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The relationship between family-to-work conflict, loneliness and work performance during the first wave of the Coronacrisis: The moderating role of work engagement

N. (Nienke) Michels

University of Technology Eindhoven

Student Number 1395521

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Supervisors:
Dr. L. (Leander) van der Meij, TU/e, HPM
Prof. Dr. J. (Jan) de Jonge, TU/e, HPM
Prof. Dr. P.M. (Pascale) Le Blanc, TU/e, HPM

TU/e, School of Industrial Engineering.

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Preface

I proudly present you my thesis: The relationship between family-to-work conflict, loneliness and work engagement during the first wave of the Coronacrisis: The moderating role of work engagement. It has been a lot of hard work writing this thesis, especially during the Coronacrisis. However, it has also been a challenge and fun to do. I am happy about the final version and hope that I was able to help others on how to cope with the Coronacrisis.

I would like to thank my mentor, Leander van der Meij, for his supervision during my master thesis. He has supported and coached me in writing my thesis while also working from home due to the Coronacrisis. Even though we were not able to meet up in person, I always felt that I could contact him whenever I needed to. In addition, I would like to thank Pascale Le Blanc for the valuable feedback in the final period of my thesis. Furthermore, many thanks to everyone who helped me during my master thesis. In particular, the people who participated in this study. Finally, I would like to thank my friends and family who spent a lot of time with me due to the restrictive measures and helped me during this final period of my master.

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Abstract

The Coronacrisis had a dramatic impact on employees and organisations across the globe. For example, people's work and family environment changed, everyday work routines ended, and social connections were lost. This study examined the relationship between family-to-work conflict, loneliness and work performance during the first wave of the Coronacrisis, with work engagement as a moderator variable, to offer practical implications for organisations. A total of 1826 people participated in the first questionnaire. This questionnaire was filled in by the same participant seven times during the first wave of the Coronacrisis. The last questionnaire received 596 responses. The results showed that during the first wave of the Coronacrisis in weeks when employees reported more loneliness, they also reported less task performance, less contextual performance, and more counterproductive work behaviour. In addition, in weeks when employees reported more family-to-work conflict, they also reported less contextual performance and more counterproductive work behaviour. Furthermore, the results showed that work engagement moderated the relationship between family-to-work conflict and counterproductive work behaviour. For highly engaged employees, family-to-work conflict did not result in more counterproductive work behaviour, whereas for low engaged employees, family-to-work conflict resulted in more counterproductive work behaviour. Therefore, organisations should create climates in which employees do not experience high levels of loneliness and family-to-work conflict. In addition, organisations should focus on keeping their employees engaged during crisis situations such as the Coronacrisis.

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Introduction

The Coronavirus caused a global public health crisis and has disrupted work and organisations across the globe (Kniffin et al., 2021; Li & Wang, 2020). For example, everyday work routines ended, people's work and family environments changed, and social connections were lost (Kniffin et al., 2021). As a result, the Coronacrisis has likely affected employees' work performance. Furthermore, boundaries between work and home became vaguer during the Coronacrisis, which may have resulted in more conflict between the work and family domains (Rigotti et al., 2020). Much research has been done on the relationship between work-family conflict and work performance and showed that work-family conflict might negatively affect an employees' work performance (Beauregard & Henry, 2009; Odle-Dusseau et al., 2012). However, work-family conflict and work performance have mostly been studied under very different and less extreme circumstances than the Coronacrisis (Rigotti et al., 2020). In addition, feelings of loneliness have increased during the Coronacrisis, and as a result, the Coronacrisis was labelled as the pandemic of loneliness (Shah et al., 2020). Up till now, not much research has been done on the relationship between loneliness and work performance (Ozcelik & Barsade, 2018). Therefore, this study will investigate work-family conflict and loneliness during the Coronacrisis and its relation to employees' work performance. However, before investigating work-family conflict, loneliness and work performance during the Coronacrisis, I will first discuss the Coronavirus and preventive measures taken in the Netherlands to show how the Coronacrisis changed people's work and family environments.

Preventive measures during the first wave of the Coronacrisis

On February 27th, Bruno Bruins, the Dutch minister of medical care, announced the first positive Corona patient in the Netherlands live on television (NOS, 2020c). Corona is a virus caused by COVID-19 and can cause respiratory complaints, fever, and breathing problems in severe cases (RIVM, 2020a, 2020b). These complaints can resemble a cold. In the worst case, the virus can cause severe pneumonia, sometimes resulting in death (RIVM, 2020a, 2020d).

In the Netherlands, the Coronacrisis came in waves. The number of infections and the number of ICU admissions defined whether it was a wave or not. If the number of infections and ICU admissions continued to increase, this resulted in a wave during the Coronacrisis (Peter Ullenbroeck, 2020). Preventive measures during waves included lockdowns, social distancing, self-isolation, and quarantine to slow down the spread of the Coronavirus (Shah et al., 2020). This study focuses on the first wave of the Coronacrisis in the Netherlands, which was from March 2020 till June 2020 (RIVM, 2020e). During the first wave, there was not much knowledge on the Coronavirus. The Coronavirus spread unnoticed, easily and fast during the first wave in the Netherlands (RIVM, 2020f). It is a dangerous virus, especially for older adults and people with health issues (Rijksoverheid, 2020f). During this first wave, 10.1 thousand residents of the Netherlands died from the Coronavirus or suspected Coronavirus (CBS, 2020).

The Dutch approach during the first wave of the Coronacrisis was to relieve the healthcare sector and protect vulnerable people in society (Rijksoverheid, 2020f). This was done by working together to ensure that all people follow the hygiene rules and keep a physical distance of 1.5 meters. Some venues were only open to a limited extent (and only when possible). Furthermore, people who experienced Coronavirus symptoms should be tested immediately and stay at home until the results were known. By doing this, people were less likely to infect one another with the Coronavirus. When a person was tested positive on the Coronavirus, the Area Health Authority in the Netherlands (GGD) carried out a source and contact tracing (Rijksinstituut voor Volksgezondheid en Milieu, 2020). People who were possibly infected by the Coronavirus were informed by the GGD and advised to stay at home because they may also have been infected with the Coronavirus and be contagious (Rijksinstituut voor Volksgezondheid en Milieu, 2020). The Dutch government hoped this would help contain the virus as soon as it emerged (Rijksoverheid, 2020b; RIVM, 2020c).

The measures to prevent the spread of the Coronavirus changed the normal daily routines of people and their work and family environment (Kniffin et al., 2021). At the beginning of the first Coronacrisis wave, the Dutch government decided on an intelligent lockdown to maintain control of the Coronacrisis. This intelligent lockdown caused several restrictions. For example, 1) where possible, employees should work from home, 2) people should keep the 1.5-meter distance from one another, and 3) it was no longer allowed to organise events with more than 100 persons (Rijksoverheid, 2020g; RIVM, 2020d). Furthermore, a key measure in fighting the Coronavirus was social distancing. However, social distancing had many implications for family life, work, and their interaction. Almost everyone had to find new routines to adapt to these uncommon life circumstances (Rigotti et al., 2020). Furthermore, on March 15th, the Dutch government decided that schools, childcare, bars, restaurants, and gyms closed for three weeks until April 6th (NOS, 2020b). The Coronacrisis has hit the Dutch labour market, and in various sectors, the work has stopped, putting jobs at stake (Rijksoverheid, 2020h). The Dutch Institute for Employee insurance (UWV) registered an increase of 10.000 more unemployment benefits at the end of march (UWV, 2020a, 2020b). In May 2020, the severe economic and social consequences became apparent, and it showed that many companies suffered from the Coronacrisis, also in the long term (NOS, 2020a; Rijksoverheid, 2020e). As a result, this might have increased feelings of job insecurity among employees (Rudolph et al., 2020).

Employees' experience during the first wave of the Coronacrisis

The first wave of the Coronacrisis was expected to change employees' work environment (Kniffin et al., 2021). A major change in employees' work environment was that the Dutch government recommended that employees worked from home (Rijksoverheid, 2020f). Before the Coronacrisis, some employees already worked from home. However, working from home was mostly done part-time or incidentally and not for the entire workweek (Kniffin et al., 2021; van Veldhoven & van Gelder, 2020b, 2020a). Thus, working from home during the first wave of the Coronacrisis may differ from working from home before the crisis because there was an obligatory factor (Kniffin et al., 2021; van Veldhoven & van Gelder, 2020b, 2020a). As a result, research done on working from home before the Coronacrisis can only be generalised to a limited extent to working from home during the first wave of the Coronacrisis (van Veldhoven & van Gelder, 2020b, 2020a). This led to an increasing interest to further investigate the role of working from home during the first wave of the Coronacrisis.

Another challenge of working from home may be the difficult segmentation between work and family (Rudolph et al., 2020). Because work and family were ‘taking place’ at the same physical location (Cacioppo et al., 2006; Rudolph et al., 2020). As a result, it is likely that during the first wave of the Coronacrisis, for some employees' family- and work-life may have been more mixed up (Allen et al., 2015; Rudolph et al., 2020). This raised the interest to further investigate the relationship between working from home and family-to-work conflict during the first wave of the Coronacrisis.

In addition, the combination of working from home and social isolation may have required a certain amount of adaptability from some people (Rigotti et al., 2020). During the first wave of the Coronacrisis, social isolation might have increased, and relationships with colleagues may have suffered (Rudolph et al., 2020). The Dutch government indicated that there should be extra attention to people's physical and mental well-being during the Coronacrisis (Rijksoverheid, 2020i). Previous research showed the importance of social interactions for individuals’ well-being. For example, informal chats among colleagues are essential for a person's mental and physical health (Kniffin et al., 2021). However, for some people, social interactions happened through telecommuting during the first wave of the Coronacrisis when working from home. A negative risk of telecommuting is misunderstandings because of the absence of non-verbal cues, causing employees' concerns about being personally rejected by their colleagues, contributing to their loneliness (Kniffin et al., 2021). This raised the interest to further investigate the role of loneliness during the first wave

of the Coronacrisis. Accordingly, this study will investigate the relationship between working from home and loneliness during the first wave of the Coronacrisis.

Furthermore, an employees' work engagement might have acted as a buffer against the effects of family-to-work conflict and loneliness during the first wave of the Coronacrisis. “Highly engaged employees experience high levels of energy (vigour), are enthusiastic about their work (dedication), and are often fully immersed in their job so that time appears to fly by (absorption)” (Sulea et al., 2012, p. 191). In addition, highly engaged employees are less likely to experience family-to-work conflict and loneliness (Halbesleben & Wheeler, 2008; Öge et al., 2018; Ruiz-Frutos et al., 2020; Vaziri et al., 2020). Therefore, this study will investigate employees' work engagement and whether work engagement acts as a buffer for family-to-work conflict and loneliness in its relationship with employees' work performance during the first wave of the Coronacrisis.

To summarise, this study focuses on the relationship between family-to-work conflict, loneliness and work performance during the first wave of the Coronacrisis. First, if family-to-work conflict, loneliness and work performance changed during the first wave of the Coronacrisis. In addition, I was interested in an employee's household size, household composition, and whether an employee worked from home during the first wave of the Coronacrisis as antecedents of employees' family-to-work conflict and loneliness. Lastly, I was interested in the role of work engagement during the first wave of the Coronacrisis and if work engagement might have acted as a buffer against the effect of family-to-work conflict and loneliness on work performance during the first wave of the Coronacrisis. In the next chapter, I will be reviewing the literature on the key study variables, i.e. 1) Family-to-work conflict, 2) Household size, 3) Household composition, 4) Working from home, 5) Loneliness, 6) Work performance, and 7) Work engagement.

Scientific introduction

Family-to-work conflict among employees during the first wave of the Coronacrisis

During the first wave of the Coronacrisis, for many people, their work environment and home environment converged. Because of social isolation, most people were more bound to their homes (Rijksoverheid, 2020b). At the beginning of the first wave of the Coronacrisis, schools and childcare centres were closed, so children spent more time at home (NOS, 2020d). Due to the above developments, boundaries between work and family became vaguer (Fisher et al., 2020; Rigotti et al., 2020). The vaguer boundaries resulted in work and family competing for individuals' resources, time, and energy (Rigotti et al., 2020). As a result, family-to-work conflict was likely to increase (Bartsch et al., 2020; Kniffin et al., 2021; Ozcelik & Barsade, 2018; Rigotti et al., 2020).

Previous research defined work-family conflict as a form of inter-role conflict where the role pressures from the work and family domains are mutually incompatible in some respect. That is, participation in the work role is made more difficult by participation in the family role (Greenhaus & Beutell, 1985). Work-family conflict is made up of two reciprocal processes, such that work interferes negatively with family (work-to-family conflict) or family interferes negatively with work (family-to-work conflict) (Greenhaus & Beutell, 1985). In this research, the focus is on family interfering with work because I was interested in work-related outcomes (family-to-work conflict).

Furthermore, work-family conflict consists of three dimensions: 1) time-based conflicts, 2) strain-based conflicts, and 3) behaviour-based conflicts (Greenhaus & Beutell, 1985). Firstly, time-based conflicts could happen when for example, a person spends his/her limited amount of time on one role (e.g., family role) and is not able to spend this time on other roles (e.g., work role) (Greenhaus & Beutell, 1985). According to some researchers, during the first wave of the Coronacrisis, family- versus work roles got more entangled with each other. In turn, this may have caused more time-based conflicts (Fisher et al., 2020; Rigotti et al., 2020). Secondly, strain-based conflicts happen when for example, an employee experiences much stress and tension from home and takes this stress and tension to their work, where it is transferred to their work (Greenhaus & Beutell, 1985). The first wave of the Coronacrisis had the potential to increase the levels of stress (Arslan et al., 2020; Talaee et al., 2020; Yıldırım & Solmaz, 2020). People became worried about their health and their family's health (Prime et al., 2020). Families needed to adapt to new routines and

structures; for example, some parents had to home school their children during their work hours (Behar-Zusman et al., 2020; Prime et al., 2020; Rijksoverheid, 2020b; Vaziri et al., 2020). These new stress and tensions at home could have interfered with an employee's work (Arslan et al., 2020; Prime et al., 2020; Vaziri et al., 2020). Finally, behaviour-based conflicts are conflicts where work expects the employees to behave in a certain way, while at home, other behaviour is expected (Greenhaus & Beutell, 1985). During the first wave of the Coronacrisis, these three different types of conflicts each may have affected employees work-family interaction (Arslan et al., 2020; Fisher et al., 2020; Prime et al., 2020; Rigotti et al., 2020; Vaziri et al., 2020).

Employees' household size and composition

During the first wave of the Coronacrisis, some families spent an exceptional amount of time together at home. In some cases, parents had to home school their children (Behar-Zusman et al., 2020; Rijksoverheid, 2020b). This generated much potential to create conflicts within families because many hours were spent together in a limited space while confronting the stress of a pandemic (Behar-Zusman et al., 2020). In addition, previous research has shown that "employees with larger families tend to allocate more time and effort to their families and less to their jobs" (Golden et al., 2006, p. 1343). Therefore, I expected that employees with larger household sizes and/or children would experience more family-to-work conflict.

However, some employees lived on their own during the first wave of the Coronacrisis. Previous research showed that immediate family members living in the same household require the most attention, time, and emotional energy (Golden et al., 2006; Greenhaus & Powell, 2003). Therefore, employees living alone may have experienced fewer demands from their families because they had no immediate household members, resulting in less to no family-to-work conflict (Golden et al., 2006). I expected that employees living alone experienced lower family-to-work conflict during the first wave of the Coronacrisis compared to employees who live together with someone.

To summarise, the first wave of the Coronacrisis generated new home situations (e.g., employees working from home and children receiving home-schooling) in which household members spent many hours together in a limited physical space (Behar-Zusman et al., 2020). Also, employees with large families may have allocated more time and effort to their families and less to their jobs. These employees may have faced great demands from their family members, especially from the members who lived in the same house (Golden et al., 2006; Greenhaus & Powell, 2003). This indicated the importance to investigate the role of household size and children in work-family conflict during the first wave of the Coronacrisis and led to the first and second hypotheses:

1. *Employees who live together with more people (i.e., have a larger household size) experience more family-to-work conflict during the first wave of the Coronacrisis compared to people who live alone*
2. *Employees with children at home experience more family-to-work conflict during the first wave of the Coronacrisis than employees without children at home*

Working from home

During the first wave of the Coronacrisis, many employees were obligated to work from home and telecommute (Rijksoverheid, 2020b). Previous research has shown that "when an employee extensively telecommutes, (s)he is more likely to face a greater number of demands, expectations, and strains due to their accessibility and proximity to household members" (Golden et al., 2006, p. 1343). When there was more time spent on the family role (e.g., home-schooling their children), this may have led to less time spent on the work role (Greenhaus & Powell, 2003). In turn, family-to-work conflict might have increased (Beauregard & Henry, 2009; Kniffin et al., 2021).

However, working from home might also be positively related to work-family conflict. Because working from home might have given employees the opportunities to alter their work schedule and effectively manage their family needs (Golden et al., 2006; Greenhaus et al., 2006;

Greenhaus & Powell, 2003). However, the first wave of the Coronacrisis abruptly ended normal work routines (Kniffin et al., 2021). Therefore, organisations were not prepared for this new virtual online work environment which they needed to create at high speed (Kniffin et al., 2021). In turn, employees may not have been given the opportunity to effectively manage their family needs and alter their work schedule during the first wave of the Coronacrisis.

Furthermore, depending on the work sector, some employees had to be physically present at their work during the first wave of the Coronacrisis (Rijksoverheid, 2020b, 2020a). I expected that when employees were physically present at their workplace, their work and family boundaries were clearer (Rigotti et al., 2020). As a result, it was less likely that family would interfere with work resulting in less family-to-work conflict (Golden et al., 2006; Greenhaus & Powell, 2003).

To summarise, when working from home, employees might have experienced greater family involvement, and as a result, more work-family conflict during the first wave of the Coronacrisis (Golden et al., 2006). However, when employees were physically present at work, it was less likely that family interfered with work (Golden et al., 2006; Greenhaus & Powell, 2003). This leads to the third hypothesis:

3. *Employees who work from home experience more family-to-work conflict during the first wave of the Coronacrisis compared to employees who are not working from home*

Employees' feelings of loneliness during the first wave of the Coronacrisis

Social distancing, working from home, and staying at home were essential measures to contain the Coronavirus outbreak during the first wave of the Coronacrisis (Luchetti et al., 2020; NOS, 2020d; Rijksoverheid, 2020f). However, these measures to contain the Coronavirus might have caused a loss of social connections (Kniffin et al., 2021; Landman, 2020; Rijksoverheid, 2020d). Due to these measures, there was a concern that feelings of loneliness increased (Luchetti et al., 2020). Loneliness is defined as "the subjective feeling of the unpleasant absence of a social network or social relationships" (De Jong Gierveld & Van Tilburg, 2008, p. 9; Leigh-Hunt et al., 2017, p. 158). In addition, previous research showed strong evidence that social isolation and loneliness were associated with increased all-cause mortality and increased risk of depression (Leigh-Hunt et al., 2017; Luchetti et al., 2020; Shankar et al., 2013). Therefore, it was essential to keep in touch with other people and maintain social interactions during the first wave of the Coronacrisis (Rijksoverheid, 2020d).

Employees' household size and composition

Even though some households spent more time together than before the first wave of the Coronacrisis, I expected that feelings of loneliness might have increased (Behar-Zusman et al., 2020; Luchetti et al., 2020). Previous research showed that loneliness during the Coronacrisis was higher in adults who are single, divorced, separated, widowed, and/or living alone. Furthermore, being married or living with a partner was associated with less loneliness and are protective factors of loneliness (Li & Wang, 2020; Stack, 1998). As a result, I expected that employees' living alone during the first wave of the Coronacrisis were likely to experience more feelings of loneliness (Luchetti et al., 2020). In addition, I expected that employees with larger family sizes were likely to experience fewer feelings of loneliness during the first wave of the Coronacrisis.

Furthermore, previous research on the impact of having children on loneliness has received conflicting results. Much of the research was focused on the elderly and showed weak relationships between having children and loneliness (Stack, 1998). During the first wave of the Coronacrisis, employees loneliness might have increased due to the loss of social connections and most time was spent with family at home (Behar-Zusman et al., 2020; Kniffin et al., 2021). As a result, having children might have become a protective factor of loneliness because children at home were social connections. Therefore, I expected that employees with children at home were likely to experience fewer feelings of loneliness during the first wave of the Coronacrisis compared to employees without children at home. This leads to the fourth and fifth hypotheses:

4. *Employees who live together with more people (i.e., have a larger household size) are less lonely during the first wave of the Coronacrisis than employees who live alone*
5. *Employees with children at home are less lonely during the first wave of the Coronacrisis than employees without children at home*

Working from home

More employees worked from home during the first wave of the Coronacrisis (Rijksoverheid, 2020b). As a result, employees might have started to feel more disconnected from colleagues, which has been identified as a risk factor for loneliness (Shah et al., 2020). In addition, working from home and social distancing may have led to workplace withdrawal and workplace loneliness (Kniffin et al., 2021). When working from home during the first wave of the Coronacrisis, I expected feelings of loneliness increased among employees (Kniffin et al., 2021; Shah et al., 2020). This leads to the sixth hypothesis:

6. *Employees who work from home are lonelier during the first wave of the Coronacrisis than employees who do not work from home*

Employees' work performance during the first wave of the Coronacrisis

Due to the first wave of the Coronacrisis, there were many changes in our society. However, it is unclear how employees' work performance was affected. Work performance is defined as behaviour or actions, rather than results, relevant to the organisation's goals (Campbell, 1990; Rotundo & Sackett, 2002). Work performance was separated into three fields; 1) Task performance, 2) Contextual performance, and 3) Counterproductive work behaviour (Koopmans et al., 2011).

Firstly, task performance are “outcomes or behaviour that directly or indirectly contribute to the organisation's technical core of the proficiency with which one performs central job tasks” (Koopmans et al., 2011, p. 858). For example, task performance is an employee's work quantity, work quality, and job knowledge (Koopmans et al., 2011). During the first wave of the Coronacrisis, some employees started working from home. However, "employees who do not usually work from home may lack the adequate space, equipment, and materials to do their work in this unusual setting. Moreover, they may find it difficult to structure their workdays" (Rudolph et al., 2020, p. 9). Furthermore, the boundaries between work and family were almost non-existent (Rigotti et al., 2020; Rijksoverheid, 2020g). This virtual work environment changed how an employee performed a task (Bartsch et al., 2020). Because of these challenging conditions (e.g. home-schooling, new virtual work environment, non-existent boundaries), some tasks could have become unclear for employees (Bartsch et al., 2020). Therefore, I expected a reduction in task performance during the first wave of the Coronacrisis.

Secondly, contextual performance are “outcomes or behaviour that support the organisational, social, and psychological environment in which the technical core must function” (Koopmans et al., 2011, p. 858). Predictors of contextual performance are, for example, delivering effort, facilitating the performance of co-workers for the team, teamwork, cooperation, and communication (Campbell, 1990; Koopmans et al., 2011). During the first wave of the Coronacrisis, employees experienced a new virtual online work environment when working from home. This new environment came with several challenges for employees and their teams (Kniffin et al., 2021). For example, previous research has shown that "leadership in virtual environments is indeed more challenging than in face-to-face teams. Coordinating within teams, building trust, forming shared mental models, and managing conflict all require extra efforts than in a traditional team setting" (Liao, 2017, p. 657). Besides, telecommunication lacks non-verbal signs, which may have resulted in miscommunications between colleagues (Kniffin et al., 2021). Thus, I expected a reduction in contextual performance during the first wave of the Coronacrisis.

Thirdly, counterproductive work behaviours are “outcomes or behaviours that harm the organisation's well-being” (Koopmans et al., 2011, p. 861; Rotundo & Sackett, 2002, p. 69). Employees' counterproductive work behaviours are, for example, absenteeism, being late for work,

complaining, and engaging in off-task behaviour (Koopmans et al., 2011). During the first wave of the Coronacrisis, the boundaries between work and family were almost non-existent, which could have led to less time spent on actual work-related tasks (Rigotti et al., 2020; Rijksoverheid, 2020g). As a result, employees may have engaged in off-task behaviour. In addition, social isolation may have resulted in more workplace loneliness among employees (Kniffin et al., 2021). Previous research has shown that workplace loneliness results in less affective commitment among employees and workplace withdrawal (Ozcelik & Barsade, 2018). Withdrawal includes absence, arriving late or leaving early, and taking longer breaks than authorized. As a result, the amount of time an employee works is less than required by the organisation (Spector et al., 2006). Furthermore, the first wave of the Coronacrisis can increase stress, anxiety, burnout, fear, and frustration among employees (Arslan et al., 2020; Talaee et al., 2020; Yıldırım & Solmaz, 2020). Previous research showed that negative emotions (e.g., loneliness, anxiety, fear and frustration) might predict the occurring of counterproductive employee behaviour (Spector et al., 2006). To that end, I expected an increase in counterproductive work behaviour during the first wave of the Coronacrisis.

To summarise, due to the first wave of the Coronacrisis, there were many changes in society. As a result, boundaries between work and home might have become vague and family-to-work conflict might increase (Rigotti et al., 2020). Due to these changes, I expected a reduction in task and contextual performance during the first wave of the Coronacrisis. Also, I expected an increase in counterproductive work behaviour during the first wave of the Coronacrisis.

Family-to-work conflict and work performance during the first wave of the Coronacrisis

How was family-to-work conflict related to work performance during the first wave of the Coronacrisis? Much research was done on the relationship between family-to-work conflict and work performance (e.g., Beauregard & Henry, 2009; Odle-Dusseau et al., 2012). Less to no family-to-work conflict is associated with more task performance and contextual performance (Odle-Dusseau et al., 2012). Furthermore, previous research showed that low family-to-work conflict is related to higher work performance, increased job satisfaction, and a stronger organisational commitment (Sirgy & Lee, 2018). However, high levels of family-to-work conflict can be seen as a workplace hazard and should be treated as such (Cullen & Hammer, 2007). Family-to-work conflict may negatively affect an employees' work performance (Beauregard & Henry, 2009). Furthermore, previous research showed that family-to-work conflict directly affects the workplace emotions of employees, including counterproductive work behaviour (Greenhaus et al., 2006). Thus, when employees experience family-to-work conflict, this could have resulted in counterproductive work behaviour (Greenhaus et al., 2006).

To summarise, I expected that due to the first wave of the Coronacrisis, people would experience more family-to-work conflict (Kniffin et al., 2021). In turn, more family-to-work conflict was associated with worse work performance (Beauregard & Henry, 2009). This leads to the seventh hypothesis:

7. *Family-to-work conflict is negatively related to work performance during the first wave of the Coronacrisis*

Loneliness and work performance during the first wave of the Coronacrisis

Previous research showed that high-quality interactions, including informal chats, are essential for someone's mental and physical health (Kniffin et al., 2021). During the Coronacrisis, the loss of social connections was likely to hurt employees and may have increased feelings of workplace loneliness (Kniffin et al., 2021). In addition, workplace loneliness showed to have strong negative relationships with employees' affective commitment, affiliative behaviours, and performance (Kniffin et al., 2021; Ozcelik & Barsade, 2018). Furthermore, lonelier employees are more likely to show work withdrawal which is related to less work performance and counterproductive work behaviour (Ozcelik & Barsade, 2018; Spector et al., 2006). Therefore, previous researchers

mentioned that "management should not treat work loneliness as a private problem that needs to be individually resolved by employees who experience this emotion but rather should consider it as an organisational problem that needs to be addressed both for the employees' sake and that of the organisation" (Ozcelik & Barsade, 2011, p. 5). This showed the importance for organisations to create climates in which employees do not experience workplace loneliness (Kniffin et al., 2021).

To summarise, the first wave of the Coronacrisis might have increased feelings of loneliness among employees and more workplace loneliness (Kniffin et al., 2021; Luchetti et al., 2020). Workplace loneliness and work withdrawal are related to less work performance (Kniffin et al., 2021; Ozcelik & Barsade, 2018). This leads to the eighth hypothesis:

8. *Loneliness is negatively related to work performance during the first wave of the Coronacrisis*

Employees' work engagement during the first wave of the Coronacrisis

Work engagement represents “the willingness to dedicate physical, cognitive, and emotional resources to this work” (Christian et al., 2011, pp. 101–102). Furthermore, an engaged individual approaches the tasks associated with their work with a sense of self-investment, energy, and passion, which should translate into higher in-role and extra-role performance (Kahn, 1990). Work engagement is characterised by vigour, dedication, and absorption (González-Romá et al., 2006; Sulea et al., 2012). Thus, “engaged employees experience high levels of energy (vigour), are enthusiastic about their work (dedication), and are often fully immersed in their job so that time appears to fly by (absorption)” (Sulea et al., 2012, p. 191). Previous studies examined the outcomes of engagement and found that it was associated with higher performance and lower turnover intentions (Christian et al., 2011; Halbesleben & Wheeler, 2008).

Work engagement as a buffer for family-to-work conflict

During the first wave of the Coronacrisis, I expected that employees might experience more family-to-work conflict (Rigotti et al., 2020). Previous research showed that family-to-work conflict was negatively related to work performance (Beauregard & Henry, 2009; Odle-Dusseau et al., 2012). However, work engagement might act as a buffer and reduce family-to-work conflict according to the Conservation of Resources theory (COR) (Grandey & Cropanzano, 1999; Hobfoll, 2001; Kim et al., 2018).

The Conservation of Resources theory (COR) predicts that an individual aspires to preserve, protect and build resources such as objects, conditions, personal characteristics or energies (Hobfoll, 2001; Shimazu et al., 2013). According to the COR theory, stress will occur when individuals resources are threatened with a loss (Hobfoll, 2001). When juggling the work and family role, this might lead to resource loss (Grandey & Cropanzano, 1999). In addition, COR theory predicts that: "those with greater resources are less vulnerable to resource loss and more capable of orchestrating resource gain. Conversely, those with fewer resources are more vulnerable to resource loss and less capable of resource gain” (Hobfoll, 2001, p. 349; Kim et al., 2018). Previous literature suggests that work engagement is an important motivational resource for employee performance (Kim et al., 2018). Therefore, work engagement might act as a stable resource and buffer an individual's resource loss due to family-to-work conflict (Grandey & Cropanzano, 1999; Kim et al., 2018).

More specifically, highly engaged employees are more resistant to stress and can store their resources (Kim et al., 2018; Ruiz-Frutos et al., 2020). Therefore, highly engaged employees might have been able to offset resource loss due to family-to-work conflict by drawing from larger resource reservoirs (Kim et al., 2018). This may indicate that highly engaged employees have a large "reservoir" of resources for sustaining work motivation and enhancing performance (Hobfoll, 2001; Kim et al., 2018). As a result, highly engaged employees are less affected by resource loss due to family-to-work conflict during the first wave of the Coronacrisis (Grandey & Cropanzano, 1999; Hobfoll, 2001; Kim et al., 2018). Furthermore, I expected that low engaged employees experienced more resource loss due to family-to-work conflict during the first wave of the Coronacrisis (Grandey

& Cropanzano, 1999). Because low engaged employees did not have enough resources to buffer the resource loss due to family-to-work conflict, this leads to the ninth hypothesis:

9. *The negative relationship between family-to-work conflict and work performance during the first wave of the Coronacrisis was stronger for employees with low work engagement compared to employees with high work engagement*

Work engagement as a buffer for loneliness

During the first wave of the Coronacrisis, I expected that loneliness increased among employees (Luchetti et al., 2020). In addition, previous research showed that loneliness was negatively related to work performance (Kniffin et al., 2021; Ozcelik & Barsade, 2018). However, work engagement might have acted as a buffer and reduced loneliness among employees according to the Job Demands and Resources model (JD-R) (Bakker et al., 2004).

The job demands and resource model (JD-R) is a widely used model to study the relationships between job characteristics and job outcomes (Bakker et al., 2004). The JD-R model assumes that high job demands lead to stress reactions while having many job resources leads to higher motivation and productivity (Bakker & Demerouti, 2007). "Job demands refer to those physical, psychological, social, or organisational aspects of the job that require sustained physical and/or psychological (cognitive and emotional) effort or skills and are therefore associated with certain physiological and/or psychological costs" (Bakker & Demerouti, 2007, p. 312). Loneliness was negatively related to work performance and might have functioned as a job demand during the first wave of the Coronacrisis (Ozcelik & Barsade, 2018). Work engagement might act as a buffer in the relationship between loneliness and work performance during the first wave of the Coronacrisis.

More specifically, engaged employees are likely to infect their colleagues with their enthusiasm, have stronger social ties and better health (Ruiz-Frutos et al., 2020; Sulea et al., 2012). Furthermore, a highly engaged employee approaches the tasks associated with their work with a sense of self-investment, energy, and passion (Kahn, 1990). Self-investment, energy, and passion are job resources (Bakker & Demerouti, 2007). "Job resources refer to those physical, psychological, social, or organisational aspects of the job that are either/or functional in achieving work goals, reduce job demands and the associated physiological and psychological costs, and stimulate personal growth, learning and development" (Bakker & Demerouti, 2007, p. 312). In addition, highly engaged employees have high job resources (e.g., self-investment, energy and passion), which may buffer the job demands of loneliness (Bakker et al., 2004; Bakker & Demerouti, 2007; Öge et al., 2018). However, low engaged employees have low job resources but high job demands. Therefore, job resources cannot buffer the job demands (Bakker & Demerouti, 2007). As a result, loneliness remains negatively related to work performance during the first wave of the Coronacrisis for low engaged employees. This leads to the tenth hypothesis:

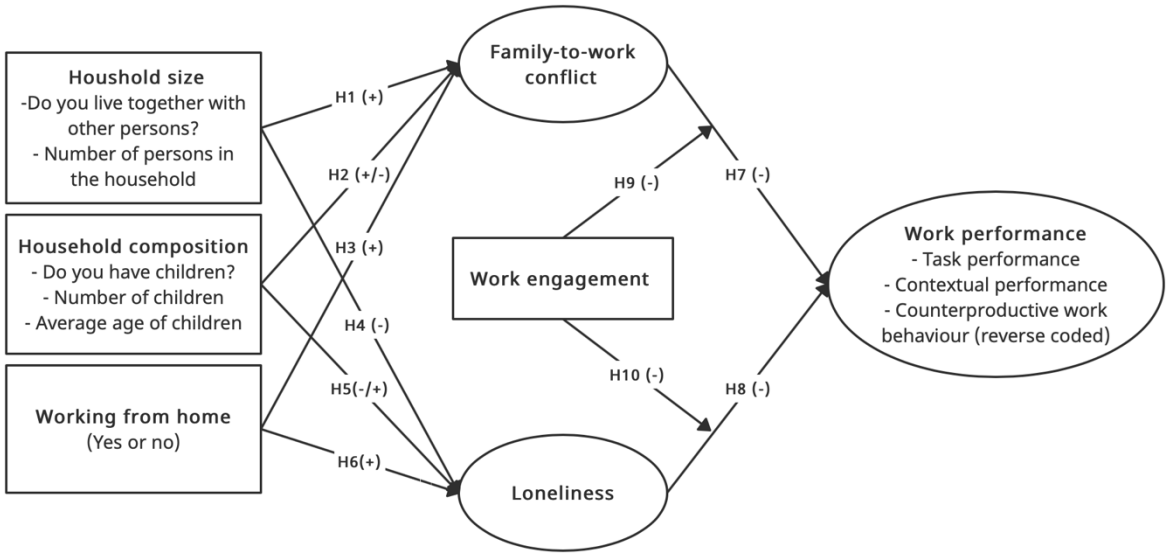
10. *The negative relationship between loneliness and work performance during the first wave of the Coronacrisis was stronger for employees with low work engagement compared to employees with high work engagement*

Summary

This study was designed to examine employees' family-to-work conflict and feelings of loneliness during the first wave of the Coronacrisis and how these are related to employees' work performance. Additionally, this study also examined important antecedents of employees' family-to-work conflict and feelings of loneliness, such as employees' household size, household composition and whether or not they work from home. Furthermore, this study examines employees' work engagement during the first wave of the Coronacrisis and whether it acts as a buffer for the negative effects of employees' family-to-work conflict and loneliness on their work performance. The conceptual model can be found in Figure 1.

Figure 1

Conceptual model



Note. The + or – shows the direction of the relationship. + = a positive relationship. - = a negative relationship.

Method

Participants

In order to test the hypotheses, I designed a questionnaire that participants completed on seven measurement moments during the first wave of the Coronacrisis. So, this study has a repeated measurements design. The strength of this study is that due to the repeated measurements, I was able to look at developments over time within persons. When distributing the questionnaire on multiple platforms, I did not have a specific target group. The goal was to get as many participants as possible. The first questionnaire was filled in by 1826 participants. From the 1826 participants, 1156 participants had a paid job for three or more than three days per week (i.e., a part-time job or a full-time job). Table 1 shows the sample size per measurement moment and the time between measurement moments. For this study, I included participants with a paid part-time or full-time job because I was interested in work-related outcomes. This study excluded participants who did not have a paid job and participants who worked one or two days per week because this study considered it a job on the side and usually applies to students and younger people. Also, only Dutch participants were included in the study because the questionnaire was in Dutch. Not every country worked with the same measures to prevent the spread of the Coronavirus. Thus, the questionnaire was only applicable to Dutch people.

The sample consisted of 87.3% females (*N* = 994) and 12.7% males (*N* = 145). Furthermore, the average age was 43 (*SD* = 12.2). The youngest participant was 18, and the oldest participant was 79. During the first wave of the Coronacrisis, 41.7% (*N* = 473) of the sample worked in a vital sector, and 48.6% (*N* = 554) did not work in a vital sector. A vital work sector includes jobs that are essential to Dutch society. For example, vital work sectors are health-care, education, or public transport. During the Coronacrisis, employees with vital jobs needed to continue working, else this might lead to social disruption. Interestingly, most of the sample participants worked in the healthcare sector (26.2%; *N* = 297). Furthermore, 84.4% of the participants *(N* = 961) lived together with other persons, from which 81% (*N* = 778) had a partner. In addition, 56.1% of the participants (*N* = 539) in our sample had children. During the first wave of the Coronacrisis, 39.5% of the participants (*N* = 450) did not work from home, 43.9% (*N* = 500) worked from home, and 16.6% (*N* = 189) worked from home partially.

Table 1

Sample size per measurement moment

Period		Sample size			Measurement moment	
Date	Week	Total	Work	No work	Moment	Questionnaires
27-03-2020	13	1826	1156	670	1	Baseline
03-04-2020	14	1233	665	568	2	Follow-up 1
10-04-2020	15	1070	523	547	3	Follow-up 2
24-04-2020	17	925	343	582	4	Follow-up 3
08-05-2020	19	820	303	517	5	Follow-up 4
29-05-2020	22	679	239	440	6	Follow-up 5
19-06-2020	25	596	219	377	7	Follow-up 6

Procedure

The baseline questionnaire was developed with the online tool Qualtrics and spread on multiple platforms (e.g., Facebook, WhatsApp, LinkedIn) to find participants. I welcomed participants on the first page, where also the confidentiality of the study was explained. In addition, I asked participants to give consent to participate in this study. Furthermore, a distinction in participants was made based on whether they had a paid job for three or more than three days per week.

Secondly, the participants of the baseline questionnaire received e-mails with follow-up questionnaires during the first wave of the Coronacrisis. I asked participants for their e-mails in the baseline questionnaire. It was emphasised that their e-mail account was only known to the researchers of this study and that their personal information was not shared with other people. The follow-up questionnaires measured the same variables as the baseline questionnaire, except for the demographic questions. Demographic questions were only asked in the baseline questionnaire. Each participant received seven questionnaires during the first wave of the Coronacrisis from March 2020 till June 2020: The baseline questionnaire and six follow-up questionnaires.

Measures

The baseline questionnaire and follow-up questionnaires measured the variables work performance, family-to-work conflict, loneliness, and work engagement. Each variable was assessed by a validated scale derived from previous research (De Jong Gierveld & Van Tilburg, 2008; Geurts et al., 2005; Koopmans et al., 2012; Schaufeli et al., 2019). The Dutch version of the scales was used because the questionnaire was only spread in the Netherlands. Furthermore, work performance, family-to-work conflict, and work engagement were only measured for participants who had a job for three or more days a week. There were seven measurement moments, and for every moment, a Cronbach's alpha was calculated. The Cronbach's alphas can be found in Table 2.

Table 2

Cronbach's alpha per measurement moment

		Measurement moment						
		1	2	3	4	5	6	7
1	Family-to-work conflict	.70	.72	.78	.77	.83	.79	.73
2	Loneliness	.70	.69	.73	.72	.70	.75	.81
3	Task performance	.87	.88	.86	.89	.89	.90	.89
4	Contextual performance	.89	.90	.91	.91	.92	.93	.94
5	Counterproductive work behaviour	.82	.85	.85	.87	.85	.86	.84
6	Work engagement	.95	.89	.88	.88	.88	.89	.89

Work performance

To measure work performance during the first wave of the Coronacrisis the Individual Work Performance Questionnaire (IWPQ) (in Dutch: Individuele Werkprestatie Vragenlijst – IWPV) was used (Koopmans et al., 2012). The IWPQ is divided into three different scales: 1) Task performance, 2) Contextual performance, and 3) Counterproductive work behaviour. The questions were answered on a 5-point Likert scale from 1 (*seldom*) to 5 (*always*) for every scale. Firstly, the task performance scale consists of 5 items. An example of a question would be "In the past seven days, I was able to plan my work so that I finished on time" or "In the past seven days I was able to set priorities" (Koopmans et al., 2012). Secondly, the contextual performance scale consists of 8 items. An example of a question would be "In the past seven days on my own initiative, I started new tasks when my old tasks were completed" or "In the past seven days I came up with solutions for new problems" (Koopmans et al., 2012). Thirdly, the counterproductive work behaviour scale consists of 5 items. An example of a question would be "In the past seven days, I complained about minor work-related issues at work" or "In the past seven days, I talked to colleagues about the negative aspects of my work" (Koopmans et al., 2012).

Work-family conflict

The questionnaire used to measure family-to-work conflict during the first wave of the Coronacrisis was the SWING (Survey Work-home Interaction – NijmeGen) (Geurts et al., 2005). I used one scale from the SWING: negative Home-Work Interaction (HWI-). The questions were answered on a 4-point Likert scale ranging from 1 (*never*) to 4 (*always*). The HWI- scale consists of 4 items. An example of a question would be "In the past seven days, how often does it happen that the situation at home makes you so irritable that you take your frustrations out on your colleagues?" or "In the past seven days, how often does it happen that problems with your spouse/family/friends affect your job performance?" (Geurts et al., 2005).

Loneliness

The questionnaire used to measure loneliness during the first wave of the Coronacrisis was the ‘’Short Loneliness Scale’’ (In Dutch: ‘’Verkorte eenzaamheidsschaal’’) (De Jong Gierveld & Van Tilburg, 2008). The Short Loneliness Scale consists of 6 items. The questions could be answered with "yes", "more or less", and "no". An example of a question would be "I experience a general sense of emptiness" or "There are many people I can trust completely". The variable loneliness was constructed by adding up the items (De Jong Gierveld & Van Tilburg, 2008). A score between 0 and 1 indicated not lonely, which applied to 46.6% of our sample. A score between 2 and 4 indicated somewhat lonely, which applied to 43.1% of our sample. Lastly, a score between 5 and 6 indicated very lonely, which applied to 10.8% of our sample.

Work Engagement

The questionnaire used to measure work engagement during the first wave of the Coronacrisis was the 3 item scale of the Utrecht Work Engagement Scale (UWES-3) (Schaufeli et al., 2019; Schaufeli & Bakker, 2003). Each item represents a dimension of work engagement: 1) "At my work, I feel bursting with energy" (vigour); 2) "I am enthusiastic about my job" (dedication); 3) "I am immersed in my work" (absorption). The questions could be answered on a 7-point Likert scale ranging from 1 (*never*) to 7 (*always*). Previous research investigated the internal consistency and factorial validation of UWES-3 by investigating national samples from 5 nations (Finland, Japan, The Netherlands, Flanders and Spain) (Schaufeli et al., 2019). It showed a Cronbach's alpha ranging from 0.77 (Spain) to 0.85 (Japan). The national sample of the Netherlands showed a Cronbach's alpha of 0.82 (Schaufeli et al., 2019).

Household size and household composition

These variables were measured once in the baseline questionnaire. The items to measure household size and composition were not derived from previous research. The items were created for this study. Firstly, household size was measured by asking the following questions: "Do you live together with other persons?", if yes: "With how many persons do you live together (including yourself)?". The first question was labelled ''Living Together'', which is a categorical variable (No = 0, Yes = 1). The second question was labelled "Household size". When participants lived alone, they got a value of 0 and were not treated as missing values during the analysis.

Secondly, household composition was measured by asking the following questions to participants: "Do you have children?", if yes: "How many children do you have?" and "How old are your children?". The first question was labelled "Children", which is a categorical variable (No = 0, Yes = 1). The second question was labelled "Number of children", having no children was not treated as a missing value. Participants who did not have children received a value of 0. The third question was labelled "Average age of children". The average age of children was constructed by adding up the age of all children in a household, divided by the number of children in that household. When participants did not have children, the average age of children could not be constructed. Therefore, participants without children were treated as system missing values and not considered during the analysis. In addition, during the analysis, participants with older children were compared to participants with younger children.

Working from home

Working from home was measured for participants who had a paid job for three or more than three days a week. Working from home was measured by asking participants the following questions: "Do you currently work from home because of the measures that have been taken to prevent the spread of the Coronavirus?". Participants had the option to choose between "yes", "no", and "partially". This question was labelled "Working from home", which is a categorical variable (No = 0, Yes = 1, Partially = 2).

Statistical analysis

The data in this study was analysed through longitudinal multilevel regression modelling, in which observations (lower-level units) were nested within participants (higher-level units). Each participant filled in seven questionnaires during the first wave of the Coronacrisis from March till June. The multilevel structure implied that for each person (higher-level), there were seven measurement moments (lower-level) during the first wave of the Coronacrisis. Because measures were collected over time and across different individuals, a multilevel approach was best suited to analyse the data (Hox et al., 2010). Furthermore, conceptually similar to ANOVA and regression, multilevel models are particularly suitable for nested research data, such as completed timewaves within individuals (Hox et al., 2010). Therefore, for hypothesis testing, multilevel analysis was used based on the data structure.

Before hypothesis testing, the data gathered from each questionnaire were combined into one large dataset. First, all participants who did not have a job for three days or more were omitted from the dataset. Next, three cases were deleted from the dataset because the participants did not live in the Netherlands

The dataset was analysed through a longitudinal multilevel regression model. All multilevel analyses were conducted with R. The primary unit of analysis (Level 1) was completed measurement moments (N = 7973), with individuals as units at level 2 (N = 1139). Level-one variables are measured multiple times during the first wave of the Coronacrisis; Measurement moment, work performance, family-to-work conflict, loneliness and work engagement. Level-two variables are variables measured only once in the baseline questionnaire; Household size, household composition, and working from home. For the multilevel regression, measurement moment was a continuous variable, and the outcome variables for the multilevel regression were standardised (Hox et al.,

2010). For hypotheses testing, six selection steps were distinguished after the empty model. The model is "empty" because it does not have any exploratory variables in it yet. The empty model is often used as a start model because it gives a clear idea of the variation at both levels (van Duijn et al., 1999).

1. Adding moment as a fixed level-one variable (Model 1)
2. Adding a random slope of measurement moment (Model 2)
3. Adding:
    a. Fixed level-two variables (Model 3)
    b. Fixed level-one variables (Model 3)
4. Adding random slopes of fixed level-one variables (Model 4)
5. Adding work engagement as a fixed level-one variable (Model 5)
6. Adding an interaction term between work engagement and another fixed level-one variable (Model 6)

The second and fourth step gives the opportunity to test whether the relationships investigated between the explanatory variable and the outcome variable was different between persons. In addition, the sixth step gives the opportunity to test how the found effects vary over persons. In steps 3b, and 5, I wanted to estimate the relationship between two level-one variables. To do this, I centred the level-one variables around each person mean. By doing so, the within-person centred variable captures fluctuations relative to each person's average over time during the first wave of the Coronacrisis. Furthermore, I calculated the intraclass correlation (ICC) in step 1. ICC is the proportion of the between-individual variance of an outcome variable. Thus, ICC is interpreted as 'the proportion of the variance explained by the grouping structure in the population' (Geeraert & Demoulin, 2013; Hox et al., 2010).

The fixed effects from the multilevel analysis can be tested with a *t*-test, based on the ratio of parameter estimate to standard error. However, for the random effects, a *t*-test is not appropriate. Instead of a *t*-test, a likelihood ratio or deviance test is used to compare the goodness of fit of two nested models (van Duijn et al., 1999). The deviance of the model with the most parameters is equal to or smaller than the deviance of the model containing less parameters. Thus, the difference in deviance between the two nested models can be used as a test statistic for the random effects (van Duijn et al., 1999). Furthermore, suppose a model explained more variance in the outcome variable as compared to the previous model on the person-level. In that case, it is more likely to have significant random effects.

Results

Descriptive statistics

Table 3 shows the means, standard deviations, number of observations, and correlations for level-two variables from the baseline questionnaire and level-one variables after combining all the data from measurement moments into one large dataset. In addition, Table 4 shows the correlations between level-one variables and level-two variables.

Table 3

Descriptive statistics for level-two and level-one variables

		N	*M*	*S.D.*	*1*	*2*	*3*	*4*	*5*
1	Living Together [a]	1139	.84	.36					
2	Number of household members	961	3.12	1.29	[c]				
3	Children [a]	961	.56	.50	[c]	.48**			
4	Number of children	538	1.96	.86	[c]	.64**	[d]		
5	Average age of children	538	13.85	7.29	[c]	-.05	[d]	.20**	
6	Working from home [b]	1139	.77	.71	-.03	.01	.03	.01	-.03
					7	8	9	10	11
7	Family-to-work conflict	3121	1.31	.41					
8	Loneliness	3265	2.04	1.61	.22**				
9	Task performance	3047	3.50	.91	-.24**	-.22**			
10	Contextual performance	3034	3.06	.99	-.15**	-.25**	.46**		
11	Counterproductive work behaviour	3024	1.54	.60	.29**	.20**	-.27**	-.13**	
12	Work engagement	3057	4.62	1.26	-.26**	-.26**	.46**	.58**	-.33**

Note. **significant at the .01 level (2-tailed).

[a] 0 = no and 1 = yes

[b] 0 = no, 1 = yes and 2 = partially

[c] No correlation coefficients were computed because to measure the number of persons in a household, if an employee had children, the number of children, and the average age of children, they needed to live together with other persons. Therefore, living together always had a value of 1 when testing the correlation coefficient between the variables.

[d] No correlation coefficients were computed because to measure the number of children and the average age of children, employees needed to have children. Therefore, having children always had a value of 1 when measuring the correlation coefficient between the variables.

Table 4

Correlations between level-one and level-two variables

		7 Family-to-work conflict	8 Loneliness	9 Task performance	10 Contextual performance	11 Counterproductive work behaviour	12 Work engagement
1	Living together [a]	.02	-.24**	.04*	.13**	-.01	.15**
2	Number of household members	.07**	-.21**	.04*	.10**	-.05*	.09**
3	Children [a]	.09**	.04*	.00	-.01	-.10**	.02
4	Number of children	.08**	-.10**	.02	.05**	-.08**	.07**
5	Average age of children	-.20**	-.01	.06*	.07*	-.20**	.16**
6	Working from home [b]	.04*	-.02	-.08**	.10**	.02	.05**

Note. *significant at the .05 level (2-tailed), **significant at the .01 level (2-tailed).

[a] 0 = no and 1 = yes

[b] 0 = no, 1 = yes and 2 = partially

Multilevel model: Work performance, family-to-work conflict, and loneliness

Table 5 shows the results from the multilevel analyses after adding to the empty model moment as a fixed level-one explanatory variable predicting work performance, family-to-work conflict and loneliness. The results showed that employees' task performance (*B* = .04, *se* = .01, *t*(3047) = 6.06, *p* < .001), contextual performance (*B* = .02, *se* = .01, *t*(3034) = 3.25, *p* < .001), family-to-work conflict (*B* = .04, *se* = .01, *t*(3047) = 4.81, *p* < .001), and feelings of loneliness (*B* = .04, *se* = .01, *t*(3047) = 4.81, *p* < .001) fluctuated over time during the first wave of the Coronacrisis.

Table 5

Model 1 with measurement moment as a fixed level-one explanatory variable

	Outcome variables									
	Task performance		Contextual performance		Counterproductive work behaviour		Family-to-work conflict		Loneliness	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
Fixed effects										
Intercept	-.12**	<.001	-.06*	.045	.06	.096	.15**	<.001	.08**	.010
Moment	.04**	<.001	.02**	.001	<.01	.969	-.04**	<.001	-.03**	<.001
Random effects										
ICC:	.63		.71		.69		.61		.71	
Deviance:	7317.2		6796.2		7136.0		7712.0		7373.0	

Note. *significant at the .05 level (2-tailed), **significant at the .01 level (2-tailed).

Next, Table 6 shows the results from the multilevel analysis after adding the random slope of moment to model 1 (Table 5). Table 6 shows that employees' task performance increased over time during the first wave of the Coronacrisis (*B* = .04, *se* = .01, *t*(3047) = 4.81, *p* < .001). In addition, family-to-work conflict (*B* = .04, *se* = .01, *t*(3047) = 4.81, *p* < .001), and feelings of loneliness (*B* = .04, *se* = .01, *t*(3047) = 4.81, *p* < .001) decreased over time during the first wave of the Coronacrisis.

Table 6

Model 2 with random slopes for moment added

	Outcome variables									
	Task performance		Contextual performance		Counterproductive work behaviour		Family-to-work conflict		Loneliness	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
Fixed effects										
Intercept	-.12**	.001	-.05	.103	.06	.118	.15**	<.001	.07*	.020
Moment	.04**	<.001	.01	.093	< .01	.806	-.04**	<.001	-.02**	.001
Random slopes										
Moment	.01**	<.001	.01**	<.001	.01**	<.001	.01**	<.001	.01**	<.001
Random effects										
ICC:	.72		.77		.72		.71		.75	
Deviance:	7250.3		6695.6		7105.7		7649.1		7298.0	

Note. *significant at the .05 level (2-tailed), **significant at the .01 level (2-tailed).

Furthermore, I added the random slope of moment to show if the fluctuations over time in task performance, family-to-work conflict and loneliness during the first wave of the Coronacrisis,

was different between persons. After adding the random slope of moment in model 2 (Table 6), the model fit improved for task performance ($\Delta\chi^2 = 66.9$, $\Delta df = 2$, $p < .001$), family-to-work conflict ($\Delta\chi^2 = 62.9$, $\Delta df = 2$, $p < .001$), and for loneliness ($\Delta\chi^2 = 75.0$, $\Delta df = 2$, $p < .001$), as compared to model 1 (Table 5). In addition, the person-level variance explained 9% more in task performance, 10% more in family-to-work conflict, and 4% more in loneliness. Therefore, the fluctuations over time for task performance, family-to-work conflict and loneliness varied between employees during the first wave of the Coronacrisis. As a result, some employees experienced more fluctuations over time than other employees during the first wave of the Coronacrisis. How task performance increased over time and family-to-work conflict and loneliness decreased over time during the first wave of the Coronacrisis is shown in Figures 2, 3 and 4. In Figures 2, 3 and 4, the red dot shows the average in task performance, family-to-work conflict and loneliness for a specific measurement moment. For example, in Figure 2, the average task performance on 'MarchEnd' has a lower value than on 'MidJune'. Therefore, task performance increased over time during the first wave of the Coronacrisis.

Figure 4

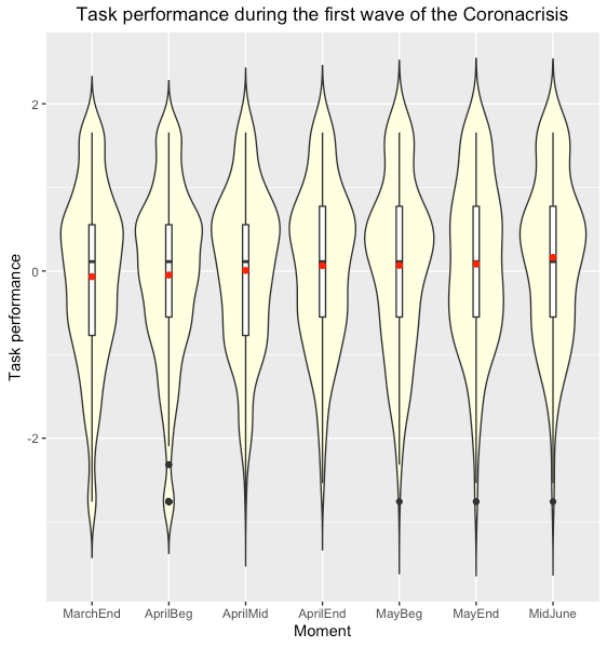


Figure 3

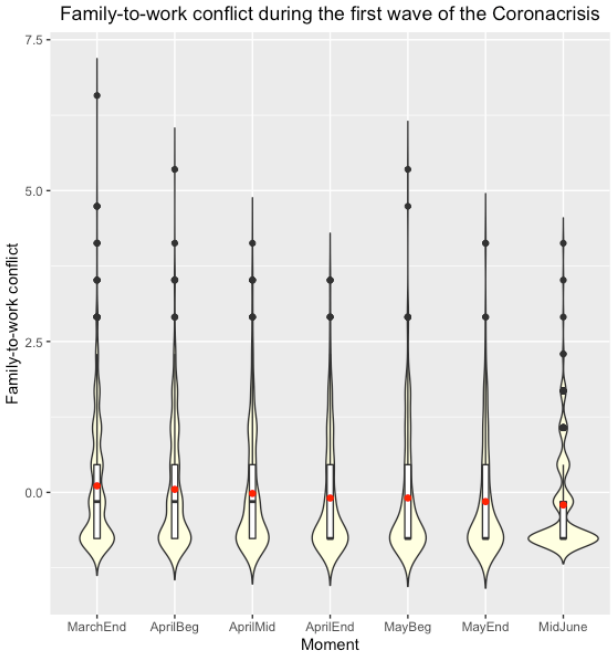
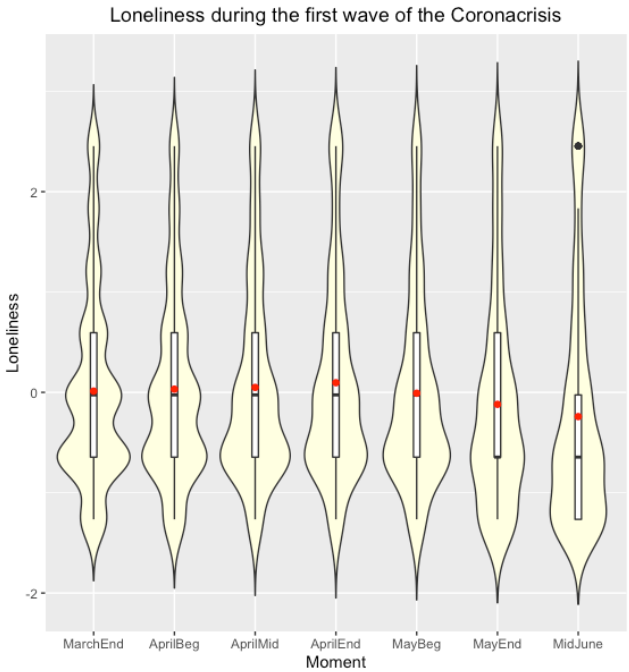


Figure 2



Household size, household composition and working from home

Household size, household composition and working from home are fixed level-two variables. To test hypotheses 1 to 6 in this study, these variables were added separately to model 2 (Table 6).

Household size

Model 3 in Table 7 shows the results from the multilevel analyses after adding the fixed level-two exploratory variable household size to model 2 (Table 6). I investigated household size through two separate variables: a) Living together and b) The number of household members. The variables were added separately because they highly correlate with one another. As a result, adding them separately prevents overlapping between variables.

First, after adding living together, the model fit did not improve for family-to-work conflict ($\Delta\chi^2 = .14$, $\Delta df = 1$, $p = .713$). However, the model fit did improve for loneliness ($\Delta\chi^2 = 58.7$, $\Delta df = 1$, $p < .001$), as compared to model 2 (Table 6). Employees who lived together with someone, reported less feelings of loneliness during the first wave of the Coronacrisis ($B = -.56$, $se = .07$, $t(3265) = -7.77$, $p < .001$) compared to employees who lived alone.

Table 7

Model 3 with household size as added fixed level-two variable

	Outcome variables			
	Family-to-work conflict		Loneliness	
Model 3a: Living together				
	Estimate	*p*	Estimate	*p*
Fixed effects				
Intercept	.13	.081	.55**	<.001
Moment	-.04**	<.001	-.02**	.001
Living together (Yes)[a]	.03	.713	-.57**	<.001
Random slopes				
Moment	.01**	<.001	.01**	<.001
Random effects				
ICC:	.71		.73	
Deviance:	7649.0		7239.2	
Model 3b: Number of household members				
	Estimate	*P*	Estimate	*p*
Fixed effects				
Intercept	.09	.093	.36**	<.001
Moment	-.04**	<.001	-.02**	.001
Number of household members	.02	.220	-.11**	<.001
Random slopes				
Moment	.01**	<.001	.01**	.002
Random effects				
ICC:	.71		.71	
Deviance:	7647.6		7253.2	

Note. *significant at the .05 level (2-tailed), **significant at the .01 level (2-tailed).

[a] 0 = no and 1 = yes

Second, after adding number of household members, the model fit did not improve for family-to-work conflict ($\Delta\chi^2 = 1.51$, $\Delta df = 1$, $p = .219$). However, the model fit did improve for loneliness ($\Delta\chi^2 = 44.6$, $\Delta df = 1$, $p < .001$), as compared to model 2 (Table 6). The larger the household size of an employees, the less feelings of loneliness (s)he reported during the first wave of the Coronacrisis ($B = -.11$, $se = .02$, $t(3265) = -6.76$, $p < .001$).

To conclude, hypothesis 4: "Employees who live together with more people (i.e., have a larger household size) are less lonely during the first wave of the Coronacrisis than employees who live alone" was supported by the results.

Household composition

Model 3 in Table 8 shows the results from the multilevel analyses after adding the fixed level-two variable household composition to model 2 (Table 6). I investigated household composition through three separate variables: a) Children, b) The number of children, and c) The average age of children. The variables were added separately because they highly correlate with one another. As a result, adding them separately prevents overlapping between variables.

Firstly, after adding children the model fit improved for family-to-work conflict ($\Delta\chi^2 = 1287.3$, $\Delta df = 1$, $p < .001$) and for loneliness ($\Delta\chi^2 = 1329.1$, $\Delta df = 1$, $p < .001$), as compared to model 2 (Table 6). In addition, employees who had children, reported more family-to-work conflict during the first wave of the Coronacrisis ($B = .16$, $se = .06$, $t(2600) = 2.61$, $p = .009$) compared to employees who did not have children. However, having children compared to having no children was not related to loneliness during the first wave of the Coronacrisis ($B = .02$, $se = .06$, $t(2725) = .39$, $p = .694$).

Secondly, after adding number of children the model fit improved for family-to-work conflict ($\Delta\chi^2 = 4.2$, $\Delta df = 1$, $p = .040$) and for loneliness ($\Delta\chi^2 = 16.0$, $\Delta df = 1$, $p < .001$), as compared to model 2 (Table 6). Accordingly, the larger the number of children, the more family-to-work conflict ($B = .05$, $se = .03$, $t(3121) = 2.06$, $p = .040$) and the less feelings of loneliness ($B = .05$, $se = .03$, $t(3121) = 2.06$, $p = .040$) employees reported during the first wave of the Coronacrisis.

Thirdly, after adding the average age of children the model fit improved for family-to-work conflict ($\Delta\chi^2 = 3999.1$, $\Delta df = 1$, $p < .001$) and for loneliness ($\Delta\chi^2 = 3826.3$, $\Delta df = 1$, $p < .001$), as compared to model 2 (Table 6). The younger the children of an employee, the more family-to-work conflict they reported during the first wave of the Coronacrisis ($B = -.03$, $se = .01$, $t(1465) = -5.17$, $p < .001$). However, the average age of children was not related to loneliness during the first wave of the Coronacrisis ($B < .01$, $se = .01$, $t(1539) = -.63$, $p = .532$).

To conclude, hypothesis 2: "Employees with children at home experience more family-to-work conflict during the first wave of the Coronacrisis than employees without children at home" was supported by the results.

Table 8

Model 3 with household composition as added fixed level-two variable

	Outcome variables			
	Family-to-work conflict		Loneliness	
Model 3a: Children				
	Estimate	*p*	Estimate	*p*
Fixed effects				
Intercept	.07	.152	.02	.650
Moment	-.04**	<.001	-.03**	<.001
Children (Yes)[a]	.16**	.009	.02	.694
Random slopes				
Moment	.02**	<.001	.01**	<.001
Random effects				
ICC:	.71		.72	
Deviance:	6361.8		5968.9	
Model 3b: Number of children				
	Estimate	*p*	Estimate	*p*
Fixed effects				
Intercept	.10*	.012	.16**	<.001
Moment	-.04**	<.001	-.02**	.002
Number of children	.05*	.040	-.10**	<.001
Random slopes				
Moment	.01**	<.001	.01**	<.001
Random effects				
ICC:	.71		.74	
Deviance:	7644.9		7282	
Model 3c: Average age of children				
	Estimate	*p*	Estimate	*p*
Fixed effects				
Intercept	.64**	<.001	.03	.751
Moment	-.05**	<.001	-.02	.085
Average age of children	-.03**	<.001	< .01	.532
Random slopes				
Moment	.02**	<.001	.01**	<.001
Random effects				
ICC:	.67		.72	
Deviance:	3650.0		3471.7	

Note. *significant at the .05 level (2-tailed), **significant at the .01 level (2-tailed).

[a] 0 = no and 1 = yes

Working from home

Model 3 in Table 9 shows the results from the multilevel analyses after adding the fixed level-two variable working from home to model 2 (Table 6). After adding working from home, the model fit did not improve for family-to-work conflict ($\Delta\chi^2 = .87$, $\Delta df = 2$, $p = .646$) and loneliness ($\Delta\chi^2 = 2.1$, $\Delta df = 2$, $p = .346$), as compared to model 2 (Table 6). So, no significant effects were found for working from home. Thus, whether an employee worked from home or not was not related to family-to-work conflict and loneliness during the first wave of the Coronacrisis.

Table 9

Model 3 with working from home as added fixed level-two variable

		Outcome variables			
		Family-to-work conflict		Loneliness	
		Estimate	*p*	Estimate	*p*
Fixed effects					
	Intercept	.14**	.005	.11*	.018
	Moment	-.04**	<.001	-.02**	.002
Working from home[a]					
	Yes	< .01	.985	-.08	.176
	Partially	.07	.389	< .01	.959
Random slopes					
	Moment	.01**	<.001	.01**	<.001
Random effects					
	ICC:	.71		.75	
	Deviance:	7648.2		7295.8	

Note. *significant at the .05 level (2-tailed), **significant at the .01 level (2-tailed).
[a] 0 = no, 1 = yes and 2 = partially

Multilevel model: Family-to-work conflict and loneliness

Family-to-work conflict and work performance

Model 3 in Table 10 shows the results from the multilevel analyses after adding family-to-work conflict to model 2 (Table 6). Family-to-work conflict was added as a level-one variable to test hypothesis 7.

Model 3 in Table 10 shows that the model fit improved for contextual performance ($\Delta\chi^2 = 9.7$, $\Delta df = 1$, $p = .002$) and counterproductive work behaviour ($\Delta\chi^2 = 20.0$ $\Delta df = 1$, $p < .001$), as compared to model 2 (Table 6). During the first wave of the Coronacrisis, in weeks when employees reported more family-to-work conflict, they overall reported less contextual performance ($B = -.06$, $se = .02$, $t(3034) = -3.12$, $p = .002$) and more counterproductive work behaviour ($B = .09$, $se = .02$, $t(3024) = 4.84$, $p < .001$). Therefore, hypothesis 7 was partially supported by the results.

Next, model 4 in Table 11 shows the results from the multilevel analyses after adding the random slope of family-to-work conflict to model 3 (Table 10). The random slope of family-to-work conflict was added to investigate if the relationship between family-to-work conflict and work performance was different for different employees during the first wave of the Coronacrisis.

Model 4 in Table 11 shows that the model fit improved for contextual performance ($\Delta\chi^2 = 14.9$, $\Delta df = 3$, $p = .002$) and counterproductive work behaviour ($\Delta\chi^2 = 23.8$, $\Delta df = 3$, $p < .001$), as compared to model 3 (Table 10). All the random slopes were significant. Therefore, the relationship between family-to-work conflict and contextual performance and counterproductive work behaviour was different for different employees during the first wave of the Coronacrisis. For

example, one employee might experience the relationship between family-to-work conflict and contextual performance differently than another employee. This might be due to differences in their personality or their level of work engagement.

Table 10

Model 3 with family-to-work conflict added as a fixed level-one predictor

	Outcome variables					
	Task performance		Contextual performance		Counterproductive work behaviour	
	Estimate	*p*	Estimate	*p*	Estimate	*p*
Fixed effects						
Intercept	-.12**	.001	-.05	.137	.05	.180
Moment	.04**	<.001	.01	.162	.01	.483
Family-to-work conflict	-.03	.240	-.06**	.002	.09**	<.001
Random slopes						
Moment	.01**	<.001	.01**	<.001	.01**	<.001
Random effects						
ICC	.72		.77		.72	
Deviance	7248.9		6685.9		7085.7	

Note. *significant at the .05 level (2-tailed), **significant at the .01 level (2-tailed).

Table 11

Model 4 with a randomised slope family-to-work conflict added

	Outcome variables					
	Task performance		Contextual performance		Counterproductive work behaviour	
	Estimate	*p*	Estimate	*p*	Estimate	*p*
Fixed effects						
Intercept	-.12**	.001	-.05	.127	.05	.181
Moment	.04**	<.001	.01	.135	.01	.417
Family-to-work conflict	-.02	.519	-.04*	.042	.09**	.001
Random slopes						
Moment	.01**	<.001	.01**	<.001	<.01**	<.001
Family-to-work conflict	.03*	.029	.03**	.002	.07**	<.001
Random effects						
ICC:	.73		.78		.73	
Deviance	7240.2		6671.0		7061.9	

Note. *significant at the .05 level (2-tailed), **significant at the .01 level (2-tailed).

Loneliness and work performance

Model 3 in Table 12 shows the results from the multilevel analyses after adding loneliness to model 2 (Table 6). Loneliness was added as a level-one variable to test hypothesis 8.

Model 3 in Table 12 shows that the model fit improved for task performance ($\Delta\chi^2 = 4.8$, $\Delta df = 1$, $p = .028$), contextual performance ($\Delta\chi^2 = 16.0$, $\Delta df = 1$, $p < .001$), and counterproductive work behaviour ($\Delta\chi^2 = 13.0$, $\Delta df = 1$, $p < .001$), as compared to model 2 (Table 6). In addition, during the first wave of the Coronacrisis, in weeks when employees were lonelier, they overall reported less task performance ($B = -.06$, $se = .03$, $t(3047) = -2.21$, $p = .028$), less contextual performance ($B = -.09$, $se = .02$, $t(3034) = -4.01$, $p < .001$), and more counterproductive work behaviour ($B = .09$, $se = .02$, $t(3024) = 3.61$, $p < .001$). Therefore, hypothesis 8 was supported by the results.

Table 12

Model 3 with loneliness added as a fixed level-one predictor

	Outcome variables					
	Task performance		Contextual performance		Counterproductive work behaviour	
	Estimate	*p*	Estimate	*p*	Estimate	*p*
Fixed effects						
Intercept	-.12**	.001	-.05	.136	.05	.154
Moment	.04**	<.001	.01	.155	.004	.609
Loneliness	-.06*	.028	-.09**	<.001	.09**	<.001
Random slopes						
Moment	.01**	<.001	.01**	<.001	.01**	<.001
Random effects						
ICC	.73		.77		.72	
Deviance	7245.5		6679.7		7092.7	

Note. *significant at the .05 level (2-tailed), **significant at the .01 level (2-tailed).

Next, model 4 in Table 13 shows the results from the multilevel analyses after adding the random slope of loneliness to model 3 (Table 12). The random slope of loneliness was added to investigate if the relationship between loneliness and work performance was different for different employees during the first wave of the Coronacrisis.

The model fit improved only for counterproductive work behaviour ($\Delta\chi^2 = 8.9$, $\Delta df = 3$, $p = .030$), as compared to model 3 (Table 12). The random slope of loneliness was significant for counterproductive work behaviour. Therefore, the relationship between loneliness and counterproductive work behaviour was different for different employees during the first wave of the Coronacrisis. For example, one employee might experience the relationship between loneliness and counterproductive work behaviour differently than another employee. This might be due to personal differences between employees.

Table 13

Model 4 with a randomised slope of moment and loneliness added

	Outcome variables					
	Task performance		Contextual performance		Counterproductive work behaviour	
	Estimate	*p*	Estimate	*p*	Estimate	*p*
Fixed effects						
Intercept	-.11**	.001	-.05	.139	.05	.151
Moment	.04**	<.001	.01	.157	<.01	.638
Loneliness	-.06*	.039	-.09**	<.001	.09**	.001
Random slopes						
Moment	.01**	<.001	.01**	<.001	.01**	<.001
Loneliness	.02	.742	.03	.133	.03*	.028
Random effects						
ICC:	.73		.78		.73	
Deviance:	7244.3		6674.3		7083.8	

Note. *significant at the .05 level (2-tailed), **significant at the .01 level (2-tailed).

Work engagement as moderator

Family-to-work conflict and work performance

Model 5 in Appendix A shows the results from the multilevel analyses after adding work engagement as a fixed level-one predictor variable to model 4 (Table 11). However, to test hypothesis 9, the interaction term between family-to-work conflict and work engagement needed to be added. Therefore, Model 6 in Table 14 shows the results from the multilevel analyses after adding an interaction term between family-to-work conflict and work engagement to Model 5 (Appendix A).

Model 6 in Table 14 shows that the model fit improved for counterproductive work behaviour ($\Delta\chi^2 = 6.6$, $\Delta df = 1$, $p = .010$), as compared to model 5 (Appendix A). In addition, the interaction term showed that work engagement moderated the relationship between family-to-work conflict and counterproductive work behaviour ($B = -.14$, $se = .06$, $t(3024) = -2.38$, $p = .017$). In Figure 5, the relationship between family-to-work conflict and counterproductive work behaviour is shown for different levels of work engagement.

Figure 5 shows that, for highly engaged employees (+1SD), family-to-work conflict was unrelated to counterproductive work behaviour during the first wave of the Coronacrisis ($B = .03$, $se = .03$, $t = .82$, $p = .409$). However, for low engaged employees (-1SD), family-to-work conflict was related to more counterproductive work behaviour during the first wave of the Coronacrisis ($B = .13$, $se = .03$, $t = 4.00$, $p < .001$). Therefore, work engagement might explain why the relationship between family-to-work conflict and counterproductive work behaviour was different for employees with different levels of work engagement during the first wave of the Coronacrisis.

In addition, Model 6 in Table 14 shows that the model fit did not improve for task performance ($\Delta\chi^2 = .2$, $\Delta df = 1$, $p = .634$) and contextual performance ($\Delta\chi^2 = 1.3$, $\Delta df = 1$, $p = .252$), as compared to model 5 (Appendix A). Also, the non-significant interaction term showed that work engagement did not moderate the relationship between family-to-work conflict and task performance ($B = .03$, $se = .06$, $t(3047) = .48$, $p = .632$) and contextual performance ($B = .06$, $se = .05$, $t(3034) = 1.15$, $p = .250$). Therefore, hypothesis 9 was partially supported by the results.

Table 14

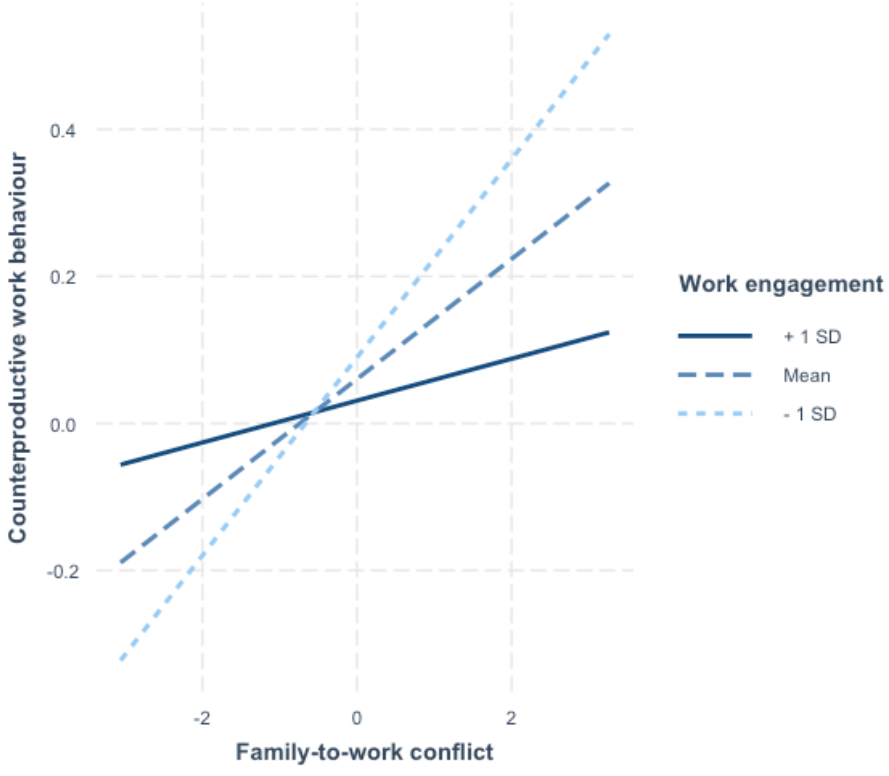
Model 6 with an added interaction term between work engagement and family-to-work conflict

	Outcome variables					
	Task performance		Contextual performance		Counterproductive work behaviour	
	Estimate	*p*	Estimate	*p*	Estimate	*p*
Fixed effects						
Intercept	-.11**	.002	-.05	.172	.04	.199
Moment	.03**	<.001	.01	.167	.01	.414
Family-to-work conflict	-.01	.733	-.03	.076	.08**	.002
Work engagement	.39**	<.001	.40**	<.001	-.08**	.005
Interaction effects						
Family-to-work conflict * Work engagement	.03	.632	.06	.249	-.14*	.018
Random slopes						
Moment	.01**	<.001	.01**	<.001	.01**	<.001
Family-to-work conflict	.01	.555	.01	.079	.07**	<.001
Random effects						
ICC:	.75		.80		.73	
Deviance:	7057.1		6414.1		7049.7	

Note. *significant at the .05 level (2-tailed), **significant at the .01 level (2-tailed).

Figure 5

The relationship between family-to-work conflict and counterproductive work behaviour during the first wave of the Coronacrisis, for different levels of work engagement



Loneliness and work performance

Model 5 in Appendix B shows the results from the multilevel analyses after adding work engagement as a fixed level-one predictor variable to model 4 (Table 13). However, to test hypothesis 10, the interaction term between loneliness and work engagement needed to be added. Therefore, Model 6 in Table 15 shows the results from the multilevel analyses after adding an interaction term between loneliness and work engagement to model 5 (Appendix B).

Model 6 in Table 15 shows that the model fit did not improve for task performance ($\Delta\chi^2 = .9$, $\Delta df = 1$, $p = .360$), contextual performance ($\Delta\chi^2 = 1.5$, $\Delta df = 1$, $p = .224$), and counterproductive work behaviour ($\Delta\chi^2 = 1.1$, $\Delta df = 1$, $p = .298$), as compared to model 5 (Appendix B). The non-significant interaction term showed that work engagement did not moderate the relationship between loneliness and task performance ($B = -.06$, $se = .07$, $t(3047) = -.92$, $p = .357$), contextual performance ($B = -.07$, $se = .05$, $t(3034) = -1.22$, $p = .222$), and counterproductive work behaviour ($B = .07$, $se = .07$, $t(3024) = 1.05$, $p = .293$).

To summarize, work engagement did not moderate the relationship between loneliness and work performance during the first wave of the Coronacrisis.

Table 15

Model 6 with an added interaction term between work engagement and loneliness

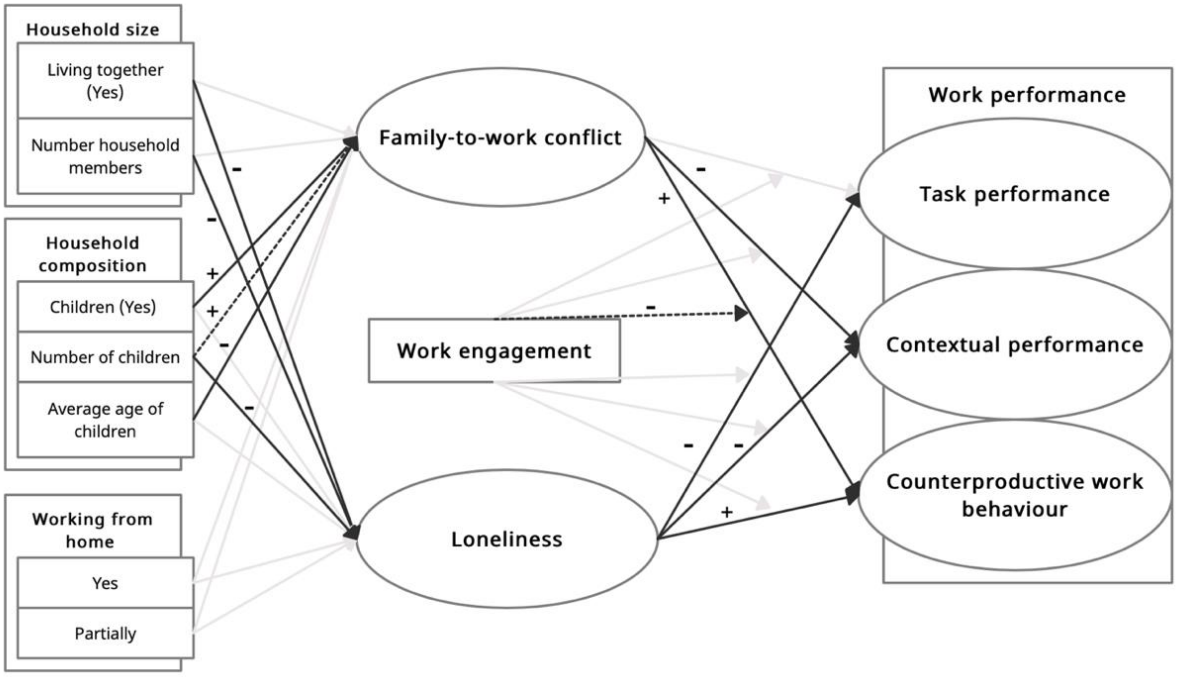
	Outcome variables					
	Task performance		Contextual performance		Counterproductive work behaviour	
	Estimate	*p*	Estimate	*p*	Estimate	*p*
Fixed effects						
Intercept	-.11**	.002	-.05	.172	.05	.159
Moment	.03**	<.001	.01	.189	<.01	.582
Loneliness	-.03	.330	-.06**	.007	.09**	.001
Work engagement	.39**	<.001	.40**	<.001	-.07**	.008
Interaction effects						
Loneliness * Work engagement	-.06	.357	-.07	.222	.07	.293
Random slopes						
Moment	.01**	<.001	.01**	<.001	.01**	<.001
Loneliness	.03	.426	.02	.220	.03*	.018
Random effects						
ICC:	.76		.80		.73	
Deviance:	7054.9		6413.7		7075.9	

Note. *significant at the .05 level (2-tailed), **significant at the .01 level (2-tailed).

To conclude, Figure 6 shows all the significant effects from the multilevel regression analysis combined in one conceptual model.

Figure 6

Conceptual model with significant effects shown



Note. Full black line = significant at the .01 level (2-tailed). Dotted black line = significant at the .05 level (2-tailed). Light grey line = no significant relationship. The + or – showed the direction of the relationship. + = a positive relationship. - = a negative relationship.

Scientific discussion

This study explored if work performance, family-to-work conflict and loneliness increased or decreased over time during the first wave of the Coronacrisis. The results showed that task performance increased over time and family-to-work conflict and loneliness decreased over time. Next, this study investigated an employees' household size, household composition and whether they worked from home or not as possible antecedents of an employees' loneliness and family-to-work conflict. The results showed that employees with children at home experienced more family-to-work conflict than employees without children at home. In addition, employees who live together with more people (i.e., have a larger household size) were less lonely.

Furthermore, the central hypothesis in this study was that family-to-work conflict and loneliness were negatively related to work performance during the first wave of the Coronacrisis. More specifically, this study investigated if the relationship between family-to-work conflict, loneliness and work performance was moderated by an employees' level of work engagement. The results from this study among a large sample of 1156 employees showed that in weeks when employees reported more loneliness, they also reported less task performance, less contextual performance, and more counterproductive work behaviour. In addition, in weeks when employees reported more family-to-work conflict, they also reported less contextual performance and more counterproductive work behaviour. Furthermore, the results showed that work engagement moderated the relationship between family-to-work conflict and counterproductive work behaviour. For highly engaged employees, family-to-work conflict did not result in more counterproductive work behaviour, whereas for low engaged employees, family-to-work conflict resulted in more counterproductive work behaviour.

Work performance, family-to-work conflict and loneliness over time

Contrary to expectations, results showed that task performance increased during the first wave of the Coronacrisis, and family-to-work conflict and loneliness decreased over time. An explanation for the opposite results might be that the first questionnaire was spread on the 27th of March, two weeks after the start of the first wave (March 15th). At the beginning of the first wave, employees' work performance probably decreased, and family-to-work conflict and loneliness probably did increase compared to before the Coronacrisis. However, employees' work performance, family-to-work conflict and loneliness were not measured before the first wave. As a result, I could not compare employees' work performance, family-to-work conflict and loneliness from during the first wave of the Coronacrisis to before the start of the first wave.

In addition, it was likely that people became more used to the measures preventing the spread of the Coronavirus. As a result, task performance increased, and family-to-work conflict and loneliness decreased during the first wave of the Coronacrisis. Previous research found that people use various coping methods during a crisis or disaster situation (Kar et al., 2021; Sharma & Kar, 2019). Coping methods are, for example, "hoping for the best", "remaining busy", or religious faith (Kar et al., 2021). As a result, during the first wave of the Coronacrisis, people likely used coping methods to deal with the Coronacrisis. Therefore, as the results showed in this study, during the first wave of the Coronacrisis (with the 27th of March as starting point), task performance increased over time, and family-to-work conflict and loneliness decreased over time because people started to cope with the Coronacrisis and got more used to the preventive measures.

Furthermore, towards the end of the first wave, the Dutch government decided to relax more preventive measures. Accordingly, the results showed that employees reported most task performance at the end of the first wave. In addition, employees reported the lowest values of loneliness and family-to-work conflict at the end of the first wave.

Antecedents of family-to-work conflict and loneliness

Results showed that employees who had younger children reported more family-to-work conflict during the first wave of the Coronacrisis, which was in line with previous research showing that the more hours spent on childcare, the more employees experienced family-to-work conflict (Byron, 2005). Furthermore, when employees had more children, they also reported more family-to-work conflict. This was also in line with previous research showing that employees with larger families tend to allocate more time and effort to their families and less to their jobs (Golden et al., 2006).

Furthermore, the results also showed that employees who lived together with someone reported less loneliness during the first wave of the Coronacrisis. Accordingly, previous research showed that being married or living with a parent was associated with less loneliness (Li & Wang, 2020; Stack, 1998). In this study, 84.4% of the participants lived together with other persons, from which 81% lived together with a partner. Furthermore, employees who had larger household sizes and more children reported less loneliness. Previous research showed that living together with others might act as a protective factor of loneliness (Li & Wang, 2020). Therefore, when employees had larger household sizes, there was an increased presence of social connections, and employees were less likely to feel lonely.

In addition, results showed that having children was not related to loneliness during the first wave of the Coronacrisis. However, the results were not in line with my expectations. I expected that employees with children would experience less loneliness because having children might be a protective factor (Kniffin et al., 2021; Luchetti et al., 2020). An explanation for the results might be that previous research on the impact of having children on loneliness has yielded conflicting results (Stack, 1998). For example, previous local research in Chicago showed that mothers with young children become more isolated from the adult world and experience more loneliness (Gove & Geerken, 1977; Stack, 1998). Other previous research showed that children have no impact on loneliness among parents (Stack, 1998). So, evidence for the relationship between having children

and loneliness is mixed, which might explain why I did not find a relationship between having children and loneliness. Furthermore, another explanation might be that the type of contact between parents and their children is different from the type of contact between two adults (Keijsers & Poulin, 2013; Punch, 2002). For example, children have a different and limited use of vocabulary and understanding of words, relatively less experience of the world and may have a shorter attention span (Punch, 2002). Therefore, communicating with children might not be the social connection needed to reduce an employees' loneliness.

Furthermore, results also showed that when an employee worked from home during the first wave of the Coronacrisis, this was unrelated to his/her experience of family-to-work conflict and loneliness. This was not in line with my expectations; when employees worked from home during the first wave of the Coronacrisis, I expected they would report more family-to-work conflict (Golden et al., 2006; Greenhaus et al., 2006) and more loneliness (Kniffin et al., 2021; Shah et al., 2020). An explanation might be that before the first wave of the Coronacrisis, working from home has already allowed some employees to effectively manage their family needs (Golden et al., 2006; Greenhaus et al., 2006; Greenhaus & Powell, 2003). Therefore, employees could still effectively manage their family needs, and work needs even though organisations were not prepared for this new virtual online work environment (Kniffin et al., 2021). In addition, the Dutch government started a campaign to decrease feelings of loneliness for persons who were likely to experience high levels of loneliness (in Dutch: een tegen eenzaamheid) (Rijksoverheid, 2020c). For example, this campaign has set up a loneliness hotline, organised Corona proof activities (e.g., walking groups, helping elderly with groceries, outdoor activities such as a nature walk), and organised short online courses on how to help someone lonely.

In addition, most employees who worked from home during the first wave of the Coronacrisis shared this experience with their colleagues because their colleagues also worked from home. Previous research showed, in times of common stress, it is normal for employees to feel more need to communicate with each other because social interactions diminish stress (Altena et al., 2020; De Vries et al., 2003). Therefore, the shared experience of working from home and social distancing may be a protective factor of loneliness (Saltzman et al., 2020). For example, employees working from home do not necessarily feel alone because they have frequent social interactions with colleagues who also work from home.

Predicting work performance

Results showed that during the first wave of the Coronacrisis, when employees reported more family-to-work conflict in a week, they also reported less contextual performance and more counterproductive work behaviour. In addition, during the first wave of the Coronacrisis, it was likely that boundaries between family and work became vague. Previous research showed that non-existing boundaries between family and work resulted in more family-to-work conflict (Bartsch et al., 2020; Fisher et al., 2020; Ozcelik & Barsade, 2018; Rigotti et al., 2020). The results were in line with previous research showing that family-to-work conflict was associated with less contextual performance and more absenteeism, which is a predictor for counterproductive work behaviour (Amstad et al., 2011; Odle-Dusseau et al., 2012). For example, due to employees' accessibility and proximity to household members during the first wave of the Coronacrisis, employees were not able to put enough effort into their work (Campbell, 1990; Golden et al., 2006; Koopmans et al., 2011). Therefore, high family-to-work conflict can be seen as a workplace hazard and may negatively affect an employees' performance during the first wave of the Coronacrisis (Beauregard & Henry, 2009; Cullen & Hammer, 2007).

In addition, results also showed that in weeks during the first wave of the Coronacrisis, when employees reported more loneliness, they also reported less task performance, less contextual performance and more counterproductive work behaviour. In addition, at the beginning of the first wave of the Coronacrisis, the Dutch government introduced new preventive measures from the intelligent lockdown; social distancing, keeping a 1.5-metre distance from one another, working

from home, and schools, bars, restaurants and gyms were closed (NOS, 2020b; Rijksoverheid, 2020g; RIVM, 2020d). Previous research showed that the loss of social connections was likely to harm employees and de-densifying workplaces contributed to workplace loneliness (Kniffin et al., 2021). The results were in line with previous research showing that workplace loneliness has strong negative relationships with employees' affective commitment, affiliative behaviours, and performance (Kniffin et al., 2021; Ozcelik & Barsade, 2018). For example, lonely employees were not very committed to their job and were more likely to withdraw from work (Ozcelik & Barsade, 2018).

The role of work engagement

Results showed that work engagement moderated the relationship between family-to-work conflict and counterproductive work behaviour during the first wave of the Coronacrisis. For highly engaged employees, family-to-work conflict was unrelated to counterproductive work behaviour. In contrast, for low engaged employees, more family-to-work conflict was related to more counterproductive work behaviour. This was in line with previous research on COR (Hobfoll, 2001). When employees experience more family-to-work conflict, this resulted in resource loss, and in turn, less work performance (Grandey & Cropanzano, 1999). However, work engagement reduces resource loss because work engagement is an important motivational resource for employees (Grandey & Cropanzano, 1999; Kim et al., 2018). Therefore, engaged employees who reported more family-to-work conflict during the first wave of the Coronacrisis did not report counterproductive work behaviour. However, work engagement could not prevent resource losses due to family-to-work conflict for low engaged employees (Hobfoll, 2001; Kim et al., 2018). Therefore, when low engaged employees reported more family-to-work conflict, they also reported more counterproductive work behaviour during the first wave of the Coronacrisis.

In addition, the results were in line with previous research on the JD-R model (Bakker & Demerouti, 2007). For example, family-to-work conflict might lead to higher job demands (Bakker et al., 2008) and reduces employees' work performance (Beauregard & Henry, 2009). However, work engagement comes with specific job resources, such as self-investment, energy and passion (Bakker & Demerouti, 2007; Kahn, 1990). According to the JD-R model, job resources might act as a buffer for the job demands influencing work performance (Bakker & Demerouti, 2007). Therefore, engaged employees who reported more family-to-work conflict during the first wave of the Coronacrisis did not report counterproductive work behaviour. However, when an employee was not engaged in his/her work, they lacked job resources such as self-investment, energy and passion for buffering the positive effects of family-to-work conflict on counterproductive work behaviour (Bakker & Demerouti, 2007; Kahn, 1990; Kim et al., 2018). Therefore, low engaged employees who reported more family-to-work conflict during the first wave of the Coronacrisis also reported more counterproductive work behaviour.

Furthermore, contrary to expectations, results showed that work engagement did not moderate the relationship between loneliness and work performance. Previous research on the evolutionary theory of loneliness might explain this (Cacioppo et al., 2006). When individuals start to experience feelings of loneliness (the transient state of loneliness), this functions as an alarm to motivate individuals to reconnect with others immediately (Cacioppo et al., 2006; Kniffin et al., 2021). Therefore, it might be assumed that reconnecting with others was more likely to decrease feelings of loneliness during the first wave of the Coronacrisis than an employees' work engagement. Accordingly, in times of common stress, it is normal for individuals to feel more need to communicate with each other because social interactions diminish stress (Altena et al., 2020; De Vries et al., 2003).

However, some individuals do not have existing social connections with others (Saltzman et al., 2020). When the reconnection with others does not occur, these feelings of loneliness might persist and lead to further social disruption and distress (Cacioppo et al., 2006; Kniffin et al., 2021). Consequently, individuals who do not have existing social connections with others were probably already lonely before the Coronacrisis. Therefore, lonely employees in this study might have been

lonely already before the first wave of the Coronacrisis. In addition, before the Coronacrisis, loneliness was considered an epidemic and was associated with poor mental health, increased all-cause mortality and increased risk of depression (Kniffin et al., 2021; Leigh-Hunt et al., 2017; Luchetti et al., 2020; Shankar et al., 2013). Therefore, it might be assumed that employees' work engagement is not enough to buffer the negative effects of loneliness during the Coronacrisis. Instead, other interventions might be needed to decrease feelings of loneliness (e.g., improvement of social skills, social support or creating opportunities for social interactions) (Cacioppo et al., 2006; Ozcelik & Barsade, 2018; Qualter et al., 2015).

Limitations

Certain limitations should be taken into consideration when interpreting the results of the present study. First, certain sample characteristics in this study limit the generalizability of the findings to the rest of the population. For example, the first questionnaire was spread in groups on Facebook to find participants. These groups included participants specifically interested in helping each other during the Coronacrisis (e.g., people offered to do someone's groceries). However, it was likely that people in these groups were very concerned about the Coronavirus. Therefore, this sample was not random. In addition, 87% of the participants were female. Consequently, this study underrepresented males. Having the same number of males as females would be more representative for the rest of the population. Another example is that 84% of the participants lived together with other persons during the first wave of the Coronacrisis. As a result, only 16% lived alone in this sample. To that end, this study also underrepresented participants who lived alone. As a result, the sample was not random, and the findings might have become less generalisable to the rest of the population. Therefore, it may be difficult for future researchers to replicate this study because they may not have access to the same participants. When other participants are used in future research, results may differ.

Second, this study included repeated measurements of work performance, family-to-work conflict and loneliness. The participants filled in the same questionnaire seven times during the first wave of the Coronacrisis. However, during the first wave of the Coronacrisis, many participants dropped out. For example, on the first measurement moment, 1156 employees filled in the questionnaire. However, on the seventh measurement moment, only 219 employees filled in the questionnaire. Therefore, the sample size decreased a lot during the first wave of the Coronacrisis. A decreasing sample size could be a limitation if the dropout were not random. For example, participants with more family-to-work conflict might have dropped out during the first wave of the Coronacrisis because of a lack of time to fill in the questionnaires. As a result, at the beginning of the first wave, there were more participants with high family-to-work conflict than at the end of the first wave. Furthermore, at the end of the first wave, it was likely that there were more participants with low family-to-work conflict than high family-to-work conflict.

Third, the time span of the questionnaires was 2.5 months in this study, which is relatively short. The short time span could be a limitation because some of the expected effects might have needed a longer time span to show results eventually. For example, lonely employees were likely already lonely before the start of the Coronacrisis. Therefore, to test if the preventive measures resulted in more loneliness among employees, a longer time span was needed to show different results. For example, loneliness before the Coronacrisis or loneliness during other waves in the Coronacrisis could be considered to have a longer time span.

Future research

In this study, I investigated if work engagement moderated the relationship between loneliness and work performance during the first wave of the Coronacrisis. However, it would be interesting for future research to investigate if other variables did moderate the relationship between loneliness and work performance during the first wave of the Coronacrisis. For example, social support might be a buffer for loneliness (Saltzman et al., 2020). Social support might decrease

feelings of loneliness because there was wide access to technology during the first wave of the Coronacrisis that could be used for social support. For example, social networks can promote resilience to stress, or using technology to socialise might offer social support for people (Saltzman et al., 2020). In addition, previous research showed that "when individuals actively seek social support online, they are indeed finding it" (Eastin & LaRose, 2005, p. 988). Therefore, it might be interesting for future research to investigate if social support moderates the relationship between loneliness and work performance.

Furthermore, I also investigated whether work engagement moderated the relationship between family-to-work conflict and work performance during the first wave of the Coronacrisis or not. However, for future research, it may be interesting to investigate if gender and stress levels moderate the relationship between family-to-work conflict and work performance during the first wave of the Coronacrisis. For example, female employees might experience more family-to-work conflict than male employees (Byron, 2005). Therefore, gender might act as a buffer for family-to-work conflict. In addition, a participants' level of stress might also moderate the relationship between family-to-work conflict and work performance during the first wave of the Coronacrisis. For example, the Coronacrisis had the potential to increase the levels of stress (Arslan et al., 2020; Talaee et al., 2020; Yıldırım & Solmaz, 2020). People became worried about their health and their family's health (Prime et al., 2020). In addition, families needed to adapt to new routines and structures; for example, some parents had to home school their children during their work hours (Behar-Zusman et al., 2020; Prime et al., 2020; Rijksoverheid, 2020b; Vaziri et al., 2020). These new stress and tensions at home could have interfered with an employee's work (Arslan et al., 2020; Prime et al., 2020; Vaziri et al., 2020).

Practical implications

The results from this thesis can offer some practical implications. First, employees with younger children reported more family-to-work conflict during the first wave of the Coronacrisis. A possible explanation for this result might be that families spent an exceptional amount of time together at home during the first wave. In some cases, parents had to home school their children because schools were closed during the first wave of the Coronacrisis (Behar-Zusman et al., 2020; Rijksoverheid, 2020b). In addition, previous research showed that family-to-work conflict is reduced by setting up family-friendly policies in the workplace (Waldfogel, 2001). Family-supportive work cultures include family-friendly benefits such as flexible work schedules, childcare referrals, and leaves of absence (Allen, 2001). For example, flexible hours might decrease family-to-work conflict (Halbesleben et al., 2009). Therefore, employees with more and younger children should be given the opportunity to be more flexible with their work schedules. The opportunity to be more flexible with work schedules is even more important during the first wave of the Coronacrisis because families spent an exceptional amount of time together at home. In addition, having more flexible work schedules might allow employees to effectively manage their family needs (Golden et al., 2006; Greenhaus et al., 2006; Greenhaus & Powell, 2003). Furthermore, employees should be allowed to take a leave of absence when their children need home-schooling due to the preventive measures.

Second, this study raised the question if family-to-work conflict was related to work performance during the first wave of the Coronacrisis. The results showed that more family-to-work conflict was related to less contextual performance and more counterproductive work behaviour during the first wave of the Coronacrisis. Therefore, finding the right balance between family and work is positive for the organisation because it increases employees' contextual performance and counterproductive work behaviour. Previous research showed that clear boundaries are needed between family and work to reach this balance and reduce family-to-work conflict (Rigotti et al., 2020). For example, by creating a separate home office, employees are less likely to be disturbed by family members in the household (Golden et al., 2006; Greenhaus & Powell, 2003). Other research showed that having a mentor (i.e., more experienced senior employee) supportive of the employee's desire to balance work and family roles is related to lower levels of family-to-work conflict (Nielson

et al., 2001). For example, mentors in organisations should share strategies and suggestions with employees who desire to balance family and work. This is an important form of employee support that reduces family-to-work conflict (Nielson et al., 2001). Especially during the Coronacrisis, organisations could use mentors to guide and support employees to find the right balance between work and family.

Third, more loneliness was related to less task performance and contextual performance and more counterproductive work behaviour during the first wave of the Coronacrisis. Previous research showed that loneliness is related to poor mental health, increased all-cause mortality and increased risk of depression (Leigh-Hunt et al., 2017; Luchetti et al., 2020; Shankar et al., 2013). In addition, workplace loneliness resulted in less affective commitment and work performance (Kniffin et al., 2021; Ozcelik & Barsade, 2018; Spector et al., 2006). This study did not specifically measure workplace loneliness. However, loneliness occurs when social connections with others do not happen and when people feel like they do not belong, including at work (Cacioppo et al., 2006; Ozcelik & Barsade, 2018). Therefore, lonely employees are more likely to withdraw from the workplace (Ozcelik & Barsade, 2018). This showed the increasing importance for organisations to create climates where employees do not experience high levels of workplace loneliness (Kniffin et al., 2021). As a result, when employees are not lonely, this is beneficial for the organisation and the well-being and health of an employee. To reduce loneliness, organisations might apply loneliness intervention programs (Ozcelik & Barsade, 2018). The interventions programs include improving social skills, social support and opportunities for social interactions. Furthermore, lonelier people show more maladaptive social cognitions (Masi et al., 2011; Ozcelik & Barsade, 2018). Maladaptive social cognitions of lonely people are negative thoughts about self-worth and how others perceive you (Masi et al., 2011). The intervention programs are meant to change the maladaptive social cognitions to which lonelier people are prone (Masi et al., 2011; Ozcelik & Barsade, 2018).

Fourth, work engagement moderated the relationship between family-to-work conflict and counterproductive work behaviour during the first wave of the Coronacrisis. That is, for low engaged employees, more family-to-work conflict was related to more counterproductive work behaviour. In contrast, family-to-work conflict was not related to counterproductive work behaviour for highly engaged employees. Therefore, it would be beneficial for organisations to increase employees' work engagement. There are multiple practices to increase employees work engagement. For example, previous research on work engagement showed that job resources and personal resources facilitate work engagement. Job resources are autonomy, social support from colleagues and skill variety (Bakker et al., 2011). Therefore, developing social support and changing work procedures to enhance feedback and autonomy may create a structural basis for work engagement (Bakker et al., 2011; Bakker & Demerouti, 2008). Furthermore, another possibility to increase work engagement among employees is job rotation and changing jobs. Job rotation and changing jobs increase employees' motivation and stimulate learning and professional development (Bakker et al., 2011; Bakker & Demerouti, 2008).

In addition, organisations should also focus on keeping their employees engaged during the first wave of the Coronacrisis because the Coronacrisis has disrupted work and organisations across the globe (Kniffin et al., 2021; Li & Wang, 2020). There are multiple practices tailored to the Coronacrisis to keep employees engaged. For example, creating a virtual community with all employees and host online team building activities during the first wave of the Coronacrisis (Chanana & Sangeeta, 2020). In addition, during the first wave of the Coronacrisis, organisations can keep employees engaged by developing learning opportunities. For example, digital learning programs upgrade the skills of employees and result in professional growth (Chanana & Sangeeta, 2020). Furthermore, social interactions between employees can relieve stress during the first wave of the Coronacrisis (Altena et al., 2020; De Vries et al., 2003). However, most informal interactions between employees take place at the job. Therefore, to keep employees engaged during the first wave of the Coronacrisis, organisations should encourage informal contact between employees

online, provide learning opportunities and create a virtual community online to host online team building activities (Chanana & Sangeeta, 2020).

Conclusion

The Coronacrisis changed employees' work and home environments and generated new opportunities to investigate the relationship between family-to-work conflict and work performance. The results showed that in weeks during the first wave of the Coronacrisis, when employees reported more family-to-work conflict, they also reported less contextual performance and more counterproductive work behaviour. Therefore, it might be interesting for organisations to create a family-friendly supportive work culture to help balance employees' family and work domains (Nielson et al., 2001; Rigotti et al., 2020; Waldfogel, 2001). Furthermore, work engagement moderated the relationship between family-to-work conflict and counterproductive work behaviour, indicating that work engagement is a buffer for family-to-work conflict. Therefore, it might be interesting for organisations to increase employees' work engagement by fostering job resources such as autonomy, social support and skill variety (Bakker et al., 2011; Bakker & Demerouti, 2008). In addition, to keep employees engaged during the first wave of the Coronacrisis, an organisation should encourage informal contact between employees only, host online team building activities and provide learning opportunities (Chanana & Sangeeta, 2020).

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Appendix A

Model 5 with work engagement added as fixed level-one variable

	Outcome variables					
	Task performance		Contextual performance		Counterproductive work behaviour	
	Estimate	*p*	Estimate	*p*	Estimate	*p*
Fixed effects						
Intercept	-.11**	.002	-.05	.167	.04	.188
Moment	.04**	<.001	.01	.169	.01	.399
Family-to-work conflict	-.01	.772	-.04	.069	.08**	.001
Work engagement	.39**	<.001	.40**	<.001	-.07*	.010
Random slopes						
Moment	.01**	<.001	.01**	<.001	.01**	<.001
Family-to-work conflict	.01	.576	.01	.095	.07**	<.001
Random effects						
ICC:	.75		.80		.73	
Deviance:	7057.3		6415.4		7055.3	

Note. *significant at the .05 level (2-tailed), **significant at the .01 level (2-tailed). The model fit improved for task performance ($\Delta\chi^2 = 182.8$, $\Delta df = 1$, $p < .001$), contextual performance ($\Delta\chi^2 = 255.6$, $\Delta df = 1$, $p < .001$), and counterproductive work behaviour ($\Delta\chi^2 = 6.6$, $\Delta df = 1$, $p = .010$) as compared to model 4 (Table 12).

Appendix B

Model 5 with work engagement added as fixed level-one variable

	Outcome variables					
	Task performance		Contextual performance		Counterproductive work behaviour	
	Estimate	*p*	Estimate	*p*	Estimate	*p*
Fixed effects						
Intercept	-.11**	.002	-.05	.174	.05	.159
Moment	.04**	<.001	.01	.178	<.01	.608
Loneliness	-.03	.357	-.06**	.008	.09**	.001
Work engagement	.39**	<.001	.40**	<.001	-.07**	.009
Random slopes						
Moment	.01**	<.001	.01**	<.001	.01**	<.001
Loneliness	.03	.419	.02	.237	.03*	.023
Random effects						
ICC:	.76		.80		.73	
Deviance:	7055.8		6415.2		7077.0	

Note. *significant at the .05 level (2-tailed), **significant at the .01 level (2-tailed). The model fit improved for task performance ($\Delta\chi^2 = 188.6$, $\Delta df = 1$, $p < .001$), contextual performance ($\Delta\chi^2 = 259.1$, $\Delta df = 1$, $p < .001$), and counterproductive work behaviour ($\Delta\chi^2 = 6.8$, $\Delta df = 1$, $p = .009$), as compared to model 4 (Table 14).