does participation involve?

- Completion of three short online surveys separated by two-week intervals
- Less than 30 min of your time (across 4 weeks)
- If you complete all surveys, you will go in the draw to win 1 of 5 \$100 supermarket vouchers

For more information and to complete the first survey, click on or copy and paste the link or scan the QR code below.

[http://canterbury.qualtrics.com/jfe/form/SV\\_eD0ejEIFoxzTT3D](http://canterbury.qualtrics.com/jfe/form/SV_eD0ejEIFoxzTT3D)



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## **Appendix B – Information Sheet**

### **The Impact of Remote Work**

Hi there! Thank you for taking an interest in this study. The purpose of this research is to gain greater understanding of the impact of remote working arrangements. This knowledge will be used to improve outcomes for employees and organisations. If you choose to take part in this study, your involvement will consist of the completion of three short online surveys. The three surveys will be separated by two-week intervals, with the project lasting four weeks. In total, the three surveys should not take longer than 30 minutes to complete. To thank you for your participation, if you complete all three surveys, you will go in the draw to win one of 5 \$100 supermarket vouchers.

Please note that any information or opinions provided will be kept confidential to the researcher and supervisor, and any published or reported results will not identify the participants. Some of the questions in the survey may concern sensitive issues. If you do not feel comfortable responding to any questions, you do have the option of leaving them unanswered. As participation is voluntary, you also have the option of withdrawing from the survey at any point without penalty. Partially completed surveys will not be used and raw data can be returned or destroyed upon request before 01/09/2017.

The project is being carried out as a requirement for completion of a Masters in Applied Psychology Dissertation by Rebecca McLaughlin ([rebecca.mclaughlin@pg.canterbury.ac.nz](mailto:rebecca.mclaughlin@pg.canterbury.ac.nz)) under the supervision of Dr. Katharina Näswall ([katharina.naswall@canterbury.ac.nz](mailto:katharina.naswall@canterbury.ac.nz) Ph: +64 3 369 4588 Ext: 94588), who can be contacted if you have any concerns about this project or would like further information. The project has been reviewed and approved by the University of Canterbury Human Ethics Committee, and participants should address any complaints to The Chair, Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch ([human-ethics@canterbury.ac.nz](mailto:human-ethics@canterbury.ac.nz)).

Thank you for participating in this study.

**By completing this survey, it is understood that you agree to the conditions outlined above.**

## Appendix C – Full Survey

### Demographics – T1

1. How old are you?
2. What is your gender? (*Male, Female, Other*)
3. What is your employment status? (*Employed full time, Employed part time, Other*)
4. How many hours, on average, do you work per week?
5. How long have you worked for your current employer?
6. Where is the organisation you work for located? (*New Zealand, Other*)
7. How many hours do you work outside of the main organisational office per week?
8. Why do you engage in remote work? (*Family reasons, Personal preference, Work requirement, Other*)
9. How long have you been engaging in remote work?

### Legitimacy – T1 (*1 = strongly disagree, 7 = strongly agree*)

1. It is common for employees in my organisation to work remotely
2. It is preferred that employees in my organisation work remotely
3. It is acceptable for employees in my organisation to work remotely

### Need for Relatedness – T1 (*1 = strongly disagree, 7 = strongly agree*)

1. At work, I have the need to hang out with people
2. At work, I have the need to be with other people
3. At work, I have the need to be around people so I do not feel alone
4. At work, I have the need to feel like I was a part of a team or a group

### Management Support – T1 (*1 = strongly disagree, 7 = strongly agree*)

1. My manager strongly considers my goals and values
2. Help is available from my manager when I have a problem
3. My manager really cares about my wellbeing
4. Even when I do the best job possible, my manager fails to notice (R)
5. My manager cares about my general satisfaction at work
6. My manager shows very little concern for me (R)
7. My manager cares about my opinions

### Social and Professional Isolation – T2, T3 (*1 = strongly disagree, 7 = strongly agree*)

1. I felt left out on activities and meetings that could enhance my career
2. I missed out on opportunities to be mentored
3. I felt out of the loop
4. I missed face-to-face contact with coworkers
5. I felt isolated
6. I missed the emotional support of coworkers
7. I missed informal interaction with others

### Organisational Commitment – T2, T3 (*1 = strongly disagree, 7 = strongly agree*)

1. I was quite proud to be able to tell people who it is I work for
2. What this organisation stands for was important to me
3. I worked for an organisation that was incompetent and unable to accomplish its mission (R)
4. I felt a strong sense of belonging to this organisation

5. I felt like "part of the family" at this organisation
6. The people I worked with did not care about what happened to me (R)
7. This organisation appreciated my accomplishments on the job
8. This organisation did all it could to recognise employees for good performance
9. My efforts on the job were largely ignored or overlooked by this organisation (R)

**Job Satisfaction – T3** (*1 = strongly disagree, 7 = strongly agree*)

1. All in all, I was satisfied with my job
2. In general, I didn't like my job (R)
3. In general, I liked working in this organisation

**Advancement Opportunities – T3** (*1 = strongly disagree, 7 = strongly agree*)

1. This organisation provided me with fair opportunities for advancement or promotion
2. I saw little opportunity for advancement in this organisation (R)

**Remote Work Effectiveness – T3** (*1 = strongly disagree, 7 = strongly agree*)

1. Working remotely is not a productive way for me to work (R)
2. It is difficult to do my job being remotely managed (R)
3. Working remotely is an efficient way for me to work
4. Working remotely is an effective way for me to work

**Turnover Intent – T3** (*1 = strongly disagree, 7 = strongly agree*)

1. I often thought about quitting this job
2. I thought I would probably look for a job during the next year